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Military Manpower and the All-Volunteer Force

Richard V. L. Cooper

A report prepared for

DEFENSE ADVANCED RESEARCH PROJECTS AGENCY

Rand
SANTA MONICA, CA. 90406

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PREFACE

This report was prepared as part of Rand's DoD Training and Manpower Management Program, sponsored by the Cybernetics Technology Office of the Defense Advanced Research Projects Agency (ARPA). With manpower issues assuming an ever greater importance in defense planning and budgeting, the purpose of this research program is to develop broad strategies and specific solutions for dealing with present and future military manpower problems. This includes the development of new research methodologies for examining broad classes of manpower problems, as well as specific problem-oriented research. In addition to providing analysis of current and future manpower issues, it is hoped that this research program will contribute to a better general understanding of the manpower problems confronting the Department of Defense.

For the approximately 2 million young American males who come of military age each year, there is probably no single public policy decision in the past 25 years more important than the termination of the draft in 1973. The importance of this decision, however, goes far beyond the implications for those most immediately affected by the draft's removal. Whether viewed as an instrument of economic and social policy or in terms of its effects on the maintenance of the U.S. defense effort, the draft was a key element of public policy and touched on nearly every aspect of defense management.

The advent of the All-Volunteer Force (AVF) accordingly marks the beginning of one of the largest and most important experiments of its type ever conducted. Never before in modern history has a nation with such global military responsibilities or such an emphasis on defense been without the authority to conscript young men into military service. Together with the skyrocketing manpower costs and tight defense budgets that have characterized the 1970s, the removal of the draft has served to make military manpower one of the key concerns in the Pentagon and on Capitol Hill.

Despite its importance as a public policy issue, remarkably little has been published about the AVF and its implications for defense and nondefense national objectives. This report therefore offers the first comprehensive analysis of the AVF, including the factors that led to the removal of the draft, the experience from the first few years without conscription, and the longer-run prospects for the volunteer force. Two themes underlie this analysis. The first concerns the narrower effects of the draft's removal on the maintenance of a viable national defense, while the second concerns some of the broader social implications of the method of manpower procurement. The common thread throughout the report is the treatment of the draft and its removal as a public policy decision problem, so that the reader is provided with an analytic framework for assessing the implications of the alternative policy options.

SUMMARY

The advent of the All-Volunteer Force (AVF) in 1973 marked the beginning of a new era for the United States military and, indeed, for American society in general. Without the pressure of the draft, the Armed Forces would be forced to rely on true volunteers as their sole source of military manpower for the first time in more than three decades.[1]

Although the AVF has been viewed since its inception almost entirely in terms of its ability to attract the desired numbers and types of recruits, the implications of the volunteer force are clearly much larger, touching on virtually all aspects of the defense effort. Moreover, and whether intended or not, the draft and its removal were and are an integral part of U.S. economic and social policy, with effects going far beyond the narrower confines of defense.

THE DECISION TO END THE DRAFT

Although the demise of the draft has generally been credited to the Vietnam War, the AVF was actually the result of far more fundamental concerns. The concept of the volunteer force emerged in the late 1960s as one of the very few alternatives for dealing with the growing inequities of the Selective Service draft. The number of young men reaching military age each year was increasing, while force sizes were remaining constant (or were decreasing), which meant that a smaller proportion would have to serve in the military. Since the pay for junior military personnel was substantially below that of comparably aged and educated civilian workers, those who were not forced to serve—about 80 percent of the military-age male population—benefited substantially, while the other 20 percent carried the full burden.

The issue of draft versus volunteer manpower procurement policies was debated extensively during this period, and several advisory groups were commissioned to consider the problem. The debate culminated in 1970 with the report of one of these groups, the President's Commission on an All-Volunteer Armed Force (named the Gates Commission, after its chairman, former Secretary of Defense Thomas S. Gates, Jr.). The Gates Commission argued persuasively that those forced to serve should not have to pay a large financial price in addition to the other burdens of involuntary servitude, and it recommended that first-term military pay be raised to a level commensurate with earnings of comparably aged and educated civilian workers (i.e., 18 to 21 year old male high-school graduates). The Congress concurred with this recommendation and raised first-term pay in 1971. Interestingly, this pay raise meant that the Services would be able to attract enough volunteers so that a draft would no longer be necessary. In other words, achieving an all-volunteer military would not require any extraordinary measures; it basically meant the payment of a "market wage" to new recruits.

[1] With the exception of a short 18-month hiatus following World War II, the U.S. military was not without the authority to conscript young men between 1940 and 1972.

The substantive debate having taken place two years earlier, the end of the draft came rather quietly in 1973. Because of the rapid force reductions following the disengagement from Southeast Asia, Secretary of Defense Melvin Laird announced the end of draft calls in January 1973, six months before the expiration of draft authority.

EARLY AVF EXPERIENCE

Perhaps the most important conclusion to emerge from the first four and a half years of experience without the draft (i.e., since January 1973) is that the volunteer force has worked. It has been shown that the military services can attract a socially representative mix of the desired quantity and quality of new recruits without the pressure of the draft and at a cost substantially lower than commonly assumed. Moreover, the success of the volunteer force is not due to high unemployment rates, although unemployment certainly aided the recruiting effort, but rather can be attributed to the fact that military service is apparently seen as an attractive employment option by a broad cross-section of American youth.

With the exception of modest Army and Marine Corps recruiting shortfalls during the first year of the AVF, and again during the summer of 1976, the Services have successfully met their quantitative recruiting objectives since the removal of the draft. Moreover, these recruiting shortfalls can be shown to be largely the result of shortages of recruiters in the field, unnecessarily restrictive quality standards, and unusually large enlisted accession requirements. These difficulties thus do not seem to be indicative of longer-run recruiting problems, but they do show that recruiting problems can occur if the force is not properly managed.

The key AVF issue is therefore not manpower supply; it is enlisted accession requirements. Service policies such as limiting the flow of manpower into the career force (which is due in part to Congressional limitations on the numbers of personnel in the senior pay grades) have resulted in enlisted accession requirements that are actually higher under the volunteer force than they were under the draft, relative to force sizes—just the reverse of what would be expected. The long-run success of the volunteer force therefore depends upon reducing enlisted accession requirements—and, hence, reducing personnel turnover rates. This, in turn, is the means to more cost-effective management of enlisted manpower.

The quality of new recruits, as measured by such indicators as mental aptitude and educational attainment, has actually increased since the removal of the draft, and substantially so since about 1975. The real quality issues therefore concern whether the Services' current quality-maximizing philosophy yields standards that are too restrictive (rather than too lenient) and whether the right balance is being maintained among individual quality criteria such as mental aptitude and educational attainment. Specifically, the evidence suggests that current quality standards are too strict, that the Services should accept more Category IV high-school graduates (i.e., those who score in the 10th to 30th percentile on Service-administered mental aptitude tests), and that some of the medical standards should probably be relaxed.

The question of social representation has frequently been raised by those who are opposed to the concept of a volunteer force, as black participation in the Armed Forces has increased significantly during the past 15 years. However, this increase

is largely unrelated to the volunteer force; it is instead due mainly to the increasing numbers of blacks found eligible for military service and to the unusually high unemployment rates experienced by black males of military age (relative to whites). Although blacks continue to score lower than whites on mental aptitude screening tests, the proportion of blacks failing to qualify for military service has decreased significantly over the past 20 years. Because of this, the black proportion of the prime manpower pool—that is, military-age males of average and above-average mental aptitude—has increased from a little under 3 percent in 1960 to more than 7 percent in the mid-1970s, a more than twofold increase.

Moreover, the increasing proportion of blacks in the force does not indicate that the AVF has resulted in an Army of the poor; there are as many new recruits from middle- and high-income areas under the volunteer force as there were during the lottery draft, which was presumably the most socially representative period of peacetime conscription. Also, the regional composition and the urban/rural make-up of the volunteer force are remarkably similar to what they were under the draft. In other words, the military continues to draw a socially representative sample of American youth.

Another major issue raised by critics of the AVF is that of costs. Indeed, it is easy to see why manpower costs in general and the presumed cost of the volunteer force have become so important. Manpower costs have increased from about $25 billion in 1964 to the more than $60 billion projected for 1978. However, the attribution of these increased costs to the volunteer force is plainly incorrect. The factors leading to the considerable growth in manpower costs can in fact be traced to events that began nearly three decades ago. For example, whereas the military career has historically consisted of 30 years of service, the immediate post-World War II period saw the widespread implementation and use of the 20-year military career—a policy that would come to have a dramatic effect on defense manpower costs about 25 years later.

Similarly, the 1960s marked the implementation of comparability pay for civilian employees of the DoD, the beginning of annual pay increases for military personnel, the so-called "catch up" pay increase for career military personnel, and the "one-percent kicker" for adjusting Federal military and civilian retired pay.

In short, the only increases in manpower costs that can be even remotely related to the volunteer force are the large pay increase for first-term personnel implemented in 1971 and the increased recruiting and bonus costs for these individuals. And even the pay increase cannot properly be viewed as an AVF cost, since the Gates Commission argued vigorously that pay discrimination against junior military personnel ought to be eliminated for equity reasons alone, irrespective of the decision to end the draft.

The end result is that the volunteer force has added less than $300 million to the cost of defense manpower—about two-tenths of one percent of the defense budget. The reason why the proportion of manpower cost growth that can be attributed to the AVF is so small is that the draft provides very little leverage over total manpower costs. That is, whereas the basic effect of the draft is to reduce budget outlays for those in their first two years of service, the total cost of these personnel amounts to only about $6 billion—just a little over 10 percent of the total defense manpower outlay.

For the most part, then, the story of the volunteer force has been one of success. To be sure, there have been problems, such as the first-year recruiting shortfalls

experienced by the Army and the Marine Corps, but these have been largely problems with the way the transition was managed, not with the fundamental concept or policy. Other problems remain, such as those of reserve forces manning and first-term enlisted attrition. However, these problems probably have more to do with finding the right management and/or force structure solutions than with the implementation of the volunteer force per se.

For example, although the reserves have historically been structured as a "mirror image" of the active forces, common sense would seem to argue for alternative solutions, such as a more experienced force (where capability is maintained but not developed). These problems with the reserves should not, of course, be oversimplified. Nevertheless, the fundamental problem is that the reserve forces are showing the effects of more than 25 years of neglect. As a result, far closer attention must be paid to determining the appropriate manning configurations and personnel policies for maintaining an effective reserve force, instead of viewing the problem as a simple one of draft versus volunteer procurement policies.

MANPOWER MANAGEMENT AND UTILIZATION IN A VOLUNTEER ENVIRONMENT

Although conscription has not been used for more than four and a half years, to assume that the draft is entirely history would fail to recognize the imprint that it has left throughout the defense establishment, especially on the way the military manages and uses its personnel. Dealing effectively with this legacy will be one of the most formidable obstacles that the Department of Defense and the Congress must face during the next decade.

In a managerial sense, the elimination of the draft was a major shock. The immediate effect of ending the draft was to substantially increase the budget cost and scarcity of new recruits. The full impact, though, is clearly much larger. In a draft environment, the military could afford to be dominated by policies and traditions that ran counter to the general thrust of change in the civilian world—the draft insured an adequate supply of manpower, almost no matter what personnel policies the Services followed. In a volunteer environment, however, the Armed Forces must be responsive to the conditions of change in the civilian world.

The removal of the draft has thus altered the entire philosophy under which the military must manage its human resources. The nearly three decades of postwar conscription encouraged the military to develop and maintain patterns of manpower utilization and management that may be neither cost-effective nor equitable and, as a result, may add needless constraints and costs to the manpower system. But manpower, which was once plentiful and seemingly cheap, is now scarce and expensive. Policies adopted for reasons of convenience and equity must therefore be evaluated in terms of efficiency as well. In short, manpower is important, so cost-effective solutions to the management problem must be developed and implemented.

The possible efficiency gains that could result from new policies of manpower management and utilization—and the corresponding cost savings—have so far gone largely unrealized. These improvements will require greater understanding of the AVF, since the AVF provides the context for improved management; but more important, it is essential to address the major areas in need of reform: man-

power requirements; compensation, retirement, and tenure policy; and military training.

To illustrate, the cost of manpower has risen substantially relative to the cost of capital equipment—about 40 percent—during the past decade, yet there has been little or no change in the mix of manpower and equipment used in the defense mission. Consideration should therefore be given to finding ways of substituting equipment for manpower, especially in the support areas.

Similarly, the costs of military personnel have risen substantially relative to the cost of DoD civilian employees since the removal of the draft. The DoD has in fact responded to much of this increase, but primarily by substituting direct-hire civilian employees for military personnel. Alternatively—and this is an issue that is only beginning to receive much attention—analysis indicates that cost savings of up to $1 billion per year might be realized by contracting out for 250,000 direct-hire and indirect-hire civilian positions. Thus, the cost-effective solution may lie not in substituting direct hires for military personnel, but in substituting contract hires for direct hires.

Perhaps the most important, but least recognized, type of resource-allocation issue raised by the removal of the draft, however, concerns the experience mix of the force. Because of first-term pay increases and recruiting costs, the costs of first-term personnel have increased dramatically relative to the costs of career personnel. Yet the Services continue to rely on approximately the same mix of first-term and career personnel as they did during the pre-Vietnam draft era. The substitution of experienced personnel for first-termers would not only help to reduce enlisted accession requirements, it could result in substantial cost savings as well. Shifting from the current mix of 60 percent first-termers and 40 percent careerists to a 55/45 mix or a 50/50 mix could lead to better utilization of junior members by having them serve in jobs for which they are better suited and, as a consequence, could yield cost savings of up to $1 to $2 billion per year.

These are only three examples of the ways in which resources can be allocated within a given force structure to achieve cost savings or increases in capability. But they illustrate how manpower requirements ought to be a function of the cost of particular inputs to the defense mission.

Equally important with these questions of resource allocation are those concerning the ways the DoD manages its uniformed personnel. Individual military training, with costs amounting to more than $6 billion per year, is clearly one of the key policy problems and is recognized as such. However, attention in this area has focused almost exclusively on improving the efficiency of the training establishment in the narrow sense—that is, on designing better courses, reducing the student/staff ratio, and so forth. Equally important is the impact of today's manpower requirements system on the magnitude of first-term enlisted training, the single largest component of the training establishment.

First-term enlisted training costs are determined largely by the numbers of personnel receiving training and by course length. Shifting to a somewhat more career-intensive force could dramatically reduce the number of personnel who receive basic and skill training and could also lead to shorter courses. Thus, what at first appears to be a training problem is in reality a requirements problem.

With respect to promotion and tenure, the personnel policies developed over the last 30 years reflect a management orientation frequently geared more toward structuring an internally coherent personnel system than toward achieving the

desired force structure in terms of requirements. They are based largely on the provision of predictable career patterns followed by early retirement.

Fundamental changes in the system should be considered, but there is a persistent tendency to focus on symptoms rather than causes. For instance, the up-or-out promotion system helps to prevent the military from encountering many of the problems associated with the Civil Service system, yet it is continually questioned. The problem with up-or-out is not the basic concept, but rather the ways in which it has come to be applied over the years. A recent survey shows that nearly 50 percent of all enlisted personnel would prefer to remain technical specialists rather than assume supervisory responsibilities, but the promotion system forces them either into supervisory positions or out of the military altogether. A personnel management system that would allow senior service members to be promoted into either technical or supervisory positions would enable the integrity of the up-or-out system to be maintained while simultaneously meeting mission requirements.

The military compensation system is likewise in need of a major overhaul. It was developed for the needs of a basically different environment, and although marginal adjustments have been made in the system to solve specific problems over the years (e.g., the introduction of bonuses and flight pay), there has been no systematic or thorough revamping of the system. The result is that the current system is a patchwork of separate legislative and regulatory changes that may be ill-equipped to deal with the needs of the post-draft environment.

The current system was originally intended to keep Federal pay (both military and civilian) competitive with wages in the civilian sector, but it has evolved to the point where far more than necessary is paid. Summing all the components of the compensation package reveals that military officers, for example, earn about 70 percent more, and enlisted personnel about 30 percent more, than comparably aged and educated civilian workers. This did not happen by design, but by accident.

Military retirement is part of the compensation system that is particularly in need of thorough review. Retirement costs are among the largest and fastest growing components of manpower spending, having increased from $477 million in 1956 to the more than $9 billion projected for 1978. The present retirement system is also based in many ways on conditions that no longer prevail, such as having a small standing military, a heavy concentration in the combat arms, and limited pay. Originally, retirement compensation was intended more as a form of deferred payment than as old-age sustenance. Now that military pay equals or exceeds civilian pay, the retirement system should be reexamined in terms of its basic purposes.

The reason for today's enormous retirement costs can be seen in the fact that the actuarial cost of the current system adds between 40 and 55 percent to the military pay (regular military compensation) of those who retire; in contrast, the contribution for standard private retirement programs is between 5 and 20 percent of salaries and wages. Yet the Services have little incentive under current policy to economize on retirement costs, both because the costs do not appear in the Services' own budgets and because they appear in the DoD budget when paid rather than when incurred. Equally important, the current policy of retirement vesting after 20 years of service but not before means that there is very little turnover between the 8th and 20th years, but there are large losses at the 20-year point. Consequently, the DoD has little flexibility in adjusting career personnel to meet requirements. At the same time, strong financial incentives for early retire-

ment mean that many outstanding officers and enlisted personnel are lost to the Services just as they are entering their most productive years.

CONCLUSIONS

The removal of the draft presents an opportunity to make better use of defense resources—an opportunity that was not always present under or encouraged by the draft. The importance of this point is dramatically underlined by the fact that the relatively modest changes that have been suggested here could yield long-run cost savings of from $5 to $10 billion per year.

To summarize, the AVF can be made to fail. But it can also be made to work—and perhaps much better than its draft-dependent predecessor. Whether or not the potential of the AVF is realized will depend critically on the policies that the DoD and the Congress adopt during the next ten years, for the true test will occur in the 1980s. If this potential is not realized, society may not be willing to pay the escalating costs emanating from the current approach and, as a consequence, may simply cut forces.

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CONTENTS

PREFACE iii

SUMMARY v

ACKNOWLEDGMENTS xiii

FIGURES xix

TABLES xxi

Chapter

1. INTRODUCTION 1
   - The Transition 1
   - The Nature of the Problem 2
   - Organization of the Report 3

2. MANPOWER AND DEFENSE: DIMENSIONS OF THE PROBLEM 5
   - Structuring the Defense Problem 5
   - Sizing the Defense Effort 10
   - The Defense Manpower System 14
   - The Cost of Defense Manpower 20
   - Manpower and Defense 29

PART 1: THE DRAFT AND ITS REMOVAL

3. THE MOVE TO END THE DRAFT 35
   - The Draft Debate 35
   - The Equity Issue and Demographic Trends 40
   - Summary 44

4. HISTORICAL AND INTERNATIONAL PERSPECTIVE OF CONSCRIPTION 46
   - History of Conscription 46
   - Lessons from the Past 57
   - International Perspective 59
   - The All-Volunteer Force in Perspective 64

5. THE ECONOMICS OF PEACETIME CONSCRIPTION 66
   - Economic Cost as a Policy Criterion 67
   - The Economics of Labor Utilization 74
   - The Conscription Tax 80
   - Redistribution of Income under the Conscription Tax 86
   - Economic and Budget Costs as Policy Criteria for a Manpower Procurement Policy 89
   - Appendix 5-A: A Model of Participation in the Military and Draft Avoidance under Conscription 96

6. THE DECISION TO END THE DRAFT 102
Structuring the Debate: The Formation of the Gates Commission 102
The Gates Commission Findings 103
Outside Criticisms of the Gates Commission 106
Implementing the Volunteer Force 109

PART II: THE ALL-VOLUNTEER FORCE

7. TRANSITION TO THE VOLUNTEER FORCE 113
The Process of Transition 113
The Volunteer Debate 116
The AVF Issues 121

8. MANPOWER PROCUREMENT: QUANTITY AND QUALITY 123
Conceptual Framework 123
Enlistment Quality 128
Enlistment Quantity 141
The Reserve Forces 148
Summary 158

9. ENLISTMENT SUPPLY AND DEMAND 159
The Supply of Enlistments 159
Recruiting Objectives and the Demand for Enlistments 169
Recruiting Shortfalls 182
Unemployment and Enlistment 187
The Future of the Volunteer Force 188
Appendix 9-A: Enlistment Supply Estimation 194
Appendix 9-B: Defense Manpower Commission Estimates 200

10. SOCIAL REPRESENTATION IN THE VOLUNTEER FORCE 204
Background 204
Individual Characteristics 206
Socioeconomic Background 221
Conclusions 229
Appendix 10-A: Socioeconomic Composition of Enlisted Accessions: Supplementary Results 232
Appendix 10-B: Zip Code Data as a Unit of Analysis 246

11. COST OF THE VOLUNTEER FORCE 251
The Cost Issue 252
Budget Costs 252
Economic Costs 265

PART III: RESOURCE ALLOCATION AND MANPOWER MANAGEMENT

12. RESOURCE ALLOCATION WITHOUT THE DRAFT 269
Conceptual Framework for Defense Resource Allocation 270
Capital and Labor 277

13. RESOURCE ALLOCATION: MANPOWER REQUIREMENTS 291
Military or Civilian? 291
The First-Term/Career Mix 303
Summary 318
Appendix 13-A: Resource Allocation: Supporting Data 320

14. MANPOWER MANAGEMENT IN A VOLUNTEER ENVIRONMENT 332
Management Principles under the Draft 332
Recruiting 338
Military Training 343
Career Management 349

15. MANPOWER MANAGEMENT: THE MILITARY COMPENSATION SYSTEM 356
Theoretical Framework 357
The Military Compensation System 361
Military Pay 364
Military Retirement 372
Military Compensation Policy 376

16. DEFENSE WITHOUT THE DRAFT 381
Draft or Volunteer? 381
Early Experience with the Volunteer Force 386
The Legacy of the Draft 388
The All-Volunteer Force: Providing the Nation's Defense 389

BIBLIOGRAPHY 395

FIGURES

2-1. Organization of the Department of Defense 8
2-2. Defense Resources 10
2-3. Defense Manpower System 15
2-4. Defense Spending 29
2-5. Manpower Costs, Defense Costs, and GNP: Fiscal 1974 Constant Dollars 30

3-1. Annual Military and Civilian Wages 43
3-2. Military Manpower Procurement and Population Size 44

5-1. The Relationship Between Supply (Reservation Wage) and Civilian Earnings Opportunities 69
5-2. Measuring the Economic Cost of Military Manpower 72
5-3. Overemployment of Labor with the Draft 76
5-4. The Conscription Tax 82
5-5. Economic and Budget Cost 92

6-1. Eliminating Recruiting Deficits by (1) Moving Along the Supply Curve SS, (2) Shifting the Supply Curve, and (3) Shifting the Requirements for Volunteers 108

7-1. Indexes of Pay for Civilians, Career Military, and Recruits 115
7-2. Non-Prior-Service Male True Volunteers and Annual Enlisted Accession Requirements 116

8-1. Enlistment Supply and Demand 124
8-2. The Enlistment Process: Calendar Year 1972 126
8-3. Enlisted Accessions: All and True Volunteers 145
8-4. Selected Reserve Enlisted Accessions 153

9-1. Factors Affecting Enlistment Supply 161
9-2. Logistic Supply Curve 166
9-3. Army Accession Rates and End Strengths 172
9-4. Navy Accession Rates and End Strengths 172
9-5. Marine Corps Accession Rates and End Strengths 173
9-6. Air Force Accession Rates and End Strengths 173
9-7. Recruiter Shortages and Enlistment Shortfalls 184
9-8. Quantity, Quality, and Unemployment 188
9-9. Male 18 to 21 Year Old Population 190
9-10. Non-Prior-Service Male Enlistment Supply and Demand Projections 192

10-1. Blacks as a Percentage of Enlisted Accessions and the 18 to 21 Year Old Male Population 210
10-2. Black Accessions and Unemployment 218

12-1. A Hypothetical Production Function 271
12-2. Indexes of DoD Capital and Labor Stocks 280
12-3. Indexes of DoD Cost of Capital and Cost of Labor 283
12-4. Indexes of DoD Capital and Labor Costs and Utilization 285

13-1. Military and Direct-Hire Civilian Personnel Utilization and Costs. 302
13-2. Productivity of First-Term Enlisted Personnel on the Job 309

14-1. Statistical Decision Framework for Establishing Selection Criteria 341
14-2. First-Term Enlisted Training, Productivity, and Costs: Conceptual Framework 347

15-1. Military Labor Supply and Demand in Multiple Labor Markets... 358
15-2. Military Career Basic Pay and RMC Expressed as a Percentage of Median Wage and Salary Earnings of Comparably Aged and Educated Civilian Workers 368
15-3. Enlisted RMC Versus Civilian Wage and Salary Earnings for White High-School Graduates and White Non-High-School Graduates: Calendar Year 1974 369
15-4. Officer RMC versus Civilian Wages and Salary Income for White College Graduates: Calendar Year 1974 370
15-5. Officer RMC under Slow and Rapid Promotion versus Civilian Wage and Salary Earnings for White College Graduates: Calendar Year 1974 371
15-6. Total Military Officer Compensation versus Total Compensation for White College Graduates: Calendar Year 1974 377
15-7. Total Military Enlisted Compensation Versus Total Compensation for White High-School Graduates and White Non-High-School Graduates: Calendar Year 1974 378

TABLES

2-1. Sizing the Military: Measures of Force Strengths 11
2-2. Measures of Military Manpower Strengths for Selected Years 13
2-3. Distribution of Military Personnel by Service and Rank: 31 December 1974 17
2-4. Distribution of the Force by Occupational Area: Fiscal 1974 18
2-5. Military Manpower Procurement 20
2-6. Manpower Budget Expenditures 22
2-7. Military Retirement: Budget Outlays versus Accrued Liability ... 24
2-8. Manpower Budget Costs Not in the DoD Budget 26

4-1. Comparison of Annual Military Enlisted Earnings with Average Annual Earnings in Manufacturing 52
4-2. Military Forces in Selected Countries: 1975-1976 61
4-3. Minimum Length of Service for Conscript Forces in Western Europe 63

5-1. Ratio of the Total Number of Personnel Required to the Number Assigned in Operational Billets, as a Function of Training Time and the Length of the Conscription Tour 79
5-2. The Conscription Tax in 1964: Narrow Definition 84
5-3. The Conscription Tax (Narrow Definition) and the Costs of Collection: 1964 85
5-4. Estimates of the Conscription Tax: 1970 88
5-5. Conscription Tax and the Ability to Pay: Tax as a Percentage of Lifetime Earnings (1970) 90

6-1. The 1971 AVF Pay Raise: RMC 110

8-1. Estimated Productivity of Enlisted Personnel at the End of Four Years of Military Service 131
8-2. Percentage of First-Term Enlisted Men Receiving Disciplinary Action by Mental Category and Education: Calendar Year 1967 Accessions as of 31 December 1969 131
8-3. Distributions of Non-Prior-Service Male Enlisted Accessions by Mental Category and Education for the DoD 133
8-4. The Quality of Non-Prior-Service Male Enlisted Accessions: Mental Category IV and Percentage Non-High-School Graduates . 134
8-5. Distribution of Non-Prior-Service Enlisted Accessions by Mental Category: Actual versus Objective 136
8-6. Quality of Male Non-Prior-Service Enlisted Accessions: Joint Distribution by Mental Category and Education 136
8-7. Estimated Productivity of Enlisted Personnel at the End of Four Years of Military Service, Expressed as a Percentage Relative to the Average Four-Year Specialist 139

8-8. Distributions of Enlisted Occupations by Skill Level: Fiscal 1974 .. 140
8-9. Percent of Enlisted Accessions Discharged for Failure to Meet Minimum Behavior or Performance Criteria: Fiscal 1971 Enlistees Separated as of 30 June 1973 140
8-10. AVF Enlistments and Objectives by Service: All Sources 142
8-11. DoD Enlistments and Objectives by Source 143
8-12. Non-Prior-Service Male Category I-III Enlistments and Objectives 144
8-13. Enlistments, Objectives, and Force Strengths 147
8-14. Average Enlisted Strengths of the Selected Reserves: Authorized versus Actual 151
8-15. Selected Reserve Enlisted Accessions: Distribution by Education .. 155
8-16. Selected Reserve Enlisted Accessions: Distribution by Mental Category 155
8-17. Quality: Comparison of Active and Reserve Force Accessions 156

9-1. Individuals' Branch of Service Preferences by Enlistment Intention 163
9-2. Supply Elasticities Implied by Equation (9.5) 168
9-3. A Model of Enlistment Demand-Regression Results for Equation (9.12) 177
9-4. First-Term/Career Mix Implications for Annual Enlisted Accession Requirements 179
9-5. Accession Rates and Accession Rate Requirements 181
9-6. Service Accession Plans 191
9-A-1. Non-Prior Service Male True Volunteer Enlistments 195
9-A-2. Pay and Recruiters 195
9-A-3. Miscellaneous Supply Data 196
9-A-4. Supply Equations 198
9-B-1. Comparisons of Defense Manpower Commission Supply Projections and Those from Equation (9.5): Fiscal 1985 202

10-1. Distribution of Enlisted Accessions and the General 18 to 21 Year Old Male Population by Mental Category 207
10-2. Educational Attainment of Enlisted Accessions and the U.S. Male Population 208
10-3. Educational Attainment of All Male Military Personnel and the U.S. Male Population 209
10-4. Enlisted Accessions: Percentage Black 211
10-5. Mental Category Distributions for Pre-Inductees by Race: 1971-1972 211
10-6. Percentage of the Population Classified as Mental Categories I-III 213
10-7. Percentage of Male Population Pool that Are High-School Graduates 214
10-8. Category I-III Manpower Pools 215
10-9. Category I-III Enlisted Accessions and Manpower Pools 216
10-10. Annual Income for Year-Round Full-Time Employed 18 to 24 Year Old Males with Four Years or Less High-School Education by Race 217
10-11. Determinants of Racial Composition of Enlisted Accessions 220
10-12. Black Officer Accessions 221

10-13. Black Enlisted Accessions into the Guard and Reserves 221
10-14. Distribution of Enlisted Accessions by Census Division and Region 224
10-15. Distribution of Enlisted Accessions According to Urban Status of Home Residence 225
10-16. Distribution of Male Enlisted Accessions by SMSA Zip Codes Ranked According to Average Family Income 227
10-17. Distribution of Black and Nonblack Enlisted Accessions by SMSA Zip Codes Ranked According to Average Family Income 228
10-A-1. Distribution of Enlisted Accessions by SMSA Zip Codes Ranked According to Average Family Income by Mental Category and Education..... 233
10-A-2. Distribution of Nonblack and Black Enlisted Accessions by SMSA Zip Codes Ranked According to Average Family Income by Mental Category and Education..... 234
10-A-3. Distribution of Enlisted Accessions by Division and Region of the Country, by Six-Month Intervals 236
10-A-4. Distribution of Enlisted Accessions by SMSA Zip Codes Ranked According to Average Family Income, by Six-Month Intervals 237
10-A-5. Percentage of Enlisted Accessions Falling in the Upper 10 Percent and Upper 50 Percent of all SMSA Zip Codes Ranked According to Average Family Income..... 238
10-A-6. Distribution of Enlisted Accessions According to Region of the Country, by Service 240
10-A-7. Distribution of Enlisted Accessions by SMSA Zip Codes Ranked According to Average Family Income, by Service 241
10-A-8. Distribution of Nonblack Category III High-School Graduate Enlisted Accessions by SMSA Zip Codes Ranked According to Average Family Income, by Service 242
10-A-9. Distribution of Enlisted Accessions by SMSA Zip Codes Ranked According to Average and Median Family Income 243
10-A-10. Distribution of Enlisted Accessions by SMSA Zip Codes Ranked According to Average Years of Education Completed..... 244
10-A-11. Distribution of Nonblack and Black Enlisted Accessions by SMSA Zip Codes Ranked According to Percentage Whites 244
10-B-1. Recruits and the Income of their Parents: Comparisons of AFEES Individual Survey Data with Aggregate Zip Code Data..... 247

11-1. Budget Expenditures Associated with the AVF: Alternative Approaches 254
11-2. Chronology of Major Factors Affecting Defense Manpower Compensation..... 260
11-3. Defense Manpower Costs by Source..... 262
11-4. Cost of National Service: Men Only 264
11-5. Economic Cost of Military Personnel 266

13-1. Military and Civilian Personnel Strengths 294
13-2. Average Costs of Military and Civilian Personnel 297
13-3. Comparisons of Monthly Basic Pay for First-Termers and Careerists..... 306

13-4. Percentage of the Enlisted Force in the First-Term 306
13-5. Productivity and Cost Implications of Different Force Mixes 311
13-6. Annual Enlisted Accession Requirements Under Alternative Mixes of First-Term and Career Personnel 314
13-7. Air Force Enlisted Personnel Eligible to Reenlist: Fiscal 1976 319

13-A-1. DoD Labor Input 321
13-A-2. DoD Manpower Costs 322
13-A-3. DoD Capital Stock: 1976 Constant Dollars 323
13-A-4. Costs and Productivity: 60/40 First-Term/Career Mix 325
13-A-5. Index of Earnings from Civilian Employment 328
13-A-6. Costs and Productivity: 50/50 First-Term/Career Mix 328
13-A-7. Costs and Productivity: 45/55 First-Term/Career Mix and Revised Training and Retirement Policies 330

14-1. Age Distributions of Male Military Personnel and the Male Civilian Work Force 335
14-2. Fiscal 1976 Military Training by Type: Manpower and Costs 344

15-1. Estimated Military Compensation: Fiscal 1975 Budget Costs 362
15-2. Perceived Value of Military Pay 366
15-3. Military Retirement Costs 373
15-4. Economic Cost of Military Retirement: The Percentage of Regular Military Compensation Necessary to Fund the Future Retirement Benefits for Those Who Serve Until Retirement 375

Chapter 1

INTRODUCTION

The advent of the All-Volunteer Force (AVF) in 1973 marked the beginning of a new era for the United States military, and indeed, for American society in general. Without the pressure of the draft, the armed services were forced to rely on true volunteers as their sole source of military manpower for the first time in more than three decades.[1]

Although the AVF has been viewed since its inception almost entirely in terms of its ability to attract the desired numbers and types of recruits, the implications of the volunteer force are clearly much larger, touching on virtually all aspects of the defense effort. Moreover, and whether intended or not, the draft and its removal were and are an integral part of U.S. economic and social policy, with effects going far beyond the narrower confines of defense.

An accurate assessment of the AVF, both its implications and prospects, is therefore critically dependent on putting the AVF experience into the broader context of U.S. defense, economic, and social policy. This broad perspective, however, has been noticeably absent from most of the post-draft debate and analysis.[2] The lack of any systematic overview or analysis of the evidence to date thus serves as one of the principal motivations for this report.

The purpose of this report, then, is to provide a broad assessment of *defense without the draft*—past, present, and future. Indeed, how policies evolve and how the military responds will clearly play a key role in shaping U.S. defense posture and social policy for the remainder of this century.

THE TRANSITION

The law authorizing the conscription of young men for military service expired on July 1, 1973, but because of rapid force reductions following the Vietnam War,

[1] With the exception of a short 18-month hiatus following World War II, the U.S. military was not without the authority to conscript young men between 1940 and 1972.

[2] As of the last writing in this report, there was no other comprehensive review or analysis of the experience with the AVF. There are several other studies, however, that do examine various aspects of the early AVF experience. Binkin and Johnston provide an excellent overview, but their analysis was confined to the first three months without the draft. The Defense Manpower Commission considers the AVF but is very brief in its treatment, focusing principally on recruiting prospects. King is broader in his treatment, but because of time constraints and the fact that his emphasis is on national service, he is not able to explore the AVF issues in much depth. Finally, Lee and Parker provide an interesting description and analysis of the political and legislative history of the AVF. Other studies have, of course, been conducted, but they have tended to be more narrowly focused (many of these are cited at appropriate places later in this report). See Martin Binkin and John D. Johnston, *All-Volunteer Armed Forces: Progress, Problems, and Prospects*, report prepared for the Committee on Armed Services, United States Senate, Ninety-Third Congress, First Session, U.S. Government Printing Office, June 1, 1973; Defense Manpower Commission, *Defense Manpower: The Keystone of National Security*, U.S. Government Printing Office, April 1976; William R. King, *Achieving America's Goal: The All-Volunteer Armed Force or National Service?*, report prepared for the Committee on Armed Services, United States Senate, Ninety-Fifth Congress, First Session, U.S. Government Printing Office, March 2, 1977; and Gus C. Lee and Geoffrey Y. Parker, *Ending the Draft—The Story of the All-Volunteer Force*, Human Resources Research Organization, Report FR-PO-77-1, Alexandria, Virginia, 1977.

reliance on the draft all but ended six months earlier. In January 1973, Secretary of Defense Melvin Laird announced that there would be no more draft calls, so the last regular induction occurred on December 29, 1972. Although those previously drafted continued to serve—the last serving draftee was not discharged until November 1974—the United States has for all practical purposes operated under an all-volunteer military since January 1973.

It would be a mistake, however, to limit analysis of the AVF to the short period since the draft ended. On the one hand, much of the early AVF experience is merely a manifestation of more fundamental and longer-run trends. On the other hand, the transition is far from over—the military has only begun to adjust to the myriad of changes brought about by the draft's removal. In other words, it is important to recognize the dynamic nature of the transition when assessing the progress to date or when evaluating the future of the AVF.

For example, the transition to the volunteer force has taken place at a time when the cost of conducting the defense effort has become a likewise important concern. Manpower costs have escalated rapidly since the mid-1960s, both in absolute dollar amounts and as a share of the defense budget. As this has happened, the defense budget, which once dominated Federal expenditures, has come under more careful scrutiny by the Congress and the public every year. While making up more than half of the Federal budget during the 1950s, the defense budget today accounts for less than a quarter of all Federal expenditures, making efficient use of scarce defense resources even more important.

The advent of the AVF, rapidly escalating manpower costs, and tight defense budgets have therefore all served to make military manpower an ever-increasing concern in defense planning and budgeting. Whereas the most important issues before the Department of Defense (DoD) were once almost solely strategic and tactical in nature, they now include cost and management as well—particularly manpower costs and manpower management.

THE NATURE OF THE PROBLEM

It is important to begin by recognizing the public policy nature of the manpower procurement issue. In a narrow sense, the ability to attract the personnel required to man the nation's Armed Forces is obviously an issue of public concern. There are, however, much broader, though less visible concerns, as well.

At the broadest level of aggregation, the method of manpower procurement affects the way the defense effort is conducted, since the availability of manpower under different procurement policies is clearly an important determinant of the way that the defense mission is carried out. Furthermore, and to the extent that the DoD and the Congress respond to budget incentives, the method of manpower procurement affects the ways the DoD allocates and manages its resources, simply because of the effect of procurement policy on manpower costs.

Manpower procurement policy also has a dramatic effect on the military manpower system—on the numbers and types of personnel procured, the cost of manpower, and the ways that military personnel are managed. For example, conscription tends to encourage reliance on very junior personnel because of their increased availability and lower cost. It also acts to insulate the military as an employer from

the mainstream of society, so that policies are frequently adopted more for reasons of convenience than cost-effectiveness.

Finally, the effects of military manpower procurement policy go beyond questions of defense. For example, when coercion is used to allocate labor resources, as it is under the draft, the method of manpower procurement becomes an instrument of the nation's economic and social policies. Conscription extracts a "tax" from those forced to serve and, contrary to most social objectives, this tax generally penalizes most severely those least able to bear the burden—namely, the poor. Conversely, universal conscription can be viewed as a tool for encouraging a "socialization" process among the nation's young citizens. Although the resulting "tax" tends to be progressive in this case, the use of universal conscription requires either very large force sizes (relative to the nation's population) or short service tours (which result in reduced force readiness). Finally, whenever coercion is used to allocate labor resources into the military, some individuals will attempt to avoid serving, a process that brings its own economic and social costs.

The policy problem therefore becomes, first, one of choosing the method of manpower procurement that best resolves the often conflicting concerns represented by defense, economic, and social policy objectives. The problem then becomes one of adapting manpower and defense policy to meet the needs and constraints imposed by the form of manpower procurement that has been adopted. Accordingly, one of the main themes of this report concerns the types of changes in manpower policy that must be made if the DoD is to provide the desired defense effort at a cost the American public is willing to bear.

ORGANIZATION OF THE REPORT

This report is not intended to provide detailed and specific solutions to each of the vast array of problems and issues raised by the method of manpower procurement in general or the removal of the draft in particular. In the words of Hitch and McKean, once-and-for-all solutions of this sort are impossible ". . . because good solutions change with circumstances, and circumstances change rapidly."[3] The purpose here is, rather, to present an overview of the broad trends and policies that have emerged during the period of transition and to assess their likely effects on defense posture and the structure of the military personnel system in the years ahead.

The focus of this report is largely economic, its principal concerns being the major public policy issues posed by the draft and its removal, especially for the active duty forces.[4] This is not to deny the importance of other issues and approaches—and where possible, these other issues and approaches have been incorporated into the analysis. The focus was adopted, rather, as a means for keeping the discussion within reasonable bounds.

After some necessary background is presented in the next chapter, the body of the report is divided into three parts. Part I, *The Draft and Its Removal*, focuses

[3] Charles J. Hitch and Roland N. McKean, *The Economics of Defense in the Nuclear Age*, Harvard University Press, Cambridge, Massachusetts, 1963.

[4] The reserves are clearly a major defense issue, but a comprehensive treatment of them is beyond the scope of this study.

principally on the factors underlying the decision to end the draft. The analysis shows that the volunteer force was essentially the only viable alternative for eliminating the growing inequities of the selective service draft. Part II, *The All-Volunteer Force,* examines the early AVF experience and concludes that the volunteer force has been a success in terms of its ability to attract a socially representative mix of the desired quantity and quality of recruits at a substantially lower cost than has been commonly assumed. Part III, *Resource Allocation and Manpower Management,* examines the broader implications raised by the removal of the draft. The analysis makes it clear that major changes in manpower utilization and management are required to provide an effective defense at a cost the Amerian public is willing to pay and that the removal of the draft provides an opportunity for making such changes.

Chapter 2

MANPOWER AND DEFENSE: DIMENSIONS OF THE PROBLEM

Military manpower is an integral part of the U.S. defense effort and, as such, changes in manpower can have a substantial effect on the larger issues of defense policy. Since defense is clearly much more than manpower alone, however, we shall begin by examining how the manpower system fits into the larger context of overall defense management.

STRUCTURING THE DEFENSE PROBLEM

At the very core of the problem is the concept and measurement of "national defense." Unlike much of the private sector, or even many government activities, where there may be objective measures of output and productivity, there is no ready measure of "defense output." Instead, national defense embraces a variety of policy objectives, some broadly stated and others more narrowly defined. Though these objectives are all viewed as contributing to the "security" of the nation—whether through the defense of the borders, the deterrence of war, or the protection of allies—they are for the most part not conventionally measurable.

This lack of a clear-cut measure of defense output poses certain problems for the defense planner and for the policy analyst.[1] It is difficult to evaluate the implications of policy alternatives when comprehensive information about the costs and benefits of the alternatives is not available.

A complete analysis of the definition, measurement, and structure of national defense is, of course, beyond the scope of this report.[2] The intent here is merely to highlight some of the conceptual issues and, in the absence of precise definitions and measures, to suggest how the military manpower problem can be approached in the larger context of defense management.

The Policy Problem

Broadly stated, the policy problem facing defense planners is one of *selecting the appropriate amount of defense at the least possible cost*, or, as stated by Hitch and McKean:[3]

[1] The term *defense planner* should be viewed broadly in this context; it includes not only those engaged in such specific functions as projecting next year's defense plans, but also those agencies that conduct the more general planning functions—the military services, the Office of the Secretary of Defense, other Administration officials, and the Congress.

[2] There are a number of excellent studies which do address the more general issues of national defense in some detail. See, for example, Charles Hitch and Roland McKean, *The Economics of Defense in the Nuclear Age*, op. cit.; and Alain C. Enthoven and K. Wayne Smith, *How Much Is Enough? Shaping the Defense Program 1961–1969*, Harper & Row, Publishers, New York, 1971. Others are listed in the bibliography.

[3] Hitch and McKean, op. cit., p. 3.

> The problem of national security might in theory be regarded as one big economic problem. The nation has certain resources—now and prospectively in the future—which are conventionally classified by economists as various sorts of land, labor, and capital. These resources can be used to satisfy many objectives of the nation and its individual citizens—national security, a high standard of living, social security, a rapid rate of economic growth, and so on. These are, of course, competing objectives. In general, the more resources the nation devotes to national security, the less it will have for social security and vice versa. We could (as some economists have done) conceive of a "social welfare function" which we would attempt to maximize by an appropriate allocation of the nation's resources among the various activities satisfying these objectives.

Although this approach may be theoretically appealing and can provide valuable insights, it is at best impractical.

Indeed, Hitch and McKean go on to note:[4]

> In fact, for reasons which will become familiar as we proceed but are in any event obvious, this kind of approach to the problem of national security is completely impractical and sterile. We have to break economic problems, like so many others, into manageable pieces before we can make a good beginning at finding solutions. And in fact, in the United States and all other countries, governments and departments of defense are organized to deal with appropriate parts of the grand problem at many different levels.
>
> As a beginning let us consider economic problems at each of three rather gross levels. National security, from the point of view of an economist, may be said to depend on three things: (1) the quantity of national resources available, now and in the future; (2) the proportion of these resources allocated to national security purposes; and (3) efficiency with which the resources so allocated are used.

The basic issue, then, is not whether the broad problem of choosing the amount of defense is important—it clearly is important. Rather, the issue is that to make the problem of defense management analytically tractable, it must be disaggregated into smaller, manageable subproblems.

As a first step, the problem can be formulated as one of *minimizing the cost of achieving a specified level of defense capability,* or its economic dual, *maximizing defense capability within a given cost constraint.*[5] Though this formulation may seem little different from the social welfare optimization point of view, it is analytically attractive because it enables us to sidestep the critical issue of "How much defense?" and instead focus on *efficiency* in achieving defense (or cost) objectives.[6]

These two aspects of the defense problem—output and cost—provide a conceptual basis for evaluating the effects of ending the draft. The key to making this

[4] Ibid., pp. 3-4.

[5] Although the amount and cost of defense will vary according to which of these two approaches is used, the so-called "first-order" or "marginal" conditions are identical under both approaches. That is, a necessary condition for the optimal allocation of resources under both approaches is that the ratio of the marginal product to the marginal cost for each input be equal to this ratio for all other inputs. For a discussion of both approaches, see, for example, David Gale, *The Theory of Linear Economic Models,* McGraw-Hill Book Company, New York, 1960.

[6] That is, the social welfare maximization approach requires the explicit specification of a social welfare or utility function, thus necessitating specification of society's preferences with respect to the tradeoffs between the amount of defense and the cost of defense. By focusing instead on minimizing the cost of achieving a given amount of defense (or its economic dual), the analysis can be directed to the achievement of efficient resource allocation.

framework operational, though, rests in the ability to structure the problems and issues in meaningful, but manageable, pieces.

There is no unique way of formulating these specific subproblems, but the individual elements of defense, as well as the aggregate defense effort, can be viewed as an economic problem.[7] That is, defense capability can be thought of as a function of the factors of production (or, equivalently, the inputs to the defense mission). Thus, efficient management of the defense effort—whether in whole or parts—depends on efficient use of defense resources vis-à-vis their contribution to defense capability (i.e., their productivity) and their costs.

Defense Organization and Capability

We can begin by examining, in a theoretical sense, the defense mission, keeping in mind the primary difficulty resulting from the lack of an obvious measure of military capability. Indeed, the conceptual definition of military capability will vary considerably, depending on political, military, and economic objectives. These variations give rise to such terms as offensive forces, self-defense forces, "first-strike" capability, "expeditionary" forces, etc.

To achieve its various objectives, the DoD is organized into the Office of the Secretary of Defense (OSD), the three military departments[8] (Army, Navy, and Air Force), and a variety of specific defense agencies (such as the Defense Intelligence Agency and the Defense Nuclear Agency), as illustrated in Fig. 2-1. The OSD and the other defense agencies are generally concerned with broad DoD-level management and coordination for specific, but generally nonmilitary functions (in the narrow sense); the military departments, on the other hand, are responsible for specific mission requirements, as well as their own internal management.

Each military department can in turn be structured into its major programs and activities—such as strategic forces, general purpose forces, and support functions (e.g., training and medical). The Air Force, for example, consists of major "commands," including the Strategic Air Command, the Tactical Air Command, and the Military Airlift Command, in addition to such support commands as the Air Training Command. Organizationally, the Army's ground forces are disaggregated (in descending order) into divisions (which are, in a sense, self-contained "armies"), brigades, regiments, battalions, and so forth. Each of these organizational entities produces its own "output," whether final or intermediate.[9]

The DoD thus has a multitude of objectives, programs, and functions—a fact that considerably complicates the definition and measurement of defense capability. The problem of measurement arises primarily, however, from the lack of a common denominator among the many outputs. Commercial firms, for instance,

[7] Alternatively, defense can be viewed as an organizational or bureaucratic problem—that is, how can the defense effort be best organized to get the most out of a given amount of resources? While recognizing the importance of the organizational perspective, this report emphasizes the economic viewpoint.

[8] Although formally a part of the Department of the Navy, the Marine Corps will be treated here as a fourth military service. There are, of course, other uniformed services: the Coast Guard, the National Oceanic and Atmospheric Administration, and the Public Health Service. Even though they may have mobilization roles during wartime, these other uniformed services have been excluded from the analysis, since they fall under the jurisdiction of other executive departments.

[9] For example, an Army division can be thought of as producing "final" output, while the training command produces "intermediate" output in the form of trained personnel.

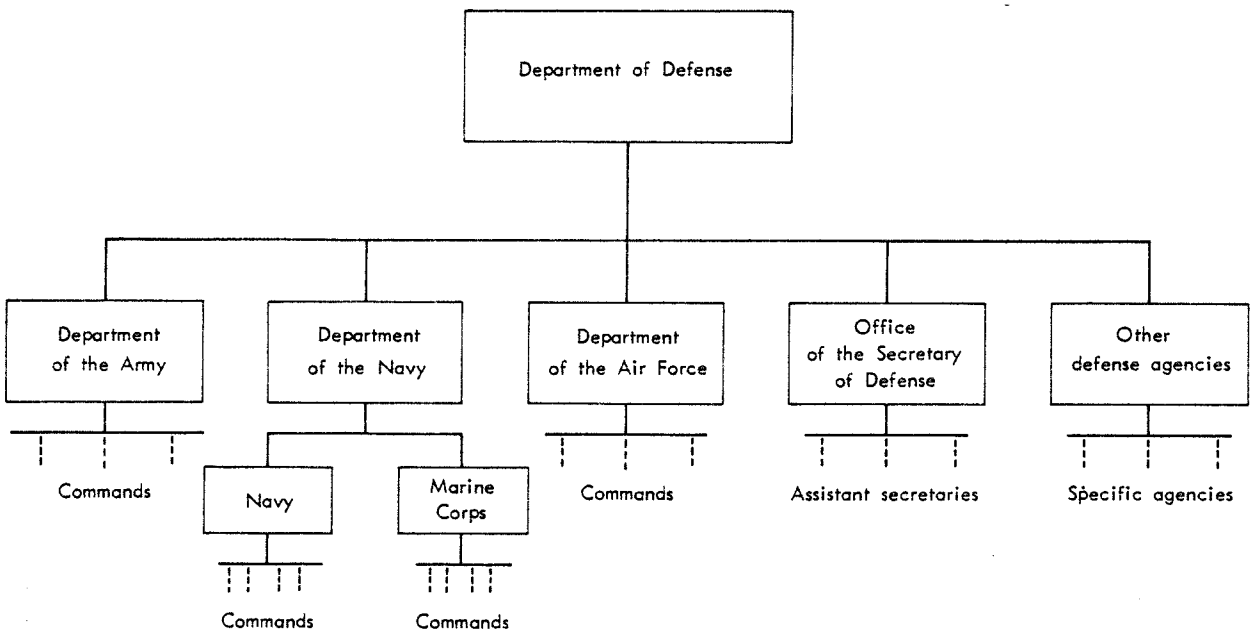

Fig.2-1—Organization of the Department of Defense

may typically produce many different products, but the dollar serves as the vehicle for determining the value of the aggregate output.

It is therefore crucially important to develop measures that give the policy planner better insights into the structure and allocation of defense resources. Though we may not have very precise measures of capability, we do have some understanding of the factors that determine overall defense capability, which include the number of men the country has under arms, the morale of its troops, the amount and quality of its weaponry and materiel, the bureaucratic structure of its defense establishment, and its military and political leadership.

In the absence of good output measures, defense strategists have been (and will be) forced to base their proxy measures of outputs on various *input* measures.[10] Thus, it is common practice to compare the inputs to the defense mission, under the assumption that such comparisons will provide some understanding of comparative defense capabilities. Moreover, though all analysts recognize that intangibles such as troop morale are important inputs with a likewise important effect on output, proxies for defense output are generally based only on those inputs that can be readily quantified.[11]

[10] It is worth noting that the development of appropriate proxies for military capability has been one of the most widely researched topics in defense planning. The tools used in this process have been numerous and varied, including historical comparisons, econometric studies, and computer simulation models. The various types of simulation models that come out of this process, for example, enable the policy planner to construct proxy measures of output such as numbers of targets destroyed, rate of troop advance, and so forth. The point is that *actual* output is not observed except in time of war, and thus must be estimated.

[11] Simulation models are, however, frequently structured so that the analyst or force planner can input some of the intangible factors through some sort of quality-adjustment parameter.

It is therefore not surprising to find such quantifiable factors as the number of army divisions, the number of ships, and the number of aircraft frequently used in defense comparisons. Among these, the number of men in uniform is perhaps used most often. The danger with using these input measures lies in using them too literally. For example, although the number of military personnel is a useful measure, a force of 2,000 men is not necessarily twice as capable as a force of 1,000, nor is it necessarily equal in capability to another force of 2,000.

Perhaps even more limiting than the general fixation on input measures as a proxy for defense output is the tendency of some analysts and planners to focus almost exclusively on only one or two measures, taken out of context. For example, Janowitz bases his contention that U.S. defense objectives will have to be substantially altered in the post-draft era largely on his assumption that the volunteer force will not be able to sustain force strengths of more than 2 million soldiers.[12]

In spite of their shortcomings, though, these quantifiable measures do provide a basis from which to begin. If the contribution of specific factors of production can be identified, then we can *estimate* the effects of alternative input mixes on overall defense capability—enabling us to approach the broad defense objectives outlined earlier.

Inputs to the Defense Mission

Economic theory provides the general analytic framework for analyzing the allocation of defense resources among specific inputs to the defense mission. To the extent that groups of specific inputs are relatively homogeneous in the conditions that determine their supply and demand, economic theory suggests that the production process can be examined in terms of these groups. Thus, the analysis of cost and productivity can be considerably simplified if suitable categories of inputs can be defined.

At the most aggregate level, defense output, or capability, is shown to be a function of the aggregate amount of resources devoted to the defense mission. Figure 2-2 shows, at a less aggregate level, that defense resources can be categorized according to three broad categories of inputs—capital, labor, and other.[13] It will be shown later that the annual "costs" associated with "capital" and "labor" alone amount to more than 90 percent of the DoD annual operating budget.

This approach to structuring the problem of managing the nation's defense resources allows us to identify the appropriate responses to the removal of the draft. For example, the low wage paid to junior military personnel during the draft encouraged the military services to allocate disproportionately large amounts of their resources to manpower versus capital, to military personnel versus DoD civilians, and to junior versus senior military personnel. The removal of the draft

[12] See Morris Janowitz, *The U.S. Forces and the Zero Draft*, Adelphi Paper #94, The International Institute for Strategic Studies, January 1973. Although fiscal 1978 uniformed personnel strengths are projected to be about 25 percent below the fiscal 1964 level, total personnel strengths (including military and civilian) are projected to be only 8 percent smaller, thus indicating the importance of looking beyond military personnel alone. (See Table 2-1.)

[13] "Other" in this instance includes land and such consumables as supplies, materials, etc. Thus, although these consumables might be thought of as capital, as they indeed are, they are counted here as "operating expenses," since they are generally used within the reporting period. By way of contrast, "equipment" generally is usable over multiple reporting periods.

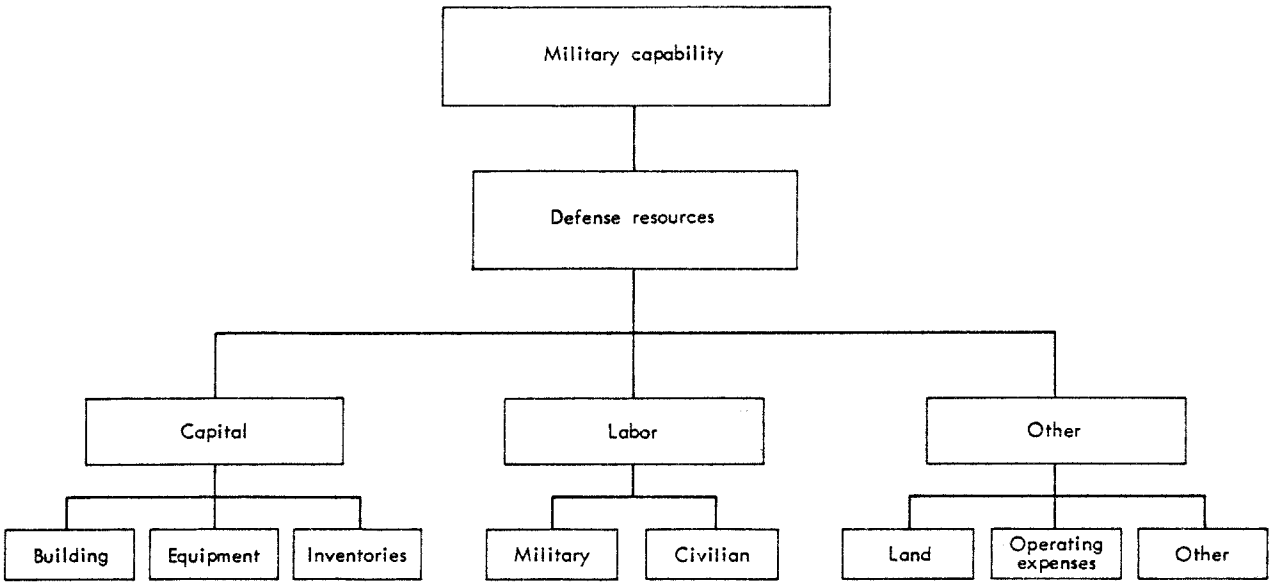

Fig.2-2—Defense resources

has changed the allocation incentives and thus argues for a revision in traditional resource allocation patterns.

SIZING THE DEFENSE EFFORT

The conceptual framework detailed in Fig. 2-2 provides a useful starting point for investigating DoD resource utilization, and manpower resource utilization in particular. At the broadest level of aggregation, defense inputs can be grouped into two major categories—capital and labor—which provide the basis for the analysis. In this regard, the aggregate force strength estimates shown in Table 2-1 have several major implications, the most obvious of which is the sheer magnitude of the defense establishment. With its 3 to 4 million employees, depending on who is counted,[14] and its approximately $400 billion worth of land and capital in fiscal 1976, *the DoD is the single largest employer of resources in the nation.*

Second, though it may be most common to focus on uniformed personnel as the measure of force strength, Table 2-1 shows the importance of other factors in terms of the gross numbers. To begin with, personnel makes up only a portion of total

[14] Those directly hired by the DoD include uniformed personnel and direct-hire civilians. Additional DoD labor resources include indirect hires and contract hires. Indirect hires are those foreign nationals working in U.S. installations abroad who are formally employed by the host nation but whose costs are actually paid by the U.S. military through a reimbursement program. Not all foreign nationals are indirect hires; for example, of the 139,000 foreign nationals working for the DoD on December 31, 1974, 48,000 were direct hires and 91,000 were indirect hires.

Contract hires are those individuals who, though actually employed by civilian firms, perform contract services such as aircraft maintenance, janitorial services, and kitchen services for the military (contract hires do not include civilian workers who are engaged in the production of equipment and construction that are ultimately purchased by the DoD).

Table 2-1

Sizing the Military: Measures of Force Strengths[a]

Fiscal Year	Year-End Manpower Strengths (000s)					Capital Stock (billions of 1976 constant dollars)[d]		
	Uniformed[b] (Active Duty)	Civilian				Plant/		
		Direct-Hire[b]	Indirect-Hire[b]	Contract-Hire[c]	Total	Equip.	Land	Total
1920	343	-	-	-	-	-	-	-
1930	256	-	-	-	-	-	-	-
1940	458	256	-	-	-	-	-	-
1945	12,123	2628	-	-	-	-	-	-
1950	1459	753	-	-	-	-	-	-
1953	3555	1332	434	-	-	-	-	-
1956	2806	1179	291	199	4475	306	100	406
1960	2476	1047	178	266	3967	283	112	395
1964	2687	1030	140	219	4076	286	118	404
1968	3548	1317	119	402	5386	309	114	423
1972	2323	1083	110	394	3910	300	111	411
1976	2087	1010	86	455	3638	268	109	377
1978[e]	2090	994	87	536	3707	-	-	-

[a]Dashes indicate data not available.

[b]Source: Department of Defense, *Selected Manpower Statistics*, U.S. Government Printing Office, Washington, D.C., June 1976.

[c]SOURCE: Richard V.L. Cooper, *Contract-Hire Personnel in the Department of Defense*, The Rand Corporation, P-5864, Santa Monica, California, May 1975, column [7], Table 6.

[d]Equipment includes "military equipment in use" and "supply system inventories; plant and land includes "military construction" and land (both "owned" and "used but not owned"). Source: Charles Robert Roll, Jr., *Capital and Labor Shares in the Department of Defense*, The Rand Corporation, forthcoming. (Roll's estimates are given in 1967 constant dollars; those reported here were converted to 1976 constant dollars by the BLS wholesale price index for "machinery and equipment.")

[e]Estimates based on *Budget of the U.S. Government: 1978*.

defense resources, as illustrated by the fact that the 3.2 million individuals working directly for the DoD (i.e., uniformed, direct-hire, and indirect-hire) in 1976 were complemented by a capital equipment stock worth more than $250 billion and another $100 billion or so of plant and land. In other words, for every full-time directly hired employee of the DoD, the military had almost $90,000 in capital equipment and $35,000 in plant and land in fiscal 1976.

Just as defense manpower represents only a portion of total defense resources, uniformed personnel make up only a portion of total defense manpower. For example, one-third of all full-time employees hired directly by the DoD are civilians, not counting the additional thousands who work indirectly for the military under the auspices of civilian contractors.[15]

[15] In addition to these personnel, the DoD unofficially employs an estimated 250,000 "non-appropriated fund" civilian personnel, such as employees of commissaries and Post Exchanges. Because such personnel are paid out of the funds generated in the Post Exchanges and so forth—i.e., not out of Congressionally appropriated funds—the exact numbers never enter the central management information systems, so there is no formal count. See Chap. 13.

It is extremely difficult to estimate the numbers of contract hires, as there are no formal procedures even for monitoring aggregate civilian contractor costs, much less for monitoring the numbers of contract hires.[16] Yet, the fact that contract hires are used in a wide variety of defense activities—ranging from routine jobs such as kitchen duties to complex and key functions such as the maintenance of sophisticated aircraft and electronic systems—attests to their importance. Table 2-1 presents rough estimates of the numbers of contract hires used by the DoD since the mid-1950s and indicates that they are a key element in the defense effort.[17] In fact, the estimates suggest that there may have been a large enough increase in their numbers to offset much of the reductions in uniformed personnel that have taken place relative to the pre-Vietnam period.

The larger point, of course, is that we cannot focus on military personnel alone, to the exclusion of the other inputs to the defense mission, if we are to understand the implications that the removal of the draft has had for the maintenance of a viable defense effort. The variety of resources shown all contribute to the defense mission and can, in many cases, be substituted for one another. Therefore, the key policy questions, as discussed in Chaps. 12 and 13, concern how cost and productivity considerations are taken into account in the allocation of total defense resources among these various input types.

Military Personnel Strengths

The gross force strength figures shown earlier are certainly not the only measures of defense resources. For example, by looking solely at gross manpower strengths, we are implicitly assuming that all members of the force are equally productive.[18] Since this is far from the case, it is important to examine alternative measures of force strength. In particular, consider some alternative measures of labor input, such as those shown in Table 2-2.

The rationale for the development of input measures lies in the usefulness of these measures as factors of production in the defense process. Whereas measures such as total force strengths are interesting descriptors, it is equally, if not more important, to develop measures that reflect inputs usable in the generation of defense capability.

It is noteworthy that the military, unlike most civilian employers, maintains a large training establishment that includes a sizable number of students, instructors, and others. Although this represents an investment in future capability, in the form of *human* capital, it does not contribute to present military capability. As shown in Table 2-2, this training establishment consumes a significant share of uniformed personnel—historically, about 15 to 20 percent of all military personnel. This sug-

[16] In fact, the DoD cannot require contractors to provide information regarding the numbers of personnel used in the performance of services provided to the DoD, except under "personal service" contracts, which make up only a small portion of all contracts.

[17] See Richard V. L. Cooper, *Contract-Hire Personnel in the Department of Defense*, The Rand Corporation, P-5864, May 1977, for a description of the methodology used to estimate the numbers of contract hires. Although the estimates presented there are extremely approximate, they reflect the trends described in informal conversations with many defense officials and analysts—namely, that there has been a sizable increase in the numbers of such personnel since the pre-Vietnam period.

[18] Recall that one of the objectives of this review of defense inputs is to determine their usefulness as proxy output measures. Thus, to the extent that inputs are not homogeneous, it is necessary to reflect comparative contributions to defense capability.

Table 2-2

Measures of Military Manpower Strengths for Selected Years
(thousands)

	1960	1964	1968	1972	1974
I. Active Duty Personnel[a]	*2476*	*2687*	*3548*	*2323*	*2162*
A. Training Status					
1. Engaged in Training	371	402	667	386	353
2. Not Engaged in Training	2113	2285	2881	1937	1809
B. Experience Mix					
1. Officers	317	338	416	336	302
a. Less than 4 years	(90)	(95)	(165)	(109)	(84)
b. 4 or more years	(227)	(243)	(251)	(227)	(218)
2. Enlisted	2149	2338	3120	1976	1849
a. Less than 4 years	(1263)	(1374)	(2241)	(1198)	(1111)
b. 4 or more years	(886)	(964)	(879)	(778)	(738)
3. Officer Candidates	11	12	13	12	11
II. Reserves[b]	*4367*	*2781*	*3195*	*3917*	*3233*
A. On Active Duty	220	230	350	206	168
B. Not on Active Duty	4147	2551	2845	3711	3065
1. Selected Reserve	997	953	922	925	925
2. Other	3150	1598	1923	2786	2140

[a]Includes reserve personnel on active duty. Source: Data were furnished by OASD(M&RA).

[b]Source: Department of Defense, *Selected Manpower Statistics*, op. cit.

gests that an alternative measure of military labor input might be those personnel not engaged in training activity, as given in Table 2-2.[19]

From still another perspective, we might expect the relative contribution of any given individual to defense capability to be a function of his or her experience. As a result, defense capability is not a unique function of the total number of personnel, but instead is a function of individual productivities. Table 2-2 shows military personnel grouped into two broad experience categories, those in their first term of service and those beyond their first term (so-called careerists),[20] with the latter expected to be more productive because of their greater experience.

To illustrate the importance of the foregoing, suppose that careerists are, on the average, twice as productive as first-termers. Under this assumption, an enlisted force of 1,725,000 with only 50 percent first-termers would yield as much capability as the actual fiscal 1974 force of 1,850,000 (with its 60 percent first-termers). Thus, by relying on more experienced personnel, the DoD could reduce total force size by 125,000 while simultaneously *maintaining capability*. Whether or not such a force

[19] Furthermore, "prisoners, patients, and transients" could also be subtracted from total force strengths. The rationale for this exclusion would be to provide measures that describe the amount of labor *input* to the defense mission, not just the numbers of personnel employed by the DoD.

[20] Empirically, it is useful to categorize those with less than four years of completed military service as first-termers and those with four or more as careerists. See Chap. 13.

would be cost-effective depends on the relative costs of first-termers and careerists. Nevertheless, the basic point is that we must attempt to account for capability, not only gross force sizes.[21]

The discussion to this point has concerned full-time employees of the DoD as represented by active duty military and full-time equivalent civilians. Reserve personnel represents another, potentially valuable resource. This raises the larger issue of the conceptual definition of defense output, since the reserves are a contingency force for mobilization.[22] As shown in Table 2-2, the total number on the reserve rolls has varied considerably over the past 15 years, though the mainstay of the reserve forces, the selected reserves (those who train regularly), has remained roughly constant over this period.

THE DEFENSE MANPOWER SYSTEM

Analysis of the defense manpower system can be structured according to the general framework shown earlier in Fig. 2-2 for the defense establishment as a whole. Specifically, the defense manpower system can be examined according to groups of inputs, where the guideline for defining these groups is again the relative homogeneity of specific inputs with respect to the conditions that determine their supply and demand. When applied to the defense manpower system, this approach yields a structure along the lines shown in Fig. 2-3.

At the most aggregate level, manpower can be thought of in terms of its uniformed and civilian components, since these differ (perhaps considerably) in both supply and demand characteristics. Of course, each of these broad categories can be further disaggregated. For example, civilian personnel consists of persons employed by the DoD and contract hires—those employed by civilian contractors under service arrangements with the DoD (such as contracts with civilian firms for kitchen duties).

Those employed by the DoD can be further disaggregated into *direct hires* and *indirect hires.* Direct hires consist of two primary groups: general schedule (GS) employees and "other" (primarily wage board employees). General schedule employees are generally white collar professional, administrative, technical, and clerical workers paid according to the general schedule salary structure; wage board employees are blue collar workers, whose wage and specific job conditions are governed by local area wage boards.

The Military Personnel System

Figure 2-3 provides a basis for structuring the military personnel system. At the most aggregate level, military personnel can be classified into "regular" and "nonregular" status, where the latter includes reservists and others (such as inductees

[21] The importance of this point will become clear in Chap. 13, where it is shown that annual savings of as much as $2 billion could be realized by shifting from the current 60/40 mix of first-termers and careerists to a 50/50 mix. The total number of men in uniform would be less than today's force, but the output or capability would be the same. If the focus remains almost solely on the *number* of men in uniform, opportunities for achieving efficiency gains may never be realized.

[22] Defense capability has thus far been defined implicitly in terms of peacetime conditions. Consideration of the reserve forces explicitly raises the issue of wartime versus peacetime capability. For the most part, however, the remainder of this report will focus on peacetime capability.

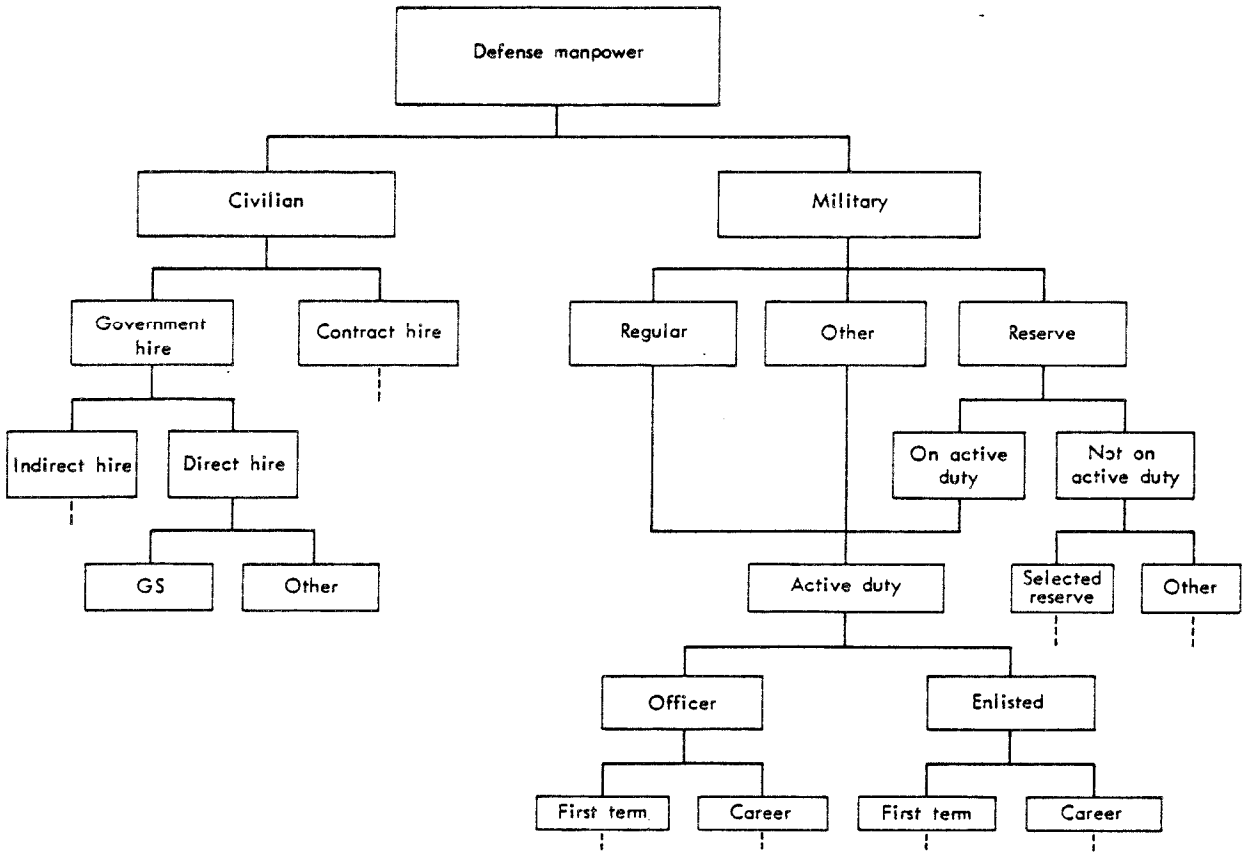

Fig.2-3—Defense manpower system

during the presence of the draft). The reserves can be structured into those on active duty and those not on active duty.

Though the reserves represent a potentially important part of U.S. defense forces, the main emphasis in this report is upon active duty personnel. As shown, active duty personnel consist of regular military personnel, reservists on active duty, and others. Except for the tenure provisions, which do differ, regular and nonregular personnel can be grouped together.

Military personnel, whether regular or reserve, can be classified as either officers or enlisted members. For the most part, the officer corps has the primary management and leadership responsibility in the force; enlisted personnel tend to correspond to the blue collar work force in the civilian sector. Although these characterizations are not exact, since, for example, many in the enlisted force have "white collar" clerical jobs, they nevertheless describe the basic character of the two forces.

The military personnel system differs from its civilian counterpart in a number of respects.[23] Perhaps the most obvious distinction is that the military maintains

[23] For an excellent discussion of the officer personnel system, see David S. C. Chu and John P. White, "Developing the Military Executive," in *Commission on the Organization of the Government for the Conduct of Foreign Policy*, Vol. 6, U.S. Government Printing Office, Washington D.C., June 1975.

an essentially closed personnel system, with little lateral entry.[24] With few exceptions, entry into the military occurs only at the bottom. Thus, management and leadership are developed solely within the system—the military does not draw from outside its own ranks for its top management and leadership positions, whether officer or enlisted.

For purposes of management and compensation, the military is structured into ranks, or pay grades. The most obvious distinction is between officer and enlisted personnel. For enlisted personnel, there are nine pay grades, E-1 through E-9. The officer corps consists of two major components: warrant officers, (pay grades W-1 through W-4) and commissioned officers (pay grades O-1 through O-10). Warrant officers are primarily senior foremen or supervisors of the "blue collar" enlisted force, though the Services, especially the Army, have also used warrant officers as helicopter pilots. Commissioned officers generally occupy leadership, managerial, and professional positions.

The distribution of the force by Service and rank shown in Table 2-3 reveals several interesting comparisons. For example, the Air Force relies most heavily on officers, about 18 percent of its total military personnel, reflecting the fact that its primary mission, flying, is manned by officers. At the other end of the spectrum, the Marine Corps consists of only 9 percent officers.[25] The Army is the only Service that relies to any degree on warrant officers, who account for about 2 percent of its total military personnel, as compared with 0.5 percent for the Navy and Marine Corps.[26]

The closed nature of the military personnel system means that enlisted members enter as E-1s and that officers generally enter as O-1s.[27] In addition, promotions occur sequentially and within a fairly rigid time schedule. For example, an individual must be promoted to O-2 before he or she can be promoted to O-3. Similarly, eligibility for promotion to a higher grade is determined by the length of time the individual has served in his or her present pay grade. The practical result of this system is that the military grade structure—and, hence, the management structure—is largely determined by seniority.[28]

The military personnel management system differs in one further and important respect from the civilian sector. When an individual joins the military, he or she signs a contract which obligates him or her to a specified length of service, generally between two and six years. Thus, whereas individuals employed in the civilian sector are generally free to leave at any time, military personnel are obligated to fulfill the terms of their contract. (It is this period of commitment which makes it feasible for the military to invest so heavily in the training of its personnel.)

[24] There are some exceptions to the rule, such as medical doctors, dentists, lawyers, and band members. Though not a major source of procurement, lateral entry is used to acquire personnel in these professions, since these individuals may be given partial or full credit for their civilian work experience.

[25] Part of this is attributable to the fact that the Navy provides various support activities (e.g., medical and dental services) to the Marine Corps.

[26] The Air Force at one time had a significant warrant officer program for its flying personnel.

[27] Warrant officers are generally promoted from within the enlisted ranks and thus do not represent part of the standard officer career.

[28] For example, under the proposed Defense Officer Personnel Management Act (DOPMA), the "phase points"—i.e., modal promotion years—are 2 years of service (YOS) to O-2, 5 YOS to O-3, 11 YOS to O-4, 17 YOS to O-5, and 23 YOS to O-6. Thus, senior management positions (O-6 and above) will be filled primarily by individuals with 23 or more years of service, though there are a certain number who will be promoted ahead of schedule.

Table 2-3

Distribution of Military Personnel by Service and Rank:
31 December 1974
(thousands)

Rank[a]	Army	Navy	USMC	USAF	DoD
Officers	89.8	62.3	17.0	108.8	277.9
Warrant Officers	13.4	3.6	1.1	nil	18.1
Enlisted	665.5	479.2	174.1	512.3	1831.1
Officer Candidates	4.0	4.3	-	4.2	12.5
Total[b]	772.8	549.4	192.2	625.3	2139.7

Source: *Selected Manpower Statistics*, op. cit.

[a]"Officer candidates" include cadets and midshipmen at the Service academies.

[b]Numbers may not add to the stated totals due to rounding.

Like the management system, the military compensation system differs substantially from those generally found in the civilian sector. This is not surprising, since the compensation system is an integral part of the basic management structure. Pay is primarily a function of pay grade and length of service and consists of several components: basic military pay, cash allowances, a tax advantage, and numerous special pays.

Basic military pay is solely a function of pay grade and length of service and is structured so that seniority is heavily rewarded. In addition, military personnel receive "free" room and board as part of their compensation package or, in lieu of these, payments in kind, i.e., cash allowances for housing and subsistence (basic allowance for quarters, BAQ, and basic allowance for subsistence, BAS, respectively). The amount of these cash allowances is a function of pay grade and number of dependents.

Because they are not treated as taxable income, cash allowances give rise to another element of the compensation package, the "tax advantage." That is, since civilian pay tends to be fully taxable, military pay is put on a comparable basis by computing what total military pay would be if it were all regarded as taxable income. The amount of this tax advantage is a function of the amount of cash allowances and the individual's marginal tax rate. Thus, those individuals who are unmarried or those with outside sources of income, such as working spouses or investment income, receive a larger tax advantage.

These three elements—basic pay, cash allowances (or their in-kind equivalent), and the tax advantage—make up what is known as "regular military compensation," or RMC.[29] In addition, there are a number of other pays such as bonuses and monthly increments which go to individuals serving in certain occupations (flight

[29] Comparisons between military and civilian pay are generally based on RMC, in recognition of the fact that military pay has these several components.

pay, jump pay, etc.) or which are designed to induce certain behavior (e.g., reenlistment bonuses). Another feature of the compensation and management system which distinguishes the military from most of the civilian sector is the retirement system. In the military, there is no vesting of retirement benefits prior to the completion of 20 years. Individuals separating with 20 or more years are eligible for retirement benefits which are collected immediately upon separation.

The military also differs from the civilian sector in a number of other, less tangible respects, such as the unique camaraderie that develops among the members of the military. These factors have been the subject of extensive discussion and debate by the academic and military communities, and though they are certainly important, they will not be treated here.

At the same time, the military is similar to the civilian sector in many broad respects. Consider, for example, the occupational mix of military personnel. As shown in Table 2-4, the military encompasses a wide range of jobs, from combat to supply to sophisticated electronics. Thus, although the military is often viewed in terms of the combat soldier, those in the combat arms make up only about 10 percent of all enlisted personnel. In fact, almost 20 percent of all enlisted personnel are in clerical occupations.[30]

Table 2-4

Distribution of the Force by Occupational Area: Fiscal 1974[a]

Officer		Enlisted	
Occupation	Percent	Occupation	Percent
Executives	1.6	Combat Arms	12.3
Tactical Operations	40.8	Electronics	10.4
Intelligence	3.2	Comm/Intelligence	6.7
Engineer/Maintenance	15.6	Other Specialists	1.9
Scientists/Professionals	6.6	Elec/Mechanics	21.6
Medical/Dental	9.4	Medical/Dental	4.6
Administrators	12.8	Admin/Clerks	18.4
Supply	6.1	Service Supply	11.0
Other[b]	3.8	Craftsmen	4.6
		Other[b]	8.6

[a]Based on "primary" occupation designators.

[b]Training, Miscellaneous, and Other.

Source: Data were furnished by OASD(M&RA).

This view of the military occupational mix further serves to illustrate the importance of looking beyond the numbers of uniformed personnel as a measure of force strength. That is, a corollary to the fact that only 10 percent of enlisted personnel are in "combat" assignments is the fact that 90 percent are in noncombat assignments. Because it is a matter of policy regarding how many of the particular

[30] For a discussion of the occupational job structure, how it has changed over time, and how it compares with its civilian counterpart, see Harold Wool, *The Military Specialist: Skilled Manpower for the Armed Services*, Johns Hopkins Press, Baltimore, 1968.

jobs in this "other" 90 percent are to be staffed—with military, direct-hire civilian, or even contract-hire civilian personnel— uniformed personnel strengths alone are not an accurate reflection of defense capability.

It is important to understand the similarities and dissimilarities between the military and civilian personnel systems, for the military's ability to successfully compete in the volunteer environment will depend critically on how well it adjusts to the changes brought about by the termination of the draft.

Stocks and Flows

To this point, the discussion of defense force structure in general and the military personnel system in particular has focused on the physical inputs to the defense mission. As such, the emphasis has been upon input *stocks*—that is, the amount of resources employed in the production of defense capability. An equally important aspect of the military manpower problem is the *flow* dimension—that is, the number of new entrants required to sustain force strengths. While the flow dimension is important to all employment sectors in the economy, it assumes a special importance for the military. Because there is little or no lateral entry into the military occupational structure, the Services recruit largely unskilled or semi-skilled youth who acquire their skills while in the military through training and on-the-job experience. The practical implication of this is that the military recruits from a very limited age group. That is, most new officers are drawn from the current year's crop of male college graduates; most new enlisted members are drawn from the 17 to 21 year old male age cohort.[31] Thus, the military's recruiting fortunes under both draft and volunteer procurement policies are very much tied to variations in age-specific population groups, which usually show much larger size variations than the population as a whole.

In a sense, then, the earlier discussion about stocks—i.e., force sizes—underestimates the overall magnitude of the manpower issue. Sizable though the total DoD employment is (some 3 to 4 million personnel out of a total labor force of about 90 million), the flow dimension is even more impressive. For example, even though the DoD civilian work force is sizable and has high annual accession requirements, it can draw from a large pool of potential applicants, as can the civilian work force in general. Military personnel, in contrast, are drawn from only a narrow age spectrum. To staff the enlisted ranks, the military services must attract approximately one out of every three or four "qualified and available" members of this age cohort.[32] Thus, the ability to attract the requisite number and quality of personnel from this limited age group represents one of the key problems for the volunteer force.

Before 1973, the military services were able to rely on the draft to fill their ranks, not only by way of the induction process itself, but also by encouraging "draft-motivated" enlistments. In fact, inductions have accounted for only about 30

[31] To illustrate, 95 percent of all enlisted accessions fell in the 17 to 21 year old age group during the first three years of the volunteer force. Even under the draft, about 90 percent of all enlisted accessions fell into this age cohort.

[32] The term "qualified and available," which was first introduced by Binkin and Johnston, refers to those qualified for military service (i.e., excluding those not mentally or medically fit) and likely to be available for military service (e.g., excluding full-time college students, those already in the military, and so forth). See Martin Binkin and John D. Johnston, *All-Volunteer Armed Forces: Progress, Problems, and Prospects*, op. cit.

percent of all enlisted manpower procurement since the Korean War, as shown in Table 2-5. Voluntary enlistments accounted for the remaining 70 percent—split about evenly between "true volunteer" and "draft-motivated" enlistments. The other side of the coin is, of course, that the military services were able to attract significant numbers of true volunteers, even during the height of the draft. Thus, great though the recruiting problem may seem to be, past history has shown that large numbers of young men are willing to join the military for reasons other than the draft, reasons that are examined in some detail later in this report.

Table 2-5

Military Manpower Procurement
(thousands)

	Fiscal Year						
	1956	1960	1964	1968	1970	1972	1974
Officer[a]	*42*[d]	*31*	*41*	*70*	*63*	*36*	*28*
Enlisted[b]	*508*	*414*	*496*	*853*	*631*	*424*	*391*
Inductions	137	90	151	340	207	27	nil
Enlistments: Total	371	324	345	513	424	397	391
(True Volunteers)[c]	(152)	(158)	(183)	(223)	(210)	(330)	(391)
(Draft-Motivated)	(219)	(166)	(162)	(290)	(214)	(67)	(0)

[a]Source: Data furnished by OASD (M&RA).

[b]Source: *Selected Manpower Statistics*.

[c]True volunteer enlistments for FY56 through FY70 estimated based on (1) true volunteer enlistment rates per 100 17 to 20 year-old males and (2) the numbers of 17 to 20 year-old males. True volunteer enlistment rates are in turn based on the assumption that 60 percent of FY1964 were true volunteers (from the Gates Report); true volunteer rates for other years were adjusted according to changes in the ratio of military to civilian pay, assuming a pay elasticity of 1.25 (see Chapter 9). True volunteer enlistments for FY72 and FY74 provided by MARDAC.

[d]Data for 1957 (1956 data unavailable).

THE COST OF DEFENSE MANPOWER

The focus to this point has been upon the physical inputs to the defense mission, but the *costs* of these inputs are equally important in overall defense planning. Indeed, it can be argued that cost, more than any other single factor, is responsible for the increased attention afforded to defense manpower in the post-draft environment. Analysis of manpower costs and their trends over time thus serves to highlight some of the crucial issues for defense policymakers.

The Measurement of Cost

Though a seemingly obvious concept, cost in fact has many different interpretations, as illustrated by the fact that Webster's Encyclopedic Dictionary defines cost

as the "value" of the item in question, while Webster's New Collegiate Dictionary defines cost as the "amount . . . paid or charged for something." Depending on *who* is paying, these definitions can mean very different things. Nowhere is this more apparent than in the case of military manpower under a draft, since the government can by fiat pay less for manpower than its "value."

This gives rise to two different measures of cost, depending on who is viewed as paying. If the government is viewed as paying, the cost of defense manpower is measured by budget expenditures, since this is the amount paid out of the treasury. When the government can pay less than the value of something, as is the case for manpower during periods of conscription, the cost to the government does not necessarily reflect the cost to society. That is, when cost is viewed more broadly in terms of what society pays for something, the appropriate measure is what society gives up (i.e., pays) for the item in question. In the case of manpower, society gives up productive output from the civilian sector when it employs individuals in the military. The value of the goods and services forgone—i.e., the opportunity cost—is therefore a more appropriate measure of the cost to society. Thus, the two dictionary definitions of cost are equivalent when society is viewed as paying the cost of manpower.

Because the measurement of economic cost of manpower under the draft depends on concepts that have not yet been developed, analysis of these costs is postponed to Chap. 5, where a more thorough discussion of the

economics of conscription is presented. The remaining discussion in this chapter will focus on the budget costs of manpower, which are important if for no other reason than that they measure what the taxpaying public pays to maintain a defense labor force.

Manpower Budget Expenditures

Analysis of budget expenditures for defense manpower can also be structured along the labor input categories developed earlier in this chapter. The results of this approach, given in Table 2-6, show that manpower costs have risen dramatically over the past 20 years, both in absolute terms and as a proportion of the defense budget. Between 1956 and 1976, for example, these costs have more than tripled, and since 1970, manpower costs have consumed more than 60 percent of the defense budget. Indeed, between 1964 and 1974, the manpower share of the defense budget increased from 52 percent to 70 percent. Even if the difficult-to-measure costs of contract-hire personnel are excluded, the increase in manpower costs is still impressive: from 49 percent of the defense budget in 1964 to 61 percent in 1974.

Although the share of the DoD budget devoted to manpower has fallen since fiscal 1974, the fiscal 1978 percentage is still substantially above the percentages experienced during the 1950s and 1960s. Moreover, the fall in the percentage of the defense budget devoted to manpower since fiscal 1974 has not been the result of falling manpower costs, though limitations on military and civilian personnel pay increases during fiscal 1975 and fiscal 1976 helped to hold down the amount of increase in manpower costs. Rather, the decrease in the manpower percentage is attributable to substantial increases in other elements of the defense budget.

In addition to the magnitude of manpower costs, the composition of these budget costs has also changed considerably over the past 20 years. While the proportions of total manpower costs associated with the military and civilian com-

Table 2-6

Manpower Budget Expenditures[a]
($ billions)

Fiscal Year	Military Personnel				Civilian			Personnel Support[f]	Manpower Total	Defense Total	Percent Manpower
	Active Duty	Reserve	Retired	Family Housing[b]	Direct Hire[c]	Indirect Hire[d]	Contract Hire[e]				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1956	10.9	0.2	0.5	nil	5.1	0.2	0.9	1.5	19.3	35.8	*53.9*
1960	11.0	0.7	0.7	0.2	6.1	0.3	1.4	1.6	21.9	41.2	*53.2*
1964	12.3	0.7	1.2	0.6	7.3	0.3	1.4	1.7	25.6	49.6	*51.6*
1968	19.0	0.9	2.1	0.6	10.3	0.3	3.1	2.8	39.0	77.4	*50.4*
1970	22.0	1.1	2.8	0.6	11.9	0.4	3.5	3.0	45.3	77.2	*58.7*
1972	22.0	1.1	3.9	0.7	12.8	0.5	3.9	3.1	48.0	75.2	*63.8*
1974	22.2	1.6	5.1	0.9	13.4	0.7	5.3	3.2	54.4	77.6	*70.1*
1976	23.3	1.8	7.3	1.0	15.5	1.1	6.1	3.8	59.9	90.0	*66.6*
1978[g]	25.1	2.0	9.0	1.5	17.3	1.3	8.4	4.1	68.7	109.5	*62.7*

[a]Source: *Budget of the U.S. Government* (except as noted).

[b]Prior to the establishment of the separate family housing budget account, costs are those reported under the Capehart Act and Wherry Act housing programs as applicable to military personnel and as reported in the *Budget*.

[c]Source: Office of the Assistant Secretary of Defense (Manpower and Reserve Affairs).

[d]Source: Office of the Assistant Secretary of the Army (Manpower and Reserve Affairs).

[e]Source: Richard V.L. Cooper, *Contract Hire Personnel . . .*, op. cit., column (3), Table 6.

[f]Includes costs of individual training, medical support, recruiting and examining, overseas dependent education, half of base operating support, and a miscellaneous category (all net of direct military and civilian personnel costs). Source: *Annual Defense Department Report: FY1978*.

[g]Estimates based on the FY1978 budget request, as reported in the *Budget of the U.S. Government, 1978*.

ponents have remained roughly constant at 70 percent military and 30 percent civilian (excluding contract-hire and support costs), the makeup of military personnel costs has shifted substantially. For example, the direct costs associated with active duty military personnel decreased from nearly two-thirds of the total manpower costs in fiscal 1956 to less than half by fiscal 1976. Budget expenditures for military retirement, on the other hand, increased from less than $500 million in fiscal 1956 to about $9.1 billion in fiscal 1978. Stated differently, military retirement costs made up less than 3 percent of manpower costs in 1956, as compared to more than 16 percent in fiscal 1978. Thus, whereas active duty personnel costs have doubled in the past 20 years, the "peripheral" elements, including reserve personnel, retired personnel, and family housing costs, were nearly 15 times as large in fiscal 1976 as they were in fiscal 1956.

Limitations of the Budget Accounts

Budget costs refer to those expenditures—cash or in kind—that are incurred on behalf of the factors of production. In defense manpower, budget outlays measure what the government actually pays for the labor services rendered to the DoD.

Within this broad definition, two specific issues require some elaboration: the method of accounting and the structure of the budget accounts. Both issues affect not only the gross magnitudes of manpower costs but also, in some instances, the inferences that can be drawn from these cost figures.

Method of Accounting. Budgets can be structured according to *cash* or *accrual* methods of accounting. Under cash accounting procedures, costs (and receipts) are recorded in the budget accounts when payments to the factors of production actually take place; under accrual accounting procedures, costs are recorded in the budget accounts according to when the liabilities for these costs are incurred. In the case of manpower costs, this means that cash accounting methods record manpower costs when individuals are actually paid, irrespective of when the labor services were rendered. Accrual accounting methods record these costs when the labor services are rendered, which need not coincide with the time of payment.

The DoD, like most of the Federal Government, operates mainly on a cash basis.[33] Thus, the defense budget reports costs when they are paid rather than when the liabilities for them are incurred.[34] For much of the defense manpower budget, the distinction between cash and accrual accounting methods is relatively unimportant, since the costs are paid in the same budget period in which the liabilities are incurred.[35]

The distinction becomes quite important, however, for certain manpower and manpower-related costs, most notably military retirement costs and certain veterans costs. For these items, the current manpower budget does not measure the costs

[33] It is interesting to note that Public Law 84-863, with various supplementary Treasury regulations, requires all government agencies to prepare businesslike, accrual-basis financial reports. Although this law was enacted in 1956, however, it remains only partially implemented more than 20 years later.

[34] Actually, the defense budget is a mixture of cash and accrual accounting methods, though it is predominantly on a cash basis. For example, the budget costs for DoD civilian employees include the 7 percent retirement contribution for participating employees. Though this 7 percent is not sufficient to fund the government's future retirement liability, it nevertheless represents at least partial accrual accounting.

[35] By way of contrast, this distinction is very important for many other parts of the defense budget, particularly the Procurement budget.

of maintaining the current force, but instead reflects the costs of *past manpower and personnel policies.*

As noted earlier, budget costs are an important input to public policy decisions because they measure what the taxpaying public must pay. Taxpayers are likely to be relatively, if not entirely, indifferent to whether their taxes are paying for current or past policies. However, if budget costs are to be used as a tool for examining the implications of alternative policy options, it is important to distinguish between those associated with current policy and those associated with past policy.

Military retirement costs are a good example, since military retirement is such a large budget item. Because retirement pay is paid for out of the current budget, the policy planner has little or no flexibility to reduce these outlays, since they are the result of past promises and policies. As a result, there is little incentive to institute changes which, at best, could only realize cost savings in the future. Conversely, if military retirement was funded on an accrual basis, current budget "costs" would relate to the current force. If the government had to make provisions today for tomorrow's retirement benefits, there would be a much stronger incentive to develop a cost-effective retirement system.

The implications of the foregoing for retirement costs can be seen in Table 2-7, where current budget outlays are compared with estimates of what annual retirement costs would have been if they were funded on an accrual basis.[36] For example, the accrued retirement liability was almost five times larger than actual retirement budget outlays during fiscal 1956, basically due to the relatively small force sizes

Table 2-7

Military Retirement: Budget Outlays versus Accrued Liability
($ billions)

Fiscal Year	Budget Outlays (1)	Annual Accrued Liability[a] (2)	Net "Unfunded" Liability (3)
1956	0.5	2.4	1.9
1964	1.2	3.1	1.9
1968	2.1	3.9	1.8
1972	3.9	4.6	0.7
1974	5.1	4.7	-0.4
1976	7.3	5.4	-1.9

[a] See text.

[b] Column (3) = Column (2) less Column (1).

[36] The annual implicit contribution can be estimated as a percentage of total basic military pay, where the percentage is in turn a function of the length-of-service distribution of the force and expected future retention behavior. Based on the methodology developed previously by the author and on historical force structure profiles and actual pay rates, the total amount of basic pay and the percentage

maintained before World War II and the Korean War. At the same time, the military was accruing a substantial future liability for those in the active force at that time—hence, the difference between the $2.4 billion in accrued retirement obligations and the actual outlay of less than $500 million for fiscal 1956, which left a net "unfunded" liability of some $1.9 billion.[37] As a result, budget outlays for military retirement understated considerably the magnitude of the "true" cost of military retirement during the 1950s and 1960s.

By the mid-1970s the picture had turned around, with budget outlays exceeding the accrued liability. This is because the smaller forces of the 1970s were incurring smaller retirement liabilities than did the larger forces of the 1950s and 1960s.[38,39] As a consequence, the growth in current retirement outlays overstates the growth of "true" retirement costs.

Structure of the Budget Accounts. The second major conceptual issue concerns the extent to which the budget accounts corresponding to defense manpower accurately reflect defense manpower costs. For instance, due to the peculiarities in the budget structure, there are certain defense or manpower-related items that are not included in the defense or manpower budgets.

The underlying analytical problem is that the budget accounts are not structured according to the specific factors of production, as in the schematic shown in Fig. 2-2. Instead, the defense budget is a mixture of budget items, some organized according to resource type and some organized according to defense function. The Military Personnel account is an example of the former, since it records the budget costs associated with a specific factor of production, regardless of its defense function. The Operations and Maintenance account, on the other hand, records some of the costs associated with the defense function of "operations and maintenance" and therefore includes a vast array of specific resource inputs—civilian personnel, contractor services, supplies and materials, utilities, and so on.

With this method of structuring the budget accounts, it is sometimes difficult to identify the costs of specific factors of production. For example, the costs and usage of contract hires are buried in the Operations and Maintenance accounts along with numerous other expenditures. As a result, accurate estimates of con-

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that would have to be set aside to fund future retirement benefits can be estimated (see Table 2-7). The discount rate—i.e, the rate at which monies "deposited" in the retirement fund earn interest—is the key economic assumption. Based on arguments developed elsewhere by the author, the estimates shown in Table 2-7 were calculated under the assumption of a 3 percent real rate of interest. If a 10 percent interest rate had been assumed, the estimates shown in Table 2-7 would have been about one-quarter as large as actually shown. See Richard V. L. Cooper, "Imputing the Economic Cost of Military Retirement," The Rand Corporation, unpublished paper, October 1975.

[37] Military retirement is entirely "unfunded," so by "net unfunded liability" we mean the difference between current budget outlays and the currently accrued liability.

[38] Actually, retention is also a key factor, since today's forces could be smaller than yesterday's, but more of those in today's forces could be accruing retirement liabilities because of higher expected retention rates. The estimates shown in Table 2-7 attempt to account for the changes in retention rates caused by different numbers of draftees in the force (draftees generally had a very low probability of remaining until retirement).

[39] There is also a more subtle factor at work, one that concerns the timing of payments for retirement. If payments are made during an individual's career (i.e., contributed to a retirement fund), less will have to be contributed than if payments are not made until the individual is on the retired rolls, simply because payments made during the time in service earn interest. Therefore, even in the steady state, where force sizes (both active and retired) are constant, the accrual retirement method results in smaller annual expenditures than the current budget outlay approach since, under the accrual method, payments are made during the individual's career (and, hence, are earning interest). The "cost" in both cases is the same, however. The difference merely reflects the time preference for money.

tract-hire costs cannot be obtained, thus considerably complicating the problem of determining the possible efficiency gains of different resource allocation schemes.

Another general problem with the structure of the budget accounts concerns those manpower-related "costs" that are not included in the defense budget. The three major items of this type, as shown in Table 2-8, are the so-called tax advantage, the unfunded civilian personnel retirement liability, and the GI Bill.

Table 2-8

Manpower Budget Costs Not in the DoD Budget[a]
($ billions)

Fiscal Year	Tax Advantage	GI Bill	"Unfunded" Civilian Retirement	Net "Unfunded" Military Retirement[b]
1956	0.4	0.8	0.6	1.9
1964	0.9	nil	0.9	1.9
1968	1.3	0.5	1.3	1.8
1972	1.1	1.9	1.6	0.7
1974	1.1	3.1	1.7	-0.4
1976	1.3	5.7	1.9	-1.9

[a]See text.

[b]From Table 2-6.

Because the so-called tax advantage represents a tax not collected rather than a budget outlay, it does not appear in the defense budget.[40] In essence, this means that the Treasury Department is subsidizing the DoD by an amount equal to the aggregate tax advantage. This implicit subsidy has grown somewhat faster over

[40] The tax advantage (TA) equals the difference between (1) the amount of taxable income in the form of allowances (TI) the individual would have to earn in order to have the same after-tax income as provided by nontaxable allowances and (2) the amount of the allowances (A):

$$TA = TI - A.$$

The tax advantage therefore puts military income on the same (taxable) basis as income earned by nonmilitary wage earners in society.

Because the tax advantage does not enter the budget accounts but instead represents an implicit subsidy from the Treasury Department, there are no official cost figures for it, so it must therefore be estimated. Assuming that the marginal tax rate is r, we have

$$A = (1 - r)TI,$$

so that

$$TA = \frac{r}{1 - r} A.$$

Given r and A, we can estimate the tax advantage TA. Based on the distribution of personnel by pay grade, years of service, and family size, estimates of the tax advantage were constructed for each individual in the force on the basis of past Federal tax rate schedules by the formula above. The aggregate tax advantage was then estimated by simply summing over the total force.

time than have total active duty personnel costs, since raises in military pay have moved individuals into higher tax brackets, thus increasing the "value" of nontaxable allowances.

In the case of the second major item, the "unfunded" civilian personnel retirement liability, the Civil Service maintains an actuarially based retirement system.[41] However, the assumptions used to determine the annual contributions to fund future Civil Service pensions seriously underestimate what would be necessary to make the fund "actuarially sound"—hence, the unfunded liability. As with military retirement, these are costs that are incurred on behalf of the current force. Since this "cost" is estimated to be about 12.5 percent of annual reported civilian personnel costs,[42] the total had grown to about $1.6 billion by fiscal 1976.

The last major item includes the costs for veterans' readjustment benefits for education and training—the GI Bill. Although these costs fall under the budget of the Veterans Administration, they are manpower-related.[43] Largely as a result of

[41] Like the military retirement system, the Civil Service Retirement System can be viewed on an actuarial basis. Because the 14 percent retirement contribution for each employee—7 percent each by the employee and the employing agency—is not sufficient to fund the system, an unfunded liability is generated each year. Since the Federal Government is obligated to pay future retirement benefits, whether or not there are sufficient funds in the retirement account, this annual increment to the unfunded liability is viewed as a cost to the Federal Government, even though it does not appear in the defense budget.

By the Civil Service's own estimates, the Civil Service Retirement System had a $156 billion unfunded liability as of 30 June 1972, assuming a modest 4 percent inflation. See the *Fifty-Second Annual Report of the Civil Service Retirement System.*

[42] The exact magnitude of the unfunded liability is open to some question. In general, it can be shown that the percentage of civilian salaries that would have to be set aside in order to maintain an actuarially sound retirement system is a function of age at entry, career length, promotion patterns, and retention behavior for the civilian work force in total, as well as a number of economic factors (see Cooper, "Imputing the Economic Cost . . .," op. cit., App. C). Lacking good estimates of these key parameters, it has instead been necessary to approximate the percentage "contribution" that would be required.

The Office of Management and Budget (OMB), for example, estimated that the forcewide percentage contribution was 24.7 percent of civilian personnel salaries (see OMB circular A-76). Bowing to pressure from Federal employees (since the "full" cost of Federal employees is supposed to be used to determine whether specific functions should be performed in-house or contracted out), OMB acknowledged the "softness" of the 24.7 percent and agreed to roll it back to 14.7 percent (which was determined by dividing current outlays for Civil Service retirees by the current Civil Service salary outlays—an obviously inappropriate procedure), pending review of the actuarial assumptions used to calculate the implicit retirement contribution. Conversations with OMB officials and Civil Service officials, as well as independent calculations by the author, suggest that the appropriate number is between 20 and 30 percent.

Assuming that the implicit contribution required to fund Civil Service retirement is 25 percent of the total Civil Service wages and salaries, the percentage of the total Civil Service wage bill (which includes salaries and wages, health insurance payments, and the DoD's 7 percent contribution) that would be required to fund Civil Service retirement equals 14.2 percent (i.e., Civil Service salaries equal 91.3 percent of the Civil Service payroll, so that $1.25 \times 0.913 = 1.142$). Thus, the 12.5 percent implicit contribution shown in Table 2-7 is probably not unreasonable, though the entire issue of Civil Service retirement clerly deserves more careful attention.

[43] Recognizing this, President Gerald Ford requested that the Congress terminate the GI Bill effective 31 December 1975. The DoD argued against the termination of the program on the grounds that the GI Bill was an incentive for potential recruits to join the military. The President countered that if the GI Bill was such an important incentive, the program should be funded by the DoD. The result of this was the passage of Public Law 94-502, which calls for (1) a cost-sharing arrangement between the individual and the government for post-service education and training benefits (for every dollar the individual pays, the government will contribute two), and (2) the DoD to bear the costs of the government's contributions.

There is some question about the appropriate agency to fund post-service education and training, however. It can be argued that during the draft the program should have been funded as it was, under the Veterans Administration. The country did have a moral obligation to those who were forced to serve in the military, and the program also served the larger social goal of educating and training a large segment of the new work force. With the end of the draft, the moral obligation disappears, but the second argument may still be valid. In a sense, then, PL 94-502 provides a compromise between defense and social objectives.

the Vietnam War and the considerable inflation during the 1970s, GI Bill costs have skyrocketed, increasing more than tenfold since 1968. Thus post-service education and training benefits have become a major element of the budget and must be considered at least partially related to defense manpower.

Implications. The most obvious implication about "outside" manpower costs is their effect on total manpower expenditures: As shown in Table 2-8, they add some 10 percent to the manpower total. Thus, the manpower problem is, if anything, larger than the standard measure of manpower costs imply.

Far more important, however, are the effects of the method of accounting and the budget structures on the utilization and management of defense resources. If the DoD responds to budget incentives, cash accounting methods and the exclusion of certain manpower items from the defense budget encourage inefficiencies in the allocation of defense resources when viewed from the larger perspective of the Federal budget and society's resources.

Military retirement again serves to illustrate the problem. Although outlays for military retirement are part of the overall defense budget, they are not part of the budgets of the individual military services. The result is that the military services, whose personnel policies determine future retirement costs, do not necessarily have the direct budget incentives to adopt policies that are cost-effective in the broader sense—specifically, there may be no direct incentive to economize on future retirement costs. For example, an individual Service can reduce current costs by retiring personnel earlier in their careers, since the cost of retired pay is not charged to their budget but comes from the general DoD budget for retired personnel.

There are similar effects with, say, the GI Bill. The military services, particularly the Army, have used the benefits provided by the GI Bill extensively in their advertising campaigns to attract new recruits, even though the DoD did not pay for these benefits. Moreover, because of these post-service benefits, the military may have had to pay more, in the form of bonuses, to retain military personnel beyond their initial period of obligation.

The passage of Public Law 94-502 eliminated some of these problems, but some still remain. For example, although the government's share of the modified GI Bill costs will be borne by the DoD (as opposed to the Veterans Administration), the costs will be carried in a general DoD account, rather than in the individual Service budgets. In other words, even though the costs will be largely the result of individual Service policies, the Services themselves will not bear the costs. Moreover, because GI Bill costs were not historically paid by the DoD, care must be taken in interpreting future defense manpower cost trends, which will include these costs.

The more general point, of course, is that the structure of the budget accounts and the method of accounting may not encourage efficient use of society's resources. With respect to such defense-specific issues as retirement, the problems center on developing budget incentives to encourage the DoD generally *and* the individual Services specifically to make the best use of society's resources. In the case of policies that transcend defense, such as the GI Bill, the problem becomes one of developing mechanisms for carefully balancing the sometimes conflicting defense and nondefense objectives.

MANPOWER AND DEFENSE

The nature of the problem facing defense and manpower planners can be brought into better focus by examining manpower spending in the larger context of defense spending, alternative uses of the defense budget, and the defense budget as it compares with aggregate U.S. economic activity. By viewing defense spending in this broader context, we can see the effects of the choices that society has made with respect to the question, How much defense? Alternatively, by examining the component parts of defense spending, we can see how some of the allocation issues have been resolved in the past.

Using the GNP price deflator to convert current dollar expenditure figures to 1974 constant dollar equivalents, we see in Fig. 2-4 the five main periods of defense policy since the end of World War II. After a peak spending level of $220 billion in 1974 constant dollars during World War II, defense spending declined to a relatively modest $20 billion following the war. The advent of the Korean War caused real defense spending to increase dramatically, peaking at some $80 billion in 1974 constant dollars.

Following the Korean War, and prior to the Vietnam buildup, defense spending remained relatively constant, averaging about $75 to $85 billion in 1974 constant dollars. Vietnam spending reached a peak of some $104 billion constant dollars, somewhat less than half the peak World War II expenditures.

Since the Vietnam withdrawal, there has been a steady decline in real defense spending up to fiscal 1978. In fact, by fiscal 1975, real defense spending was only 2 percent above the pre-Vietnam benchmark year of 1964. In general, it would appear that post-Vietnam real defense spending will be roughly comparable, or

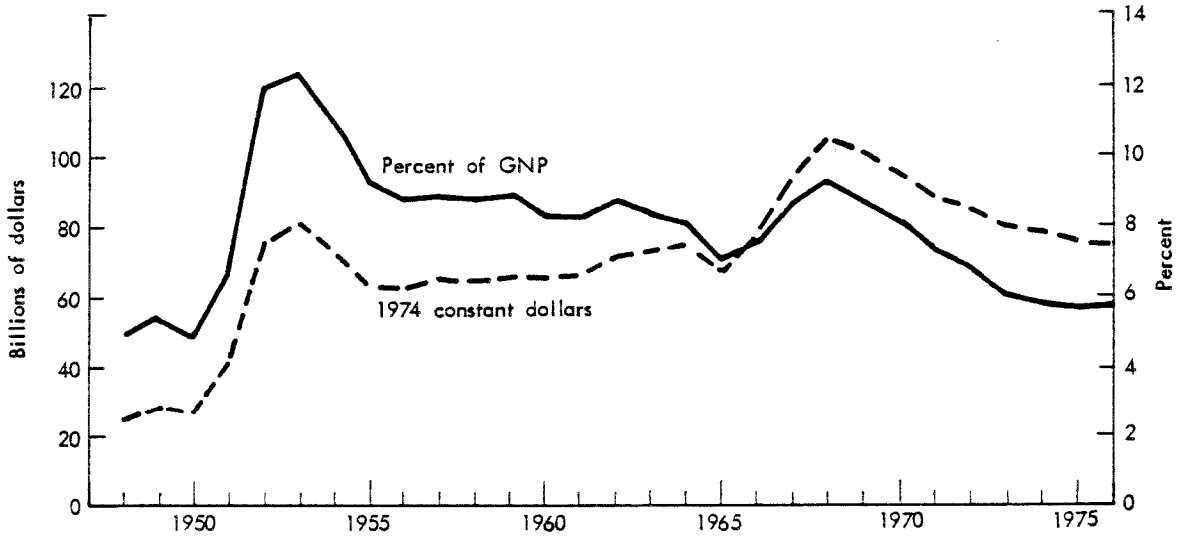

Fig.2-4—Defense spending

SOURCE: See text.

perhaps modestly above, the real amount of defense expenditures between the Korean and Vietnam wars.

An alternative way of viewing the aggregate allocation issue is to measure defense spending in terms of its proportion of the nation's economic output—gross national product (GNP)—as also shown in Fig. 2-4.[44] A somewhat different perspective emerges from this comparison, for with the exception of the brief rise during the Vietnam buildup, the percentage of GNP devoted to defense has declined rather steadily since the end of the Korean War. In fact, for the first time since the beginning of the Korean War, the country is spending less than 6 percent of the GNP on its defense effort. Thus, society is devoting a smaller share of its economic resources to defense.

Given these broad trends in aggregate defense spending, it is likewise important to examine the components of spending. As stated earlier in this chapter, manpower costs (conventionally defined) have risen markedly over the past 20 years. As shown in Fig. 2-5, the "real" amount of manpower costs has also risen.[45] Indeed, the real rate of spending for manpower in fiscal 1975 is more than 30 percent above the rate in fiscal 1964.

The implications are obvious: Less real resources are available for nonmanpower items. The effects have been particularly pronounced on procurement spending, the source of new capital equipment and force modernization. As a result, real

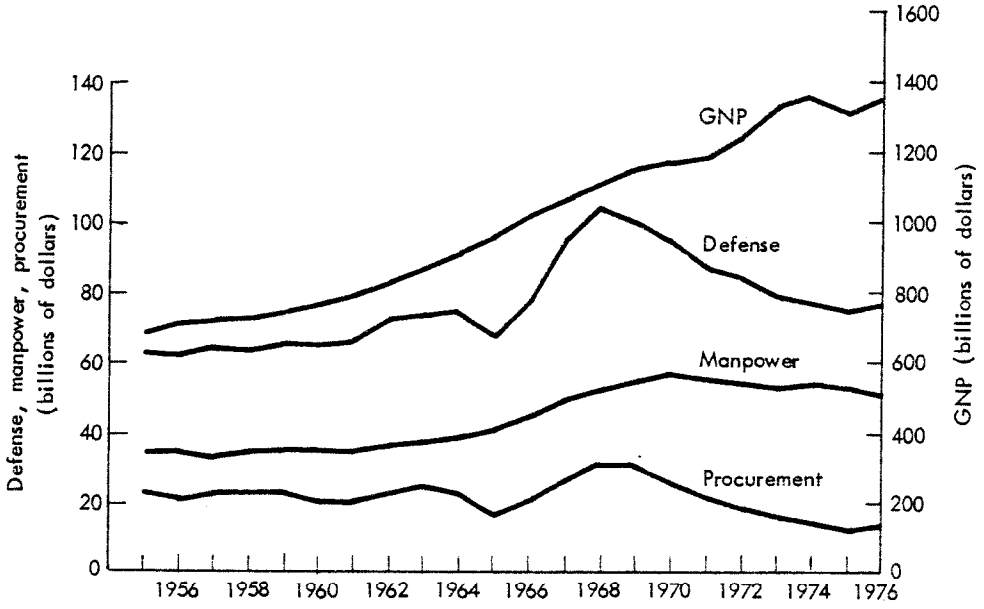

Fig.2-5—Manpower costs, defense costs, and GNP: fiscal 1974 constant dollars (billions of dollars)

SOURCE: See text.

[44] The usefulness (and shortcomings) of measuring defense in terms of GNP is discussed in Hitch and McKean, op. cit.

[45] It will be shown in Chap. 11, however, that the *economic* cost of military manpower has declined from its pre-Vietnam levels, a result of the fact that budget costs substantially underestimated the real resource cost of defense manpower under the draft.

procurement expenditures in fiscal 1975 were more than 40 percent below their 1964 level.

The above discussion clearly emphasizes the crucial role that manpower has come to play in the defense planning and budgeting process. In fact, if expenditures for military retirement are excluded from total defense expenditures (also shown in Fig. 2-5) under the rationale that these represent the result of past defense effort and should not therefore be included in the current budget account, *real defense expenditures toward current and future capability have actually declined relative to the pre-Vietnam period.*

Moreover, the problem can be expected to be more pronounced in the years ahead, since the increase in manpower costs has been at least partially contained by sizable force reductions. Assuming that force strengths will remain near their fiscal 1976 levels, manpower costs can be projected to increase in the long run at about 2 percent per year, given the real wage increases that can be expected to occur in the civilian sector. And the traditional solution of simply cutting force strengths in response to rising manpower costs is a much less viable option for achieving cost "savings" in the future than it has been in the past.

PART I

THE DRAFT AND ITS REMOVAL

Chapter 3

THE MOVE TO END THE DRAFT

"We have lived with the draft so long," declared Richard M. Nixon during his campaign for the Presidency, "that too many of us accept it as normal and necessary." This statement probably reflects the way a majority of Americans felt toward the draft as an institution during the late 1950s and early 1960s.

However, the draft was to become the subject of considerable public debate and controversy during the mid to late 1960s, particularly as opposition to the Vietnam War mounted and became more visible. Indeed, this movement gained so much momentum and became such a politically attractive stand that it was incorporated as a major platform issue in Nixon's 1968 bid for election.[1]

THE DRAFT DEBATE

The advent of the All-Volunteer Force (AVF) in 1973 was preceded by almost 10 years of extensive public dialogue concerning the efficacy of draft and volunteer manpower procurement policies. The initial stages of this debate were generally limited to brief exchanges in the Congress when the Selective Service System came up for periodic review and to discussions within the academic community; and for the most part, they were carried on with little public fanfare. This is not to say that the public enthusiastically supported the draft; more probably, they accepted it as "normal and necessary."

But the growing *inequity* of the draft, probably more than any other single factor, transformed the debate into one of major public concern. That is, although the Vietnam War served to dramatize the draft issue and indeed acted as a catalyst for the debate, the inequity of the draft was clearly the dominant issue. The concern centered on whether it was equitable to force some members of society to bear the burden of military service while others could escape that responsibility.

The growing importance of the equity issue was evidenced by the number of public inquiries into the efficacy of the Selective Service System, including the final report of the National Advisory Commission on Selective Service, *In Pursuit of Equity: Who Serves When Not All Serve.*[2] The equity issue is examined in greater detail later in this chapter.

In addition to the equity issue, a number of other issues were argued during the course of the draft debate. Proponents of the draft argued that each (male) citizen has a *moral responsibility,* or duty, to serve his country and that the draft provided a vehicle for institutionalizing this responsibility. In support of their position, these individuals frequently cited the long U.S. tradition of citizen partici-

[1] It is noteworthy that a pledge to end the draft was also part of Barry Goldwater's campaign for the Presidency in 1964 and Adlai Stevenson's in 1956 and, in fact, became a part of George McGovern's belated primary run in 1968.

[2] National Advisory Commission on Selective Service, *In Pursuit of Equity: Who Serves When Not All Serve,* U.S. Government Printing Office, Washington, D.C., 1967.

pation in the common defense of the nation, i.e., the "citizen military." In response to this proposition, opponents of the draft argued that although participation in the military might be part of U.S. tradition, the use of *coercion* to allocate resources was certainly not. They stated that the use of coercion runs counter to the main thrust of U.S. social policy and that the draft should be rejected on moral grounds alone.

Along with these ethical questions, several more practical concerns surfaced during the debate—concerns that played a major role in the ultimate decision to end the draft. Foremost among these was the issue of *cost:* Could the United States afford the cost of an all-volunteer military?[3] Throughout the post-World War II period, especially during the 1950s when force size requirements were large relative to the population base, the draft had enabled the military to procure and maintain a force for a considerably smaller budget cost than would have been required with a volunteer force. The question was, therefore, How much would ending the draft increase budget expenditures, and was this increase an amount the American taxpayer was willing to pay?

Another major practical concern centered on socioeconomic effects on the military. Some felt that ending the draft would lead to a professional military "elite" with a separate military ethos, which could pose a threat to civilian authority, individual freedoms, and the nation's democratic institutions.[4,5] Opponents of the draft countered that these are important concerns with any military establishment, draft or volunteer, but that there was no reason to suspect that ending the draft would have any effect on general military attitudes.

The other major socioeconomic concern was whether a volunteer military would come to have a disproportionately high percentage of blacks and those in the lower socioeconomic classes. This concern is ironic, since one of the principal complaints about the draft was that disproportionately large numbers of blacks and others in the lower socioeconomic classes were forced to serve—individuals who generally had fewer resources to spend trying to avoid the draft. Similarly, the disproportionately large share of combat casualties suffered by blacks in Vietnam was frequently cited as evidence of the lack of social representation engendered by the draft. Nevertheless, the possible socioeconomic effects on the composition of the Armed Forces continued to be a major issue in the public debate over ending the draft and carried well into the Congressional debate that followed the Gates Commission recommendations.

The Participants and the Evolution of the Draft Debate

Having evolved over a considerable period of time, the draft debate really began to build momentum around 1966. The date is significant first because of the

[3] In many ways, the question of cost was a ruse for the subtler issue of who was to bear the cost, the taxpayer or the individual forced to serve.

[4] There were several corollaries to this argument. For example, some felt that a volunteer military would be more prone to expeditionary adventures than a draft-induced force.

[5] This appears to be a key part of the rationale for the current French conscription policy; there is some feeling that the French military had become a "professional elite" with its own ethics during the 1940s and 1950s (even though a draft was partially used during this period), the result of which, it is argued, was the military "revolt" over the Algerian issue.

1966 study of the draft conducted by the Department of Defense (DoD).[6] Although the question of ending the draft became moot with the Vietnam buildup between 1965 and 1969, the 1966 DoD draft study marked the first major and systematic *public* review of draft policy since the reintroduction of peacetime conscription in 1948. This was also the year in which one of the first coordinated efforts was made by the academic community to review the implications of the draft: The American Economic Association devoted a session of its December 1966 meetings to the economics of manpower procurement.[7]

These events are important because of the subsequent dialogue and debate that they encouraged. For example, a considerable literature on the economics of draft and volunteer forces began to develop following the 1966 American Economic Association meetings.[8] Prior to that time, the subject of conscription had received relatively little attention from the economics profession,[9] even though economic issues such as the cost of a volunteer military were clearly key to the resolution of the draft issue. The involvement of the economics profession thus raised a number of specific issues (such as the economics of the "conscription tax" discussed in Chap. 5) and served to develop much of the expertise needed to resolve such key policy issues as how much it would cost to support an all-volunteer military.[10]

Just as the 1966 American Economic Association meetings served as the forerunner of considerable economics involvement, the 1966 DoD draft study was the forerunner of several commissions and other public investigations into the draft. In 1967, two official advisory groups were established to consider a restructuring of manpower procurement for the Armed Forces: (1) a Presidential board, the National Advisory Commission on Selective Service (referred to as the Marshall Commission, after its Chairman, Burke Marshall); and (2) a legislative advisory commission, the Civilian Advisory Panel on Military Manpower Procurement (named the Clark Panel, after its Chairman, Retired General Mark Clark). Both reports studied alternatives to the Selective Service System, and both rejected the feasibility and concept of an all-volunteer military.[11]

The Marshall Report concluded that a volunteer military was insufficiently flexible to respond to changing world conditions; was too costly (though no cost

[6] The origins of the 1966 DoD draft study can be traced back to 1964, when a bipartisan group of Senators (Gaylord Nelson, Thomas Curtis, Barry Goldwater, and Dennis Keating) requested that the Congress undertake such a study. President Johnson preempted the Congress, however, by establishing a defense of the draft under a study headed by Bill Gorham. This study, eventually known as the 1966 DoD draft study, was completed by late June 1965, but the results were not released until August 1966, when the study was reported out before the House Armed Services Committee.

The text and supporting data from the 1966 DoD draft study can be found in "Review of the Administration and Operation of the Selective Service System," Hearings Before the House Armed Services Committee, 89th Congress, Second Session, June 1966, pp. 9999-10174.

[7] See *American Economic Review*, LVII, No. 2, May 1967.

[8] See, for example, W. L. Hansen and Burton Weisbrod, "Economics of the Military Draft," *Quarterly Journal of Economics*, LXXX, No. 1, 1967; Anthony C. Fisher, "Cost of the Draft and Cost of Ending the Draft," *American Economic Review*, LIX, No. 3, June 1969; M. V. Pauly and T. S. Willett, "Who Bears the Burden of National Defense," in J.C. Miller (ed.), *Why the Draft? The Case for the Volunteer Army*, Penguin Books, Inc., Baltimore, 1968.

[9] It is noteworthy that Hitch and McKean, op. cit., perhaps the best known economic analysts of defense, fail to deal even with manpower, let alone the draft.

[10] An important by-product of this involvement in the early stages of the draft debate was the significant role that economists played in the Gates Commission (see Chap. 6). In fact, Walter Oi and Stuart Altman, two of the original contributors to the 1966 American Economic Association meetings, were two of the four Directors of Research on the Gates Commission.

[11] See National Advisory Commission on Selective Service, op. cit., and *Civilian Advisory Panel on Military Manpower Procurement*, U.S. Government Printing Office, Washington D.C., 1967.

estimates were presented); and could lead to undesirable social effects such as the erosion of patriotic spirit, lopsided racial balance, and the possible further isolation of the military into either an elite or a mercenary force. The Clark Report concurred on all major points regarding the undesirability of an all-volunteer military force.

In contrast to these three publicly commissioned efforts, all of which recommended continuation of the Selective Service draft, there were several unofficial studies during this period that came out favoring removal of the draft. Included in these was an effort sponsored by several members of the House of Representatives. This report, *How to End the Draft*, concluded that a volunteer military was not only feasible, but also desirable.[12] *The Draft*, a collection of papers prepared by a number of prominent economists and social scientists which was presented to a 1966 conference in Chicago chaired by famed anthropologist Sol Tax, came to essentially the same conclusion.[13]

In addition to these formal efforts addressed to the question of the draft, broad-based support of the notion of an all-volunteer military began to be expressed by prominent public figures representing the full range of the political spectrum—Linus Pauling, Adlai Stevenson, Barry Goldwater, George McGovern, John Kenneth Galbraith, Milton Friedman, and Norman Thomas, among others.

The culmination of the draft debate came with the report of the President's Commission on an All-Volunteer Armed Force—the so-called Gates Commission[14] —in 1970 and the subsequent discussions about the Gates Commission recommendations that took place in Congress and elsewhere.

Although these various commissions and study groups were comprised of individuals representing a variety of backgrounds, the economists were probably the dominant intellectual force during the debate. And they were clearly the mainstay of the Gates Commission, as discussed in Chap. 6.

There was some minor involvement on the part of other social scientists—particularly the historians, social psychologists, sociologists, and political scientists. With only a few exceptions, however,[15] the social scientists did not play a particularly significant role in the debate or in the solution of the draft issue. This can be at least partially attributed to the fact that debate increasingly focused on the cost of ending the draft, clearly an economic concern.

Nevertheless, this absence is striking, since the social sciences have had a long tradition of analyzing military institutions, especially the relationships between the military and civil sectors. The early dialogue was generally confined to specific academic disciplines, but the commonality of interests grew sufficiently during the postwar decades that by the late 1960s interdisciplinary forums began to appear. The Inter University Seminar on Armed Forces in Society, founded by long-time student of the military, Morris Janowitz, is perhaps the best example. The lack of participation by the social scientists in the 1960s debate is therefore clearly not attributable to a lack of interest, for not only has study of the military long been

[12] Robert T. Stafford et al., *How to End the Draft: The Case for an All-Volunteer Army*, The National Press Inc., Washington, D.C., 1967.

[13] Sol Tax (ed.), *The Draft*, University of Chicago Press, Chicago, 1967.

[14] Named for its Chairman , former Secretary of Defense Thomas S. Gates, Jr.

[15] See, for example, Albert D. Biderman, "What Is Military," in Tax, op cit.

an integral part of the social sciences, but social scientists were among the first to develop interdisciplinary approaches to the problem.

A more likely explanation stems from the tendency of the American social sciences to view the military as an intact social entity, rather than as an institution requiring reform. Post-World War II studies, such as the ground-breaking *American Soldier*, conducted by such men as Speir, Lasswell, Lerner, Huntington, Janowitz, Moskos, and Stouffer focused on the social dynamics within the military or between the military and civilian sectors. Their analyses were concerned largely with such issues as the integration of the military into the larger civilian society, rather than with the types of policy reforms that the economists addressed. The draft, however, was clearly a policy issue, one requiring analysis of the implications of alternative forms of manpower procurement.

Thus, partly because of the nature of the issues that made up the 1960s debate and partly because of the style with which the social scientists approached their analyses of the military, the noneconomic social sciences were a relatively minor part of the draft debate. Perhaps one of the greatest shortcomings of the draft debate, then, was the failure to develop an effective dialogue between the economics profession and the social scientists on the draft and the alternatives to it.

The Policy Options

There is one other important aspect of the draft debate that should be noted: The debate was focused primarily on the dissatisfactions with the Selective Service System and the corresponding advantages possible under an all-volunteer military. Thus, the debate is of interest not only for the topics that were explored, but also for those that were not.

Whereas the obvious alternative to the postwar draft was an all-volunteer military, the choice of a military manpower procurement policy is not binary. There are many forms of conscription, including selective service (lottery and otherwise), universal military training, universal military service, and national service.[16] To be sure, each of these alternatives was given at least some notice during the course of the debate,[17] but for all practical purposes, the 1960s draft debate was addressed

[16] Under a *national service policy*, all young men (and, on occasion, all young women) are viewed as having an obligation to their country which they fulfill by providing labor services that benefit the national purpose. Such service can include helping disadvantaged members of society (e.g., working in hospitals or programs such as VISTA), forestry and park services, and military service. Under a policy of *universal military service*, the nation's young men are viewed as having a specific obligation to serve in their country's military forces; this policy differs from that of national service in that nonmilitary service does not fulfill the obligation. A *universal military training* policy requires that all young men receive military training, even though not all will actually serve in the standing forces; some are instead assigned to reserve or militia forces. The common element of these three forms of conscription is that all young men (and, in some cases, young women) are required to fulfill their service obligation, whether that obligation consists of military service, some other national service, or just military training.

A *selective service* conscription policy, on the other hand, differs from these forms in that not all young men must serve or even receive training; instead, although all are usually subject to the possibility of being conscripted, only some will actually serve, since military strength requirements are too small to absorb all who are eligible. There are many different forms of selective service conscription, but these alternatives differ only in the method of selection, not in concept. For example, the selection process can be random (i.e., lottery), a system with deferments and exemptions, or some other systematic process such as the Civil War system, where prospective inductees could purchase their way out of the service.

[17] The Gates Commission, for example, gave brief mention to national service. Similarly, both the National Advisory Commission on Selective Service and the Civilian Advisory Panel on Military Manpower Procurement briefly explored other methods of conscription but rejected them in favor of selective service.

to two primary policy options: the selective service draft (and ways to improve its implementation) and an all-volunteer military. The lack of attention to other alternatives to selective service is particularly interesting in view of the fact that other forms of conscription have enjoyed wider acceptance than either selective service or volunteerism in Western Europe.

It is not clear whether the almost exclusive focus on volunteer and selective service military manpower procurement policies in the 1960s occurred because the United States was not ready to consider another type of conscription or because the economists, with their focus on voluntary military forces, provided most of the intellectual leadership in the debate. What is clear is that the focus on an all-volunteer military as the prime alternative to the selective service draft may have influenced the final outcome of the debate as much as the various arguments that were presented during the course of the dialogue.[18]

THE EQUITY ISSUE AND DEMOGRAPHIC TRENDS

Historically, the inequity of conscripting young men (and, on occasion, women) for military service has been a controversial subject nearly every time the draft has been imposed. However, as the result of some *demographic trends*—the number of young men eligible for military service more than doubled in the 20 years between 1955 and 1975—the equity issue became critically important beginning in the late 1950s. Not only was the burden of conscription limited to a relatively small segment of society—young men of military age—but the growing number of such young men (because of the post-World War II "baby boom"), combined with relatively stable force sizes, resulted in some of the age group not being required to serve, making conscription more inequitable over time. In other words, with constant manpower requirements, the increasing number of young men eligible for military service meant that an increasingly smaller proportion would have to serve.

The equity issue thus became the single most important factor in the move to end the draft and was composed of two major components: (1) the burden imposed on young men of military age and (2) the selective way in which this burden was applied.[19]

The Burden of Conscription

Those individuals subject to the Selective Service draft were forced to bear a burden that other members of society were able to avoid.[20] This burden included

[18] It is argued in Chap. 7 that neither universal military service nor universal military training is a practical alternative for the United States. Thus, the U.S. policy options boil down to selective service, national service, or a volunteer military.

[19] Canby took a somewhat different approach to the equity issue, though the two views lead to essentially the same conclusion. Since Canby's principal objective was to develop a framework for selecting the "best" manpower procurement policy (if, indeed, one exists), he chose to analyze each of a number of specific equity issues, such as pay equity, the equity of free choice, etc. The concern here, however, is to trace the process which led to the removal of the draft, so the analysis takes a more global perspective by focusing instead on the two main components of the equity issue: the burden (pay, disruption, risk, etc.) and the application of this burden. See Steven L. Canby, *Military Manpower Procurement, A Policy Analysis*, D. C. Heath and Company, Lexington, Massachusetts, 1972, pp. 22-38.

[20] This is not to imply that military service is necessarily undesirable; there are large numbers of individuals who would prefer to serve in the military, other things being equal. Rather, it means that when coercion is used to allocate individuals, some will almost necessarily view military service as a burden.

the risk of death and injury and the disruption in the lives of those subject to the draft. It is not that nonmilitary occupations lack some of these attributes, but rather that individuals in such occupations are there voluntarily.

Not the least of the burdens, particularly during periods of peacetime, was the financial burden imposed on those having to serve in the military. The draft enabled the military (and, therefore, the general taxpaying public) to pay those serving not only less than would have been required for them to join voluntarily, but also less than they could earn from civilian employment. Therefore, in addition to the nonmonetary burdens of conscription, those forced to serve also paid a financial price, which was substantial in some cases.

We can examine the magnitude of this financial burden by comparing an individual's military wage with an estimate of the wage he could have expected to earn from civilian employment. In this comparison, military wages are defined as the average regular military compensation (RMC) per year for enlisted personnel earned during the first two years of military service. This particular definition was chosen for two reasons. First, RMC is probably the most appropriate measure of pay for comparison with civilian income.[21] Second, the two-year time horizon was chosen because it is the minimum commitment length (for inductees and some enlistees) and because it is the experience range over which the draft had the most depressing effect on military wages.

The appropriate variable to represent civilian earnings forgone is more difficult to define, since any individual's expected civilian income depends, among other things, upon his age (as a proxy for experience) and education. Therefore, the appropriate annual civilian income variable for *comparing* with annual military income depends on the mix of individuals joining the Services.[22] If, for instance, the draft applied only to 19 year old high-school graduates, then the appropriate civilian income variable would be the median annual civilian earnings for 19 and 20 year old males (because of the two-year induction/enlistment obligation).[23]

Civilian wages in fact vary significantly with age and education. For example, a 26 year old high-school graduate can expect to earn more than twice as much as an 18 year old high-school graduate, according to data collected under the Current Population Survey conducted by the Bureau of the Census.[24] Similarly, a 26 year old college graduate can expect to earn about 20 percent more than a 26 year old high-school graduate. Thus, the relevant civilian income variable depends on the age and education mix of those subject to the draft. This is an important concern,

[21] Although the "fringe benefit" portion of military pay is alleged to be larger than that for civilian employment, fringe benefits were not included in either military or civilian pay estimates because of the difficulty in costing both, especially prior to 1967, and because many of these fringe benefits (e.g., retirement) were not available to inductees.

[22] Military pay does not differ according to education and prior experience (or age), while civilian pay is likely to be a function of both. Therefore, to compare military and civilian pay properly, we must know the mix of attributes (e.g., education) of those eligible for the draft.

[23] Actually, this would provide the basis for computing the median value of the financial burden of conscripting 19 year old high-school graduate inductees. Conscription is a peculiar form of taxation, since it results in the confiscation of 100 percent of the amount of earnings above military pay (and 0 percent of the earnings less than military pay). Thus, the correct measure of civilian earnings forgone *for the individual* would be that individual's actual forgone civilian wages and salaries. By using median civilian wages and salaries, we thus get a measure of what the *typical* individual within a given classification (such as 19 year old, white high-school graduates) would have given up.

[24] Unpublished tabulations by R. Cooper, P. Gowen, and G. Haggstrom, The Rand Corporation.

since Selective Service policy changed considerably during the 25 years following reintroduction of the draft in 1948.[25]

Insufficient data make it impossible to provide a fully comparable measure of civilian income, appropriately weighted by the age and education mix of those eligible and/or serving. However, we can gain some insight into the magnitude of the financial burden for the typical individual by using the median annual income for all full-time employed male 18 to 24 year olds, since this represents the primary pool from which inductees and enlistees were drawn during the draft era.[26]

The extent of the financial burden can then be estimated as the difference between civilian income forgone, as measured above, and military income.[27] From Fig. 3-1 we see that military wages during the first two years of service were only about $200 per year less than estimated civilian wages for all full-time employed 18 to 24 year olds in 1949.[28] By 1964, however, this difference had grown to some $2100 per year, with military earnings being only about half as much as average civilian earnings. This is because military pay for the first two years of military service did not rise at all between 1952 and 1964, while civilian earnings for all 18 to 24 year old full-time employed males rose by more than 50 percent.

Beginning in 1965, there were annual increases in pay for those in their first two years of military service.[29] However, civilian pay rose even more, so that by 1970, military pay was $3200 per year less than civilian pay and still remained at roughly half the level of that in civilian employment. Thus, those forced to serve in the military during the draft paid a large financial price, in addition to the other burdens. The typical individual who was drafted in 1970 could expect to forgo about $6300 during his two years of service.

We can also see the effects of the volunteer pay raise which became effective November 14, 1971.[30] Between 1971 and 1972, the pay for those in the first two years of service rose by some 60 percent, bringing military pay to rough parity with the mean income for 19 to 20 year old full-time employed high-school graduates.[31]

[25] Not only did draft policy change from an oldest-first to a youngest-first system, but because of variations in the number drafted every year and other factors, the age and education mix of new accessions varied considerably in the post-World War II period. For example, the median age of inductees changed from 21.5 years in 1954, to 23.5 years in 1963, to 20.5 years in 1966, to 19.6 years in 1972.

[26] In a sense, this is subject to two biases, possibly offsetting. On the one hand, we would expect those who are legally ineligible to serve (for mental, medical, and other reasons) to have lower civilian income opportunities, so the 18 to 24 year old mean civilian income may underestimate the civilian earning opportunities for the pool of those subject to the draft. On the other hand, those with higher incomes would be expected to have a better chance of avoiding the draft (by entering sheltered occupations, going to school, etc.).

[27] Military earnings (RMC) are estimated as the sum of basic military pay, allowance for quarters (assuming no dependents), allowance for subsistence (at the published daily rates), and an estimate of the Federal tax advantage (assuming the standard deduction for Federal income tax). Median civilian wage and salary earnings for 1967 through 1974 are based on Current Population Survey data (calculations by Cooper, Gowen, and Haggstrom). Estimates for 1949 to 1966 were constructed on the basis of the 1967 CPS estimates (earlier CPS data were not available); the 1967 CPS estimates were adjusted year by year back to 1949 by using the average weekly earnings in nonagricultural employment, as reported in the *Economic Report of the President*, op. cit.

[28] It is interesting to note that military pay in 1949 was actually more than $250 per year higher than civilian pay for 19 to 20 year old full-time employed white male high-school graduates, the primary pool from which the military draws its enlisted personnel in the post-draft environment.

[29] By way of contrast, there have been some pay increases for personnel beyond the first two years since 1949. For example, the base pay for a Sergeant (E-5) with four years of service increased by nearly 50 percent between 1952 and 1964, while that for an individual with less than two years remained unchanged during this entire period.

[30] For simplicity, Fig. 3-1 does not show the pay increase taking effect until January 1, 1972.

[31] Although the appropriate comparison during the draft environment is probably all 18 to 24 year old males, the enlisted forces in the post-draft environment draw their personnel primarily from the 19 to 20 year old age group.

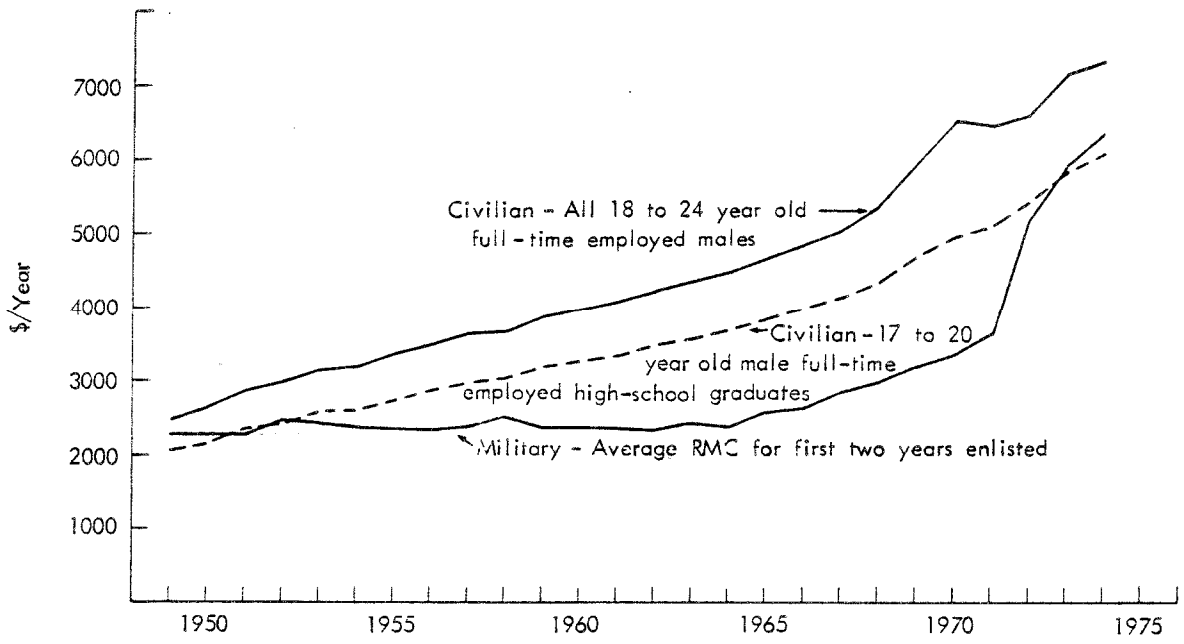

Fig.3-1—Annual military and civilian wages

SOURCE: See text.

Selectivity

The imposition of a burden does not by itself constitute inequity. Society must frequently impose "burdens" upon its citizens, usually in the form of taxes.[32] However, when the burdens are applied selectively, so that only some of the citizens must pay the price, the issue of inequity arises.[33]

Conscription can be viewed as always inequitable, simply by the fact that it is usually limited to young men. On the other hand, it can be argued that universal military service, in which all must serve (or at least all males), makes conscription equitable; for although conscription falls selectively on a narrow age cohort at any point in time, in the long run all will end up serving. When only some end up serving, however, the equity of conscription becomes a serious issue.

It is in this latter regard that some simple population dynamics brought the equity issue to the forefront of public policy beginning in the mid to late 1950s. Except for the period of the Vietnam conflict, between 1966 and 1970, the number of annual accessions into the military required to man the active duty forces has remained roughly constant since the late 1950s (in fact, it has actually declined

[32] Other such "burdens" include the right of eminent domain, the prohibition of illegal acts, etc.

[33] This does not mean that the burden must be shared equally to be considered equitable, but rather that there must be some design to distribute the burden equitably across society's members. Thus, for example, the progressive income tax is not considered inequitable because it is based on the notion that those who are better able to pay should pay proportionately more. In contrast, it will be shown later that conscription extracts proportionately more from those least able to pay.

modestly—see Fig. 3-2). However, beginning in 1954, the number of young men turning 19 increased every year, and dramatically so starting about 1961.[34]

If we exclude those not legally eligible to serve for mental, medical, or other reasons, we find that roughly 85 percent of those eligible to serve in 1954 could have been expected to actually serve. The proportion required to serve had fallen to 50 percent in 1964 (38 percent of the total population), and by fiscal 1980 it is estimated that the proportion required to serve will be only 20 percent. Even if the reserve forces are included,[35] only 70 percent of those legally eligible were required to serve in 1964, and by 1980 this is projected to decline to 25 percent. Until the volunteer pay raise in 1971, therefore, fewer (or at least a smaller proportion) had to bear a larger burden—hence, the importance of the equity issue.

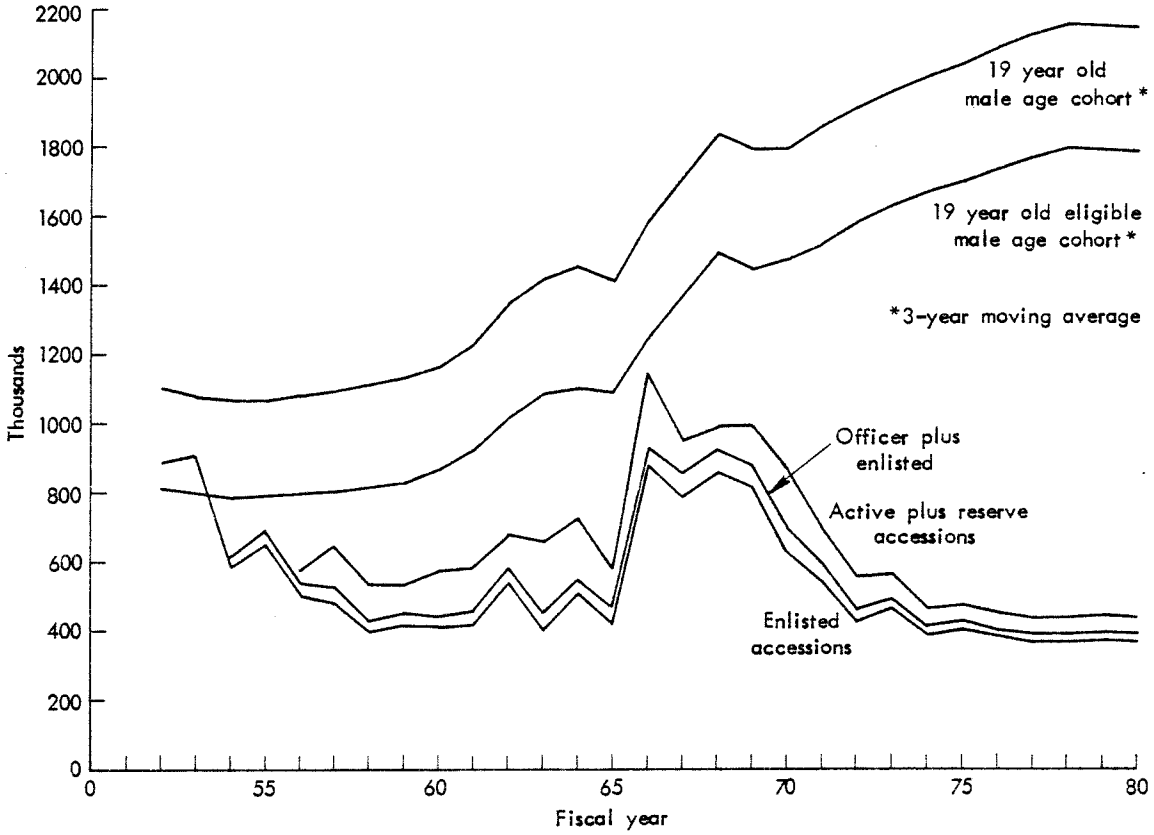

Fig.3-2—Military manpower procurement and population size

SUMMARY

By the late 1960s, the draft had become one of the most hotly debated topics in public circles. The question of the draft and the subsequent debate were certainly

[34] In any given year, the military can of course draw from more than one age cohort. In the long run, however, the age cohort is the relevant base. See Binkin and Johnston, op. cit.

[35] It can be argued that the reserve forces should not be included (particularly during the draft), since those serving in the reserves do not have to bear the same burden as those in the active forces; the reserves are essentially a second job.

not new in and of themselves. The subject had been frequently, and often more vehemently, debated in the past. Yet, the debate of the 1960s accomplished something the previous debates did not, the maintenance of a large peacetime force without conscription.

In many respects, the debate of the 1960s stands apart from its historical predecessors, and it is useful to compare this debate with those that preceded it. Particularly interesting is the comparison with the debate of the 1940s, which led to the 25 years of peacetime conscription following World War II.

The questions of the 1940s focused on the morality of inducting young men into military service during periods of peacetime, something that had been done only once before in American history, just before the U.S. entrance into World War II. Senator Vandenburg expressed these concerns in an address before the U.S. Senate in 1940:

> I am opposed to tearing up one hundred and fifty years of American history and tradition, in which none but volunteers have entered the peacetime Armies and Navies of the United States, unless there is valid reason to believe that this reliance in 1940 has become a broken reed for the first time in a century and a half.
>
> There must have been sound reasons all down the years why our predecessors in the Congress always consistently and relentlessly shunned this thing which we are now asked to do. These reasons must have been related in some indispensable fashion to the fundamental theory that peacetime military conscription is repugnant to the spirit of democracy and the soul of Republican institutions, and that it leads in dark directions.

Though he was addressing specifically the prewar introduction of peacetime conscription, Senator Vandenburg's thoughts accurately reflect much of the debate that took place as part of the decision to implement peacetime conscription in 1948.

Despite the tremendous opposition to conscription in the late 1940s and its particular focus on the morality of using the draft during periods of peace, the United States had essentially two choices: (1) to have a small volunteer military, as it had following World War I, or (2) to maintain a large peacetime military establishment by using the draft. That is, the population base was simply not large enough to support a volunteer military at a cost the American taxpaying public would have been willing to pay. In essence, then, the 1940s debate about the draft boiled down to one of whether to have a large or small military.

Something new was therefore introduced into the debate of the 1960s. In contrast to the earlier situation, where the choice was simply one of whether to maintain a large or a small military force, the choices had expanded to include a large force without the draft.

Chapter 4

HISTORICAL AND INTERNATIONAL PERSPECTIVE OF CONSCRIPTION

The issues and concerns about conscription that developed during the 1960s are not without precedent, either in American history or in the experiences encountered by other nations. The questions of how best to provide the manpower to meet a nation's defense needs has always been a vital issue. This chapter briefly reviews the issues as they have developed and been resolved in the United States and in other nations, particularly those of Western Europe with traditions and backgrounds similar to those of the United States.

HISTORY OF CONSCRIPTION[1,2]

When the draft ended in 1972, more than half of the U.S. population was under 33 years old and, for practical purposes, had never known a time without conscription.[3] This explains the almost commonplace acceptance of the draft that characterized the 1940s, 1950s, and 1960s. Yet, when we consider a larger historical context, we find that nationwide conscription for the Armed Forces has been used for only about 35 out of the 200 years since the Declaration of Independence. Moreover, major controversy has erupted nearly every time the draft has been considered. The use of conscription has thus been far more the exception than the historical norm in the United States.

A review of the history of conscription in the United States adds an important perspective to our discussion of the move to end the draft, for it illustrates how the draft issue has been resolved in the past and how various factors came to affect this process of resolution. Also, and equally important, the draft debate of the 1960s had its roots deep in America's past; in the words of one author, "The polemics of conscription abound with reference to history and tradition ...."[4] Not only were

[1] The author is indebted to Geraldine Walter for preparing much of the background information used in this section.

[2] There are a number of excellent references on the subject of conscription. See, for example, John L. Rafuse, "United States' Experience with Volunteer and Conscript Forces," in *Studies Prepared for the President's Commission on an All-Volunteer Armed Force*, Vol. II, U.S. Government Printing Office, Washington, D.C., November 1970; Samuel Huntington, *The Soldier and the State*, Belknap Press of Harvard University Press, Cambridge, Massachusetts, 1959; Robert W. Little (ed.), *Selective Service and American Society*, Russell Sage Foundation, New York, 1969; Walter Millis, *Arms and Men*, Mentor Press, New York, 1952; United States Selective Service System, *A Historical Review of the Principle of Citizen Compulsion in the Raising of Armies*, Special Monograph No. 1, Vol. I, U.S. Government Printing Office, Washington, D.C., 1947; Joseph Duggan, *The Legislative and Statutory Development of the Federal Concept of Conscription for Military Service*, The Catholic University of America Press, Washington, D.C., 1946; and Jack Franklin Leach, *Conscription in the United States: Historical Background*, Charles E. Tuttle Publishing Company, Vermont, 1952.

[3] Actually, the draft was not used for one year following World War II, as the law permitting conscription during the war lapsed on March 31, 1947, and the new law permitting conscription in the postwar period did not take effect until June 24, 1948.

[4] Rafuse, op. cit., p. III-1.1.

"history and tradition" a cornerstone in the arguments of those favoring the draft,[5] they were also central to the case for an all-volunteer military, as volunteer force proponents were quick to cite the long American "tradition" of opposition to conscription.

The Revolutionary War

Any review of conscription in America must begin at Concord in 1775 with "the shot heard round the world," since in many ways, the War of Independence formed the basis of the civilian and military relations that persist to this day. The "armed peasantry" that began the Revolution at Concord redefined the social and political military balance in a uniquely American manner. The concept of the "citizen militia" was born—the idea that to be a citizen of the nation state was to have the right and obligation to bear arms in defense of that nation state. No longer was the military a class apart, its function limited to executing kingly prerogatives; each individual was to share in the defense of his nation. Perhaps Washington's view was most representative:

> It may be laid down as a primary position, and the basis of our system that every Citizen who enjoys the protection of a free Government, owes not only a pro- portion of his property, but even of his personal services to the defense of it.

In this way, the conduct of war and often foreign policy came increasingly within the sphere of influence of the general populace, a heretofore unthinkable situation. This was a major change from the existing 18th century military-political system and a challenge from which that system never recovered. The right and the obligation of citizen participation in armies was to become the future standard of American military tradition.

Also emergent in the Revolution, and at odds with the above, was the long-brooding concept of individual rights against the state. The constant American concern was to be the relation of the individual to the state, along with the relations among individuals. The American government was dedicated to the proposition of individual liberties, and as a result, it concerned itself mainly with limiting government and excluding it as much as possible from the life of the normal citizen. Indeed, the United States was born out of the forceful assertion of the principle of individual liberty. This liberalism was to form the main force of American intellectual and political development; it was truly the "ideological constant."[6]

Prior to the Revolution, the only military manpower plan in the United States was the militia, by which every able-bodied man was considered part of the colonies' "defense establishment." With the Revolution, consolidation into a continental army became necessary. Since the Continental Congress had no legislative power to raise an army, it had to appeal to the separate colonies to fill its manpower needs. The colonies in turn called up volunteers or militia men to fill these requests, sometimes enacting "draft" legislation when insufficient numbers of men were forthcoming. Throughout the Revolutionary period, then, the Congress confined

[5] See, for example, Selective Service System, *Backgrounds of Selective Service*, Vol. II, "Military Obligation: The American Tradition," U.S. Government Printing Office, Washington, D.C., 1947.

[6] An insightful discussion of American civilian and military relations can be found in Huntington, op. cit., from which this term comes.

itself to establishing component parts of the Armed Forces and recommending that they be filled by the states.

After the war, George Washington, in "Sentiments on a Peace Establishment" (1783), suggested a plan whereby each 19 year old would train several weeks for three summers. He felt that this military system would be most beneficial for the new America because these trained men would be available to supplement the regular Army if the need arose. This plan obligated every able-bodied man to serve and was a reflection of the belief that every man *should* serve. The Knox Plan, presented a few years later, also combined the idea of the citizen's right to bear arms with the concept of universal service.

This idea of universal service was accepted in theory but was never implemented. Not only were the states against the idea of universal service, they were too suspicious of standing Federal armies to condone the development of such a potentially overbearing force. In addition, the cost of maintaining such a force would have been enormous. Luckily, the advantage of America's geographical position allowed this view, that "standing armies in time of peace are inconsistent with principles of republican government."[7] Until the next war, then, the states were to provide military manpower *when necessary,* through their militias.

The War of 1812

The War of 1812 is considered by some historians to be an attempt by expansionists to complete the Revolution by taking the Floridas and Canada. The failure of this attempt has historically been ascribed to the inefficiency of dual state and Federal control of the military. Those in power at the time recognized this weakness and presented alternative plans. James Monroe, then Acting Secretary of War, proposed the enactment of the first compulsory selective service law. This plan, in which President Madison requested the authority to draft 40,000 men, was the first executive request for Federal legislation to raise troops by imposing liability for service upon all male citizens.

This legislative request also contained the beginnings of selective service and local draft administration, as well as the idea that military law could be imposed directly on the citizenry *without going through the states.* However, fierce debating about this proposal in Congress delayed action on the request so long that the war had ended before the bill was accepted by both Houses of Congress.[8] Opposition to the war and the possible introduction of the draft became so strong that the New England states refused to raise a militia and, in fact, threatened to secede from the Union.[9] It was therefore not until the Civil War that the first real draft legislation was enacted.

[7] Ibid., p. 144.

[8] It is ironic that the proposal in these draft bills was much closer to a volunteer force than to the post-World War II draft. Basically, the bills would have had 18 to 45 year old males responsible for providing the necessary manpower. Those not serving would have been taxed so that those who did serve would have earned a wage competitive (or at least comparable) with wages in the civilian sector. The only difference between this and the current AVF is that under present law, the entire taxpaying public bears the tax "burden" of paying competitive wages to military personnel. Under the bills in Congress during the War of 1812, this burden would have been restricted to the 18 to 45 year old male population.

[9] The conscription issue was one of several issues which led to the serious consideration of secession by the New England states. The other major issue was opposition to the war itself, and the economic consequences (primarily the effects on trade) that the war was having on New England.

The Civil War

Since the United States had little more than 15,000 regular army troops at the beginning of the Civil War, President Lincoln immediately called for volunteers from the state militias upon assuming office, a call that met with more than adequate response. However, since the call-up was only for three months, per existing Federal law, most troops were marching home by the time of the first battle. The President then renewed the call, this time for three-year volunteers. The response was substantial, providing more than 700,000 men. As a result, the Federal Government, lacking the bureaucratic or physical means to process or maintain so large a number, directed that no new regiments be formed.

A year later, in 1862, the War Department decided that existing forces were sufficient and closed all recruiting offices. But two months later, the Secretary of War ordered the recruiting offices reopened because battle casualties, desertion, and disease had reduced U.S. forces drastically. The initial enthusiasm for the war had worn off in the face of grim reality, so enlistment quotas were filled slowly. This situation led to the passage of the Militia Act of 1862, wherein states were required to furnish men through enlistments or draft if necessary.

There was much outspoken opposition to the Militia Act. The specifics of the act itself were ill-considered. Bounties and paid substitutes were allowed, which therefore destroyed any further volunteer efforts. There was widespread state opposition to the inequities that were created, and eventually this act proved unwieldy and ineffective. To remedy this, manpower procurement was shifted to the Federal Government through the Enrollment Act of 1863. *This was the country's first draft law.*

The concept of a Federal draft, unsuccessful in the 1814 conscription debates, was now forcefully stated in the form of an act that gave the Federal Government authority (overriding that of the states) to draft men as needed. Despite the errors and weaknesses of the legislation, it was the first major step toward the draft system most Americans came to know so well. Under this law, $300 bought an exemption which the Army then used to purchase a substitute. A substitute was also allowed to serve in the draftee's stead, so many wealthy persons paid others to serve for them.

The obvious injustice of this measure incited rioting and violence, which led to a suspension of habeas corpus and widespread imprisonment of dissidents. In order to avoid another outbreak of violence, increased state bounties were offered to help fill the quotas, and "volunteers" were again forthcoming. Intense rivalries developed between communities attempting to attract sufficient volunteers. Prospective volunteers would shop around for the highest bounties, which frequently led to fraud—often ingenious—involving bounty jumpers, bounty brokers, and a host of corrupt local and Federal officials. Throughout the call-ups, bounties were offered, amounting at one point to as much as $1,500. The entire experience was unjust and chaotic, and all concerned were adamant that some other system of raising troops would have to be found for future wars.

For all the shortcomings of the methods of manpower procurement used, the Civil War experience demonstrated that essentially voluntary recruitment methods could be used, even during times when large forces were needed and in the face of adverse circumstances. Only 46,000 actual inductees—2.3 percent of the military manpower raised during the war—were recruited from the 250,000 draft notices issued in the North.

World War I

Except for the short war with Spain, where the popularity and brevity of the war resulted in more than sufficient manpower, there was no need for the United States to consider the question of conscription again until the outbreak of World War I. By 1916, however, war had become a different proposition because of its increasingly managerial and technological nature. This necessitated a different kind of manpower, requiring more lead-in time and training. For the first time, industrial mobilization was necessary to manufacture weapons and machinery based on the new technology, and training was necessary to equip the new managers of the technology.

It was not the outbreak of war in Europe, however, but rather incidents on the Mexican border in 1916 that caused attention to be drawn to the lack of preparedness of the U.S. Armed Forces. As a result, the National Defense Act of 1916 was passed, one of the most comprehensive pieces of military legislation in U.S. history. The Army was reorganized into the Regular Army, the Volunteer Army, the Officers Reserve, the Enlisted Reserve, and the National Guard, and a standing force of 175,000 men was authorized. Less than a year later, America declared war. The National Defense Act contained no provision for compulsory service, so the Congress subsequently (in fact, less than a month after the declaration of war) enacted the Selective Service Act of 1917.

With the disastrous conscription experience of the Civil War still in mind, the author of the Selective Service Act, Enoch Crowder, was careful not to repeat some of the major errors made during that war. To this end, a report written by Brigadier General James Oakes was extremely helpful.[10] An Assistant Provost Marshall General of Illinois, Oakes had administered conscription in Illinois and subsequently had written a lengthy critique. Many of the recommendations of Oakes's report were incorporated into the 1917 Act, the most important being:

> We must depend in every time of national peril not on a standing army nor yet upon a reserve army, but upon a citizenry trained and accustomed to arms . . . a system by which every citizen who will volunteer for the training may be made familiar with the use of modern arms.

Opposition to standing armies was still strong, and in addition, some legislators voiced opposition to conscription on the basis that it was offensive to the American people. Senator Reed of Missouri felt that the mere implication that insufficient men would volunteer was an insult to the "manhood of America." In addition, he said that it was a violation of the American democratic system:

> [Conscription] . . . is not democratic, it is autocratic; it is not republican, it is despotic; it is not American, it is Prussian. Its essential feature is that of involuntary servitude.[11]

Many others shared this view and felt that volunteerism had never been given a proper chance. Grant Hamilton, a representative of the AFL, and Jane Addams of Hull House in Chicago were among those who pleaded in House hearings for a preliminary attempt to raise an army solely through volunteers. Many senators

[10] This report served as the basis of selective service policy in the United States until the introduction of the lottery.

[11] *Congressional Record*, 1913, p. 1084.

and others felt that, given proper cash inducements, young men would willingly enlist for practical and patriotic reasons.

However, the arguments presented in favor of the Selective Service Act were ultimately to win the vote with an overwhelming majority. Duggan neatly sums up the views of the proponents of selective service:[12]

> Cumulatively the Senators in favor of selective service undertook to prove the thesis that, on the one hand, volunteering is haphazard, inefficient, disruptive of industrial and economic stability, wasteful, and operatively unequal in spreading the obligations of citizenship and on the other hand, conscription is the fairest, most democratic, most efficient and most patriotic method of raising an army.

Conscription thus became the basis for *all* enlisted manpower procurement in 1917, since enlistments were halted so as not to disrupt the "orderly" flow of individuals through the draft system. All male registrants were classified into one of five categories according to their "value" to the civil sector. Those individuals deemed most valuable to the civilian sector (generally those with the highest civilian earnings opportunities) were categorized as Class V, while those least valuable were put in Class I. Registrants were then inducted in order of their "value," with those in Class I drafted first. This, of course, led to an overrepresentation of the poor and black, as illustrated by the fact that blacks constituted 9.6 percent of all registrants but accounted for 13 percent of the inductions.

The complete reliance on conscription during World War I made it possible for the Congress to raise a large military force without having to raise military pay correspondingly, as shown in Table 4-1. Whereas increases in military pay helped to inhibit widespread use of the draft during the Civil and Spanish-American Wars, military wages fell more than 10 percent below civilian manufacturing wages during World War I and nearly 40 percent below during World War II.

Thus, the first widespread use of truly national conscription began in 1917, 141 years after the signing of the Declaration of Independence. The effect of the passage of this legislation should not be underestimated, since for the first time the conscious decision was made that voluntarism was not practical. This concept continued to exert its force throughout World War II and into the 1960s.

World War II

In many ways, the debate prior to World War II was a reechoing of 1917, as there was a strong foreign policy aspect to it. Because of the grave threat posed by the war in Europe, a "hemisphere defense" was necessary, and to be totally effective, this strategy would have to be supplemented by a strong element of "preparedness." The country therefore had to begin mobilizing *before* actual war was declared; i.e., a peacetime draft had to be enacted.

The lessons of World War I gave some measure of credence to this strategic viewpoint. The logical result was that a large mobilization effort was deemed necessary. To accomplish this mobilization and at the same time meet both industrial and military needs required a solid organization, such as the proposed Selective Service System. The view that peacetime compulsory service—selective service—was integral to defense had many powerful and vocal supporters.

[12] Joseph Duggan, op. cit., p. 72.

Table 4-1

Comparison of Annual Military Enlisted Earnings with Average Annual Earnings in Manufacturing

Period	Annual Military Pay and Allowances	Manufacturing Earnings	Percentages of Forces Drafted
Civil War (1865)	$ 427	$ 410	2
Spanish-American War (1898)	444	394	0
World War I (1918)	870	980	59
World War II (1945)	1,587	2,469	61
Korean War (1952)	2,584	3,721	27
1960	3,034	5,020	15
1965	3,567	6,130	16

Source: Rafuse, op. cit., p. III-1-41.

Despite the military base of the argument, the most visible supporters of selective service were civilians. Chief among these were Granville Clark and Henry Stimson (later Secretary of War). It was Clark who, with others including Harold Dodds, President of Princeton, and President James Bryant Conant of Harvard, drafted the first selective service bill. This bill, sent to Congress on June 20, 1940, was sponsored by Senator Burke of Nebraska and Representative Wadsworth of New York and was referred to as the Burke-Wadsworth bill.[13]

Much debate centered around passage of this bill. Those in favor of the bill cited the above-mentioned importance of preparing a defense, a view supported by various influential journals. *The New Republic* was representative and succinct in its statement of July 1, 1940: "The primary reason for universal service, whatever else may be said for it, is dire necessity." This view held that the same factors that were so important in World War I—i.e., the coordination of manpower to meet both industrial and military needs—were important now and that if America became involved in the war, only by registering and cataloging all available manpower could the most efficient use be made of human resources. As in World War I, the increasing mechanization of war required increased industrial production, manpower training, and long-range planning, since no longer would a war be lost or won by an enthusiastic but untrained and unprepared militia. Those having this pragmatic view of the situation felt that conscription through selective service was the only way to prepare for our inevitable entry into war.

Supporters of conscription marshaled other important arguments for their cause. The then present-day experience was pointed to as a proof of the inadequacy of volunteerism, though there is some question about the validity of this "proof." All quotas were filled. The Army maintained that they were setting quotas especial-

[13] The 1940 draft law had two particularly interesting features. First, as with World War I conscription, the law explicitly prohibited the payment of bounties and the use of substitutes. Second, conscripts could be forced to serve for only one year and only in the Western Hemisphere or in U.S. territories and possessions (reminiscent of the militia laws during colonial times).

ly low, since they could not expect to achieve the "true" quotas, although this was never demonstrated. In addition, emphasis on the duty of the citizen was generally stressed by military and government officials, those most closely involved with manpower planning or practical considerations. Obviously, the strengths of this argument lay in the belief, generally held by proponents of selective service, that under conscription, all eligible men would in some way serve.

On the other side of the argument, those who advocated citizens' rights as regards the state tended to emphasize opposition to governmental interference, especially *peacetime* conscription. Interestingly enough, the arguments and points brought to the fore by this group (which consisted mainly of elected officials, educators, and pacifist organizations) were many of the same ones that were later quantified and polished for the final AVF debate of the 1960s.

The arguments against the Burke-Wadsworth Bill represented an interesting combination of ideological and pragmatic considerations. On September 6, 1940, Senator Robert Taft of Ohio stated on a national radio broadcast:

> The draft . . . is absolutely opposed to the principles of individual liberty which have always been considered a part of American democracy. This country has always been opposed to a large standing army.

In this, he reiterated the traditional American stance toward the military, in which it is considered at best an unwanted necessity.

The same "ideological constant" was echoed in the "Declaration Against Conscription" authored by the Committee on Militarism in Education, which was signed by 299 prominent educators in July 1940. A month later, the "Lawyers to Keep the United States Out of War" submitted a brief to the Federal Government on its right to draft. They maintained, through historical and legal argument, that with respect to conscription the Federal Government had

> . . . no inherent power, no express power, no implied power and that such power is incompatible with the general nature and object of the Constitution.

The majority of arguments against conscription reflected this liberal philosophical base. They emphasized the Bill of Rights, individual liberty, and historical tradition. United States foreign policy was viewed through this same ideal: It was considered best to leave others alone, with the result that isolationism and neutrality were perceived as best serving the American interest. Burton Wheeler, an isolationist Senator from Montana, stated this viewpoint as follows:

> The democracy which we hail in our country . . . means different things to different people; but it is certain that to every one of us democracy means at least the right to choose freely our own occupations and to conduct our lives with the greatest amount of freedom consistent with the general welfare . . . the essence of democracy is to leave the individual unmolested in the enjoyment in the words of a declaration promulgated by great Americans of the "inalienable" rights of life, liberty and the pursuit of happiness.

Although of secondary importance to the debate at this time, practical arguments were also put forth. In one of their journals, the *American Federationist*, labor unions came out strongly against conscription on broadly stated economic grounds. Their position was that compulsory conscription of millions of soldiers was wasteful and extravagant and not yet needed. It would destroy the structure of the

unions in such a way that they might never recover, even after a war. They felt that such questions as Social Security, restitution of position, and seniority of conscripted men had never been clearly answered, certainly not to their satisfaction. The actual pay of conscripts was another unanswered point, since the unions felt that adequate pay for men subjected to military service was an essential factor in any selective service program.

Labor was primarily concerned with practical considerations and plans, or the lack thereof. The labor unions were concerned lest their interests be damaged in a hasty, ill-conceived call to military service. The prevalence of this concern can be seen in another Senate speech by Taft of Ohio:

> The principle of a compulsory draft is basically wrong. If we must use compulsion to get an army, why not use compulsion to get men for other essential tasks? Why not draft labor for [essential] occupations at wages lower than the standard? . . . In short, the logic of the bill requires a complete regimentation of most labor and the assignment of jobs to every man. This is actually done in the Communist and Fascist states which we are now apparently seeking to emulate.

This kind of argument, placing practical considerations in the shadow of larger ideological issues, is characteristic of the debate of the 1940s. That the debate was basically unresolved is apparent in the passage of the Burke-Wadsworth Bill by *one* vote, though this lack of resolution of course became moot on December 7, 1941, with the attack on Pearl Harbor.

Pearl Harbor immediately changed the mood of the Congress and the country. Philosophical, historical, and economic arguments against conscription lost all relevance in the face of obvious and imminent peril. On December 13, 1941, territorial restrictions on the use of conscripts were abolished, and the term of service was lengthened to the duration of the war plus six months afterwards. A week later, eligibility for conscription was extended from 18 to 31 years to 18 to 44 years of age. In 1942, all men between 18 and 65 were required to be registered. By 1943, in order to better control and organize crucial production needs, no volunteers were being accepted. The induction process was totally responsible for military manpower procurement as it had been in World War I, and for the rest of the war a variety of regulations and deferments were enacted to meet specific industrial and military needs.

Thus, by the end of the largest war in the world's history, conscription had become truly integrated into American society and a supposed obligation for all citizens was apparently accepted (though it should be noted that only 16 million of the 45 million registrants actually served).

In August 1945, the Japanese surrendered. The draft continued for 18 months after the war had ended and was allowed to lapse in March 1947. However, this lapse was to be just that, a brief pause in the 25 years of uninterrupted conscription to follow.

Post-World War II

The draft law expired 1½ years after the war officially came to a close. However, an increasingly tense international situation, coupled with a seeming inability to recruit enough volunteers, persuaded President Truman to request a reenactment of the draft in 1948.

Very solid facts argued for a larger standing army than the United States had ever previously maintained, since Germany and Japan were to be occupied and new bases in the Pacific had to be staffed. In addition, the European situation had worsened. America was emerging as a significant world power in counterbalance to the obviously hostile Soviet Union. Added to this was the change in warfare itself that required more sophisticated weapons and the trained personnel to man them. The organization of this "new" military was problematic, but the general consensus among those involved was that it would have to be big. The required size, it was felt, could not be achieved solely through volunteers.[14] Many pointed to the 1947 experience, when volunteers were insufficient to meet manning levels, as proof that in the post-World War II situation conscription was a necessity.

Those favoring continuation of the draft again, predictably, spoke from a more practical podium. They pointed to the position America would have to take in the future and the necessity of maintaining vigilance. Persons of diverse backgrounds shared this view, as would again be the case in the 1960s. Charles Seymour, then President of Yale, stated:

> . . . Unless we set up a system of guaranteeing complete adequacy for any reasonable contingency, we shall, as in the past, find ourselves without any preparation at all. We may be sure that for many years the state of world confusion will be such that it is better for us to be overprepared than underprepared.

Many other educators agreed with Seymour. In addition, they all seemed to ascribe to military training a certain beneficial moral influence and enlightening social experience.

Others were less interested in social objectives, being instead primarily concerned with preparedness. To this end, they supported universal military training. As historian W. F. Tompkins put it:

> The fact remains that generation after generation, we have paid an unnecessarily high price in blood for the doubtful privilege of military improvisation. It is a historical fact that until the time of World War II, the U.S. has consistently failed to make adequate preparation, even on the eve of battle, for the military implementation of the national will.

Henry L. Stimson, Secretary of War, shared this view. Indeed, many proponents of universal military conscription seemed to base their ideas on a view of the world which saw wars as unavoidable. As Stimson stated:

> If as history shows, wars recur, we owe it to our young men to provide a system of military training in peacetime . . . . In the future, we may again be forced to send our young men into combat against armies of sudden aggression. We have no right to gamble on the hope that our country, for the third time, will have even the little breathing space she has had in these two wars for hasty preparation. We have fully experimented with unpreparedness as a means for avoiding war. It has not prevented war and has led to staggering costs and sacrificed lives.

It is interesting to note that in the immediate postwar debate the issue at hand was *universal military training*. Much as George Washington had done almost 200

[14] Note the importance of the population base, for not only was the number of men in uniform required to be large, but, as shown in Fig. 3-2, about 75 percent of all young men would have to serve, simply because of the limited number of young men of military age.

years before, advocates of UMT pointed out the responsibility of *every* male citizen to assist in providing for the common defense. The new technology and the vastly different international situation certainly disallow an exact comparison with Washington's Revolutionary War, but the similarity of the political and philosophical issues is interesting. There were those who felt that every (male) citizen should bear responsibility for mutual defense, while others were concerned lest this (governmentally defined) responsibility infringe on individual liberty.

The dominance of one view over the other was mainly dictated by outside circumstance. The more obvious the necessity, whether apparent through threat or real during actual war, the more likely that the military view would prevail. This was the situation before both World Wars and after World War II.

Another point of similarity between World War I and World War II was the totality of commitment. In both these wars, there was total mobilization of military and industrial resources. Everyone was involved in the war effort. That this sense of national commitment was not present in the two succeeding wars contributed, with other factors, to the increasing dissatisfaction with the Selective Service System during the 1950s and 1960s.

The main dissatisfaction came from the fact that it was just that, a *selective service* that spread the burden of military service quite unequally, perhaps even unfairly. But it must be remembered that selective service was not the point of debate after World War II. Universal military training was the issue at hand. Had the proponents of UMT been able to foresee the reality that would result—i.e., selective service for progressively fewer "selectees"—their support might have been less unequivocal, or at least ways for distributing the burden more fairly might have been developed.

Those against UMT spoke out for values of individual choice. They challenged the real necessity of military preparedness, maintaining that the solution to international problems lay elsewhere. As Grayson Kirk, Professor of Government at Columbia, stated:

> . . . These considerations suggest the conclusion that the fundamentals of our future security are essentially *political* rather than military. Skillful statesmanship supported by a reasonably strong force in being . . . gives us the maximum likelihood of future security. For this combination, the strongest standing military force alone is not a satisfactory substitute.

Senator Taft again led the more pacifistic and perhaps idealistic opponents of compulsory military training. In an address in May 1945, he reiterated his stance:

> Military conscription is essentially totalitarian . . . because it is the most extreme form of compulsion, military conscription will be more the test of our whole philosophy than any other policy . . . . It is against the fundamental policy of America . . . and if adopted, will color our whole future.

In addition, Taft and others felt that the military should be made a sufficiently attractive occupation to enlist enough volunteers to meet military needs. In this way, the military purpose would be served with no loss of personal liberty. Unfortunately, this was never seriously considered.

LESSONS FROM THE PAST

It is always difficult to draw lessons from the past, and the history of conscription in the United States offers no exception. Substantial changes have taken place in the political, economic, and military circumstances facing the United States, while technology and management become increasingly important in every phase of American life, including warfare. Indeed, so rapid, so numerous, and so profound have the changes been that they have frequently overridden the importance and relevance of history and tradition.

Yet, certain basic themes do emerge. Chief among these is the inherent *liberalism* of the American people, tempered by a considerable *practicality*. The antipathy toward large standing armies, the insistence on civilian control, and the avowal of individual liberty are all manifestations of the former, while the search for reasonable compromise and the willingness to bear hardship for the national good are illustrative of the latter.

These basic themes keynote much of the American experience with conscription. America was founded at least partially on the notion that individuals should be free to choose their own destiny, which logically includes the right of individuals to choose their own occupation, unencumbered by governmental interference. Similarly, the notion of "just compensation" has been a hallmark of American political and social belief. The founding fathers recognized, however, that to be a viable nation state, the government also had to have certain rights, including the right to property and person. This right, however, was not that of totalitarian confiscation used in many other nations of the world, but rather the result of reasoned discourse between the nation's citizens and its government. In fact, what is perhaps most interesting is the confluence of individual rights and state rights, as illustrated by the coupling of the *right* to bear arms and the *obligation* to bear arms in the nation's defense.

The historic American attitude toward conscription reflects these basic themes. Although conscription can hardly be viewed as an integral part of American tradition—voluntary recruitment methods have dominated the course of American history—military (and militia) service and conscription have played a key role at various crucial moments, particularly since 1940. Thus, idealism and liberalism, balanced against the practical needs of the nation, have set the basic tone for the use of conscription.

The dominance of volunteerism in the United States stems principally from doubts about maintaining large standing armies and from opposition to conscription itself. American skepticism of large standing armies extends back before the Revolutionary War, as the colonists had witnessed what happened under the large standing armies of Cromwell, Charles II, and James II of England. Early Americans chose instead to rely on local militia; even during periods of war, such as the War of 1812, it was each state's responsibility to raise sufficient manpower through the militia. That reliance contributed significantly to the historical reluctance to impose a draft, since without large standing armies, there was no need for conscription.

There was also strong opposition to conscription itself, based largely on opposition to taxation without representation and on the belief in free choice. Conscription was quite rightly viewed as imposing a tax on those who were forced to serve, many of whom could not even vote.

Given this historical opposition to the draft, where did the notion of the "citizen-soldier" and the "tradition" of the draft arise? Alternatively, if opposition to conscription has been such a part of U.S. history, how and why did the draft ever come to be used, particularly in the "peacetime" conditions following World War II?.

The confusion about the history and tradition of the draft in America probably comes from the distinction between nationwide conscription and the *militia*. From its very inception, the United States has obliged all able-bodied males (within certain age limits, usually 18 to 45) to belong to the militia. In fact, the National Defense Act of 1916, which is still in effect today, specifies that every able-bodied male between 18 and 45 belongs to the militia, either the National Guard, the Naval Militia, or the Unorganized Militia.[15]

The use of this argument as a basis for a national draft is misdirected, however, since the principal purpose of the militia has historically been to provide *local*, or home, defense, while national conscription has historically been used (or proposed) for raising an army for other purposes as well. The value of militia for other than home defense, however, is open to some question:

> The militia proved less useful when they were not fighting directly and obviously in defense of their own homes. The New England expeditions that took Port Royal in Acadia in 1690 and 1710—facing weak opposition—and the famous expedition that seized the fortress of Louisbourg in 1745—despite much stronger opposition—were exceptions. In general, the colonial militias were not a reliable instrument of offensive war distant from their own firesides.
>
> The reasons are evident. Few men came to America to be soldiers. More likely, they came in part to escape soldiering. They would fight when they had to, to preserve the homes and farms and way of life they had crossed the ocean to find. But they did not wish to abandon homes and farms for months or a season, to go off soldiering in pursuit of objects only remotely connected with their own aspirations or security. Militia training did not prepare them for extended campaigns, nor did militia organization befit the maintenance of long expeditions. A long campaign to distant fields that also involved meeting Indian tactics of stealth and ambuscade was a campaign for which colonial militia, except units recruited from frontiersmen, were especially unsuited. When the French and Indian War demanded such campaigns, the militia system did not suffice. Therefore, regiments of British regular army appeared in America, to fight the French and their Indian allies and to add their contribution to the influences that were to shape the United States Army.[16]

The militia was therefore never envisioned as a national army or for engaging in "foreign" wars and, moreover, when it was called upon to serve in such a role, its performance was often far from exemplary.

For the most part, history seems to tell us that there has been a basic tendency for America to rely on volunteerism when *practical*. However, when it has not been practical, such as during World War II, the nation has resorted to conscription. This

[15] In a sense, this couples the right to bear arms guaranteed by the Bill of Rights with the obligation to bear arms in the local defense. Though it never became law, the Knox Plan (named for its author, Henry Knox, Secretary of War under President Washington) would have explicitly tied together citizenship with participation in the militia.

[16] Russell F. Weigley, *History of the United States Army*, The MacMillan Company, New York, 1967, pp. 11-12.

was particularly the case following World War II, when U.S. defense policy, for the first time in a "purely" peacetime setting, called for the maintenance of a large standing army. As shown in Fig. 3-2, it simply was not practical to attract sufficient volunteers to man the postwar military, since about 7 out of every 10 eligible members of the pool would have had to volunteer. It is notable, then, that the very reason the postwar draft was instituted—the relation of manpower demands to the available pool—was also the reason for its demise.

INTERNATIONAL PERSPECTIVE

Just as the general issues and questions about the military and manpower procurement that surfaced in postwar America are not entirely unique when viewed in the broader context of American history, neither are they unique with respect to the practices, problems, and policies of manpower procurement found in other nations. To be sure, different policies are used in different countries, because of differences in supply conditions, force requirements, and budget constraints, as well as differences in social and political attitudes. Yet a common thread does run through all of them.

Of particular concern to the draft debate of the 1960s was the fact that the conditions that led to the removal of the draft in the United States were likewise asserting themselves in other nations. The equity issue, coupled with the simple demographics of a growing population base, was the major factor in the decision to abolish peacetime conscription in America. This same problem developed in most of the industrialized Western nations, yet the solutions to the problem varied markedly by country.

An examination of the international experiences with different procurement policies helps to put the American volunteer force into perspective. Although volunteerism is found in a variety of settings, the U.S. volunteer experiment is in many respects unique. Moreover, since some nations have resolved the equity issue by means other than ending the draft, a review of these alternatives illustrates why the draft may have been an attractive alternative for them, but not for the United States.

We can begin by examining the frequency of occurrence of volunteer and draft methods of manpower procurement across countries. In general, we would expect any given country's tendency toward using the draft to be a function of the budget costs required to support a volunteer military. Other things equal, a country will be more inclined toward conscription as the budget costs of a fully volunteer military increase. Of course, other factors such as the use of conscription as an element of social policy are also significant,[17] but budget considerations will always be a very important determinant of public policy.

The budget costs required to support a volunteer military depend on the supply of volunteers. The supply of voluntary manpower is certainly a function of many factors, such as patriotism, the popularity of the military, and other nonpecuniary aspects of military service. Although these factors and their importance may vary substantially across countries, two of them are likely to be important in almost all countries: (1) the number of volunteers required and (2) the availability of attrac-

[17] Such is likely to be the case in much of the Communist bloc.

tive civilian employment offers. To attract more volunteers, the military must offer more, whether in cash or nonpecuniary incentives (e.g., better working conditions); that is, the supply curve is upward sloping as a function of pay and other rewards to serving. Furthermore, when the returns from civilian employment are larger, the military will have to offer more to compete effectively against civilian employers. A volunteer military is likely to be more costly to maintain in countries where force requirements mean that a larger fraction of the population must serve and where more attractive civilian employment opportunities exist, other things being equal. In the absence of precise data on the flow demand for manpower relative to the eligible population base and on the civilian employment alternatives for each country's youth, we must resort to some proxy measures: (1) the percentage of the total population serving in the military and (2) the per capita GNP.

The data based on these proxy measures, shown in Table 4-2, help to explain much of the variation in manpower procurement policies as used by different countries. Although conscription remains the predominant method of manpower procurement, a number of countries have had for some time or have recently adopted volunteerism instead of the draft. But, with the exception of the United States, these countries are either poor (e.g., Jordan) or have small forces (e.g., Canada), or both (e.g., India). Thus, the poorer the nation and the smaller the force, the easier it is to attract a sufficient number of volunteers.

If the military pays better than the civilian sector, and if the civilian sector is at or near a subsistence standard of living, the military finds it much easier to attract potential recruits. Such conditions have made many military establishments able to rely on volunteers alone—in fact, countries with these conditions have usually had large queues waiting to join the military. When the standard of living is higher, the military finds it more difficult to recruit personnel without the pressure of the draft, not necessarily because military service is inherently unattractive, but because it must compete with many employers.

As shown in Table 4-2, none of the major advanced nations employing a voluntary military—Australia, Canada, Great Britain, and Japan—maintains a force anywhere near the size (either in total numbers or as a fraction of the population) of that maintained by the United States. Of the five other nations shown to have a volunteer military, three also have only a small proportion of their population in their Armed Forces. The two nations that have a higher percentage of their population in the military than the United States have a standard of living much closer to a subsistence level, as measured by GNP per capita.[18] Thus, only a relatively few nations man their Armed Forces without conscription, and of those, only the United States both maintains a large force and enjoys a high standard of living.

Turning to the equity issue, which is somewhat more germane to the debate of the 1960s, the international comparisons provide valuable insights into the reasons why the solutions chosen by some countries may not be appropriate for others. Of

[18] By the measures shown in Table 4-2, Libya would seem to be an exception to the above statement, since a large proportion of its population is in the military and it has a sizable GNP per capita (relative to the other Arab nations). However, this apparent exception is in fact a result of the shortcomings of GNP per capita as a measure of the standard of living. In nations such as the United States where the wealth is reasonably well distributed across all citizens, GNP per capita is a reasonably good measure of the (relative) standard of living, but when the wealth is not well distributed, the median standard of living will be well below the measured GNP per capita. Such is the case for Libya, since most of Libya's wealth derives from oil interests and is concentrated in a relatively small segment of the population.

Table 4-2

Military Forces in Selected Countries: 1975-1976

Country[a]	Force Size[b] (000s)	Population (millions)	Population in Military Service (percent)	GNP Per Capita[c] ($ U.S.)	Type of Military Service[d]
United States	2,130	216	0.99	6,475	Voluntary
Canada	77	23	0.34	4,610	Voluntary
Belgium	87	10	0.88	5,507	Draft: 10-12 mos.
Britain	345	57	0.61	3,333	Voluntary
Denmark	34	5	0.74	6,709	Draft: 9 mos.
France	503	53	0.96	5,161	Draft: 1 yr.
Germany (FRG)	495	63	0.79	6,211	Draft: 15 mos.
Netherlands	112	14	0.82	5,117	Draft: 16-21 mos.
U.S.S.R.	3,575	253	1.41	2,572	Draft: 2-3 yrs.
Germany (GDR)	143	17	0.84	2,376	Draft: 18 mos.
Hungary	105	11	0.97	1,807	Draft: 2 yrs.
Poland	293	34	0.87	1,811	Draft: 2-3 yrs.
Egypt	322	38	0.86	477	Draft: 3 yrs.
Iran	250	33	0.75	1,072	Draft: 2 yrs.
Israel	156[e]	3	4.64	3,482	Draft: 24-36 mos.[f]
Jordan	80	3	2.94	366	Voluntary
Libya	32	2	1.38	2,543	Voluntary
Saudi Arabia	47	9	0.53	1,347	Voluntary
Syria	178	7	2.41	393	Draft: 30 mos.
Australia	69	13	0.53	5,611	Voluntary
China (PRC)[g]	3,250	850	0.38	200	Draft: 2-6 yrs.
China (Taiwan)	494	16	3.00	809	Draft: 2 yrs.
Japan	236	115	0.21	4,174	Voluntary
Korea (So.)	625	341	1.82	509	Draft: 30-36 mos.
India	956	602	0.16	144	Voluntary
Thailand	204	40	0.51	287	Draft: 2 yrs.

Source: *The Military Balance 1975-1976*, International Institute for Strategic Studies, London, 1975.

[a]Countries were selected to provide a representative cross-section of population sizes, force strengths, service obligations, and wealth. The large representation of Middle East nations appears because of the number of countries with a volunteer military; an attempt was made to represent a variety of major voluntary military systems.

[b]Force size generally refers to regular forces.

[c]Estimates of 1974 GNP in $ U.S.

[d]Type of military service refers to whether or not conscription is used. The times shown here give the length of time a conscript is obligated. Ranges on the obligations refer to the fact that a conscript's obligation depends on his particular service.

[e]Represents 30,000 regular forces and 85,000 conscripts in service at any one time. In addition, 300,000 reserve personnel can be mobilized within 72 hours.

[f]Men are obligated for 36 months; women for 24 months. In addition, individuals are required to participate in annual training (after leaving the military) until a specified age limit.

[g]Estimates for China (PRC) are extremely approximate. Population is estimated between 750 million and 850 million. The GNP estimate of $170 billion is based on a speech by the Prime Minister. Other estimates for 1972 GNP have ranged between $120 billion and $220 billion.

particular interest in these comparisons are the countries of Western Europe, especially the NATO nations in Central and Northern Europe.[19,20] These countries are social democracies with cultures and traditions broadly similar to those of the United States; they have faced the same general problem of a growing population base and constant or moderately declining force sizes over the postwar period; and, by their agreements with NATO, they all maintain roughly the same size forces, expressed as a fraction of the population base.

In each of these countries, the inequities imposed by conscription—together with the fact that a growing population base was making it impossible for all in the relevant age group to share this burden equally—became a major public concern. In fact, the equity issue has probably received more attention and concern in most of these European nations than it ever did in the United States. Given the problem of a growing population base and constant or declining force strengths, there are essentially four options for dealing with the equity issue: (1) end the draft altogether; (2) decrease the length of time a conscript must serve; (3) devise an offset procedure where those who are inducted receive some special or extra compensation, while those who are not inducted must pay a special tax; and (4) ignore the problem. Each of these options has been used by some countries. For example, the United States followed the fourth option until 1973, and then the first.

Britain's experience is probably the best known, as its transition to a volunteer force was cited frequently during the U.S. draft debate of the 1960s. A 1957 British White Paper announced Britain's intention to end the draft and, in 1961, the British officially converted to a volunteer military. Britain, however, was the only major European country to follow this route; the others have all retained conscription.

Of the remaining options, the most generally popular—and the one usually implemented first—has been a reduction in the length of time a conscript must serve. By decreasing the length of service, the flow-through can be increased, for a given force size, so that a larger number of individuals participate in the military. As shown in Table 4-3, there has been a clear trend toward reducing the length of service for conscripts since the mid-1960s. For example, the length of a Danish conscript's tour, which was 14 to 20 months (depending on the specific service and rank) in 1964, was reduced to 9 months by 1975.

In general, the conscription tour can be set so that all members of the age cohort serve, since as the population base grows, the length of the tour can be shortened sufficiently that all in the age cohort bear the same burden. At the same time, shortening the tour length is not costless. With shorter conscription tours, more individuals must be trained, there is more down time (e.g., check-in and check-out), and those in the force are less experienced. Each of these factors impairs military capability—seriously, if the tour is short enough. Thus, an inductee's tour was set at two years in the postwar United States, despite the fact that this meant a smaller proportion could serve. The rationale was that a shorter tour simply meant too much unproductive time and was not cost-effective.

[19] Although it might seem logical to include Australia and Canada, because of their similarities to the United States, both of these countries have long relied on volunteer forces (Australia did return to the draft for a while in the 1960s but removed it again). Thus, the equity problem did not become a major policy issue during the 1960s, since both countries had implicitly resolved it before it arose.

[20] In particular, Belgium, Britain, Denmark, France, West Germany, the Netherlands, and Norway. Although France is not militarily part of NATO, France was included because of her general similarity to the others.

Table 4-3

Minimum Length of Service for Conscript Forces in Western Europe[a]
(months)

	1964	1968	1972	1976
Belgium	12	12	12-15	10-12
Denmark	14-24	12-14	12	9
France	18	12-15	12-15	12
Germany (FRG)	18	18	18	15
Italy	18-24	15-24	15-24	12-18
Netherlands	20-24	16-21	16-21	16-21
Norway	16-18	12-15	12-15	12-15
Sweden	10-22	10-23	9-15	9-15
Average[b]	17.9	15.6	15.1	13.2

[a]The length of commitment in some countries is a function of the Branch of Service or rank (e.g., privates, NCOs, and officers). Where there are differences, minimum LOS are presented as ranges.

[b]A simple unweighted average.

SOURCE: The International Institute for Strategic Studies, *The Military Balance*, London, selected years.

As the countries on the Continent reduced tour length, they began to approach the point where it was no longer feasible to maintain a conventional standing army. Some—most notably Denmark, the Netherlands, and Norway—chose a different route, somewhat similar to the Israeli approach.[21] These countries view the conscription tour as a means for providing training, so relatively little time is spent in regular units. Upon completion of this tour, the individual rejoins the civilian sector but is a member of the reserves.[22] Because of the relatively small area of each of these countries, their reserves can be mobilized rapidly (at least in theory).[23] Thus, they have dealt with the selection problem by moving from a system of universal military service to essentially one of universal military training.

As Germany is the main front in Central Europe, the Germans have been in a somewhat different position. Operating under the assumption that universal military training alone would not provide sufficient security, they have been reluctant to reduce the conscription tour below 15 months. As a result, the equity and selection problem has arisen anew and has received much attention in the German literature. To deal with it, the Germans essentially try to alleviate the burden for

[21] However, the Israelis have adopted this approach for other reasons—because of scarce manpower, not surplus manpower.

[22] This is not altogether unlike the Selected Reserves in the United States.

[23] Of these, perhaps the best known are the Dutch RIM battalions. Under the RIM concept, units serving together during their tour of conscription would, if the occasion arose, be mobilized together to serve in the same units again, after their tour. See, *Om De Veiligheid Van Het Bestaan: Defensiebelied in De Jaren 1974-1983*, The Hague, July 1974.

those forced to serve. For example, conscripts are given three months of free (civilian) training at the completion of their 15 months of service.[24,25]

Finally, France uses a system of universal service where conscripts spend one year in the military. However, French conscription policy would seem to be motivated as much by political reasons as social reasons. The French military was more professionally oriented before the Algerian uprising, a fact which was at least partially held to blame for the military's political involvement during the Algerian episode. The mixing of the military and politics served to remind the French of the dangers of a professional elite, and as a result, the French sought to depoliticize the military as much as possible. One of the methods for doing so was a heavy reliance on short-term conscripts—about 65 percent of the French forces are conscripts—and hence, the integration of political and social policy.

We thus find two general approaches to the manpower procurement problem in the Western developed nations: (1) the Anglo-American model of voluntary military service, the major examples being the U.S., British, Australian, and Canadian systems; and (2) the Continental model of conscription, generally modified so as to approach universal service (or training). For the United States, universal service was not practical (nor was it deemed politically necessary), yet the inequities of conscription posed major social policy questions. As a result, the thrust of public policy began to move toward ending the draft, much as it had in Great Britain 10 to 15 years earlier.

THE ALL-VOLUNTEER FORCE IN PERSPECTIVE

The discussion in this chapter has examined the move to end the draft in terms of the major issues responsible for the removal of the draft, the character of the debate of the 1960s, and how these fit into the broader context of American history and the experiences of other nations. Of all the issues discussed and raised, though, perhaps the most important and relevant for the 1970s are those related to the uniqueness (and lack thereof) of the AVF:

- As a concept, volunteerism is far from unique in the military, either in the United States or in foreign nations. In fact, volunteerism has more of a tradition in the United States than conscription.
- The AVF as a specific institution at a specific time is unique both historically and by the standards of other nations. Never in modern history has a nation maintained such a sizable military force without the threat or use of conscription.

We can put the latter point in some perspective by considering the British experience in more detail. When the British removed their draft in 1961, there were 700,000 men in the Armed Forces. However, force strengths were programmed to

[24] One result of this is that German conscripts are officially in the military for 18 months, the last three of which are spent in civilian training. But they can be called back into military service during this three-month period, even in the absence of a full-scale mobilization.

[25] To further deal with the equity problem, there was a proposal in the early 1970s to give a 1500 DM tax credit to conscripts at the completion of service; conversely, those not serving would have been subject to a special 1500 DM tax levy. Due to political opposition and to the difficulties of administering such a system, however, this proposal was never adopted.

decline so that by 1975, British Armed Forces numbered about 350,000—50 percent less than when their draft was ended. The British experiment was therefore aided not only by having to maintain a smaller force, but by rapidly declining force strengths during the process of transition. In the United States, however, force strengths declined only modestly after the draft was removed—from 2.35 million on December 31, 1972, to 2.13 million on December 31, 1974. In sum, achieving and maintaining the AVF is clearly a public policy experiment of major proportions.

Chapter 5

THE ECONOMICS OF PEACETIME CONSCRIPTION[1]

Conscription essentially provides a vehicle for reducing the budget cost of military labor and, as such, can be viewed as an instrument of economic policy. Even when the use of conscription is motivated by seemingly noneconomic reasons, such as the desire to have a socially representative military, many of the major issues are still economically based. That is, the draft affords society the opportunity to bypass standard market allocating mechanisms, and in doing so raises a number of economic questions.

This is not to imply that the selection of a particular method of manpower procurement is based only on economic reasons. Rather, it means that the use of conscription has significant economic consequences for the military and for society in general—especially during peacetime conditions. For example, draft legislation enabled the military to pay less than the market wage for military personnel, so that budget expenditures for manpower understated the "true" cost of manpower. The result was to encourage inefficiencies in the utilization of society's resources. These inefficiencies show up in a number of ways, including the "conscription tax" and the costs of collecting that tax, a perhaps undesirable redistribution of income, restrictions on labor mobility, and excessive personnel turnover rates.

Because of the breadth and magnitude of these economic consequences, the subject has been examined at some length in the literature.[2] The purpose here is to put some of these previously raised issues into perspective by focusing on the key economic aspects of conscription, particularly as compared with voluntary military recruitment, and to raise some new issues.

These economic issues are central to the theme of this report because they played an important role in the ultimate decision to end the draft; therefore, by building on some of the basic concepts discussed in Chaps. 3 and 4, we can gain additional insight as to why the draft was terminated. In addition, the draft inspired a wide range of management and utilization patterns that may not be appropriate for a volunteer environment. By systematically examining the economics of conscription, we can lay the groundwork for evaluating the appropriateness of current manpower policy for the post-draft era.

[1] As demonstrated in the last chapter, wartime conditions introduce many other considerations into the policy problem. However, this chapter is limited to analysis of the economics of maintaining an effective military force under peacetime conditions, presumably the U.S. policy problem for the 1970s and 1980s.

[2] See, for example, Stuart H. Altman and Alan E. Fechter, "The Supply of Military Personnel in the Absence of the Draft," *American Economic Review*, May 1967, pp. 19-31; Steven L. Canby, *Military Manpower Procurement*, D.C. Heath and Company, Lexington, Massachusetts, 1972; Anthony C. Fisher, "The Cost of the Draft and the Cost of Ending the Draft," *American Economic Review*, June 1969, pp. 239-254; W. Lee Hansen and Burton A. Weisbrod, "Economics of the Military Draft," *Quarterly Journal of Economics*, August 1967, pp. 395-421; Walter Oi, "The Cost and Implications of an All-Volunteer Force," in Sol Tax (ed.) *The Draft*, University of Chicago Press, Chicago, 1967; Walter Oi, "The Economic Cost of the Draft," *American Economic Review*, May 1967, pp. 39-62; and Larry A. Sjaastad and Ronald N. Hansen, "The Conscription Tax: An Empirical Analysis," in *Studies Prepared for the President's Commission on an All-Volunteer Armed Force*, U.S. Government Printing Office, Washington, D.C., 1970.

Following Hansen and Weisbrod, we may think of the economic impact of alternative methods of manpower procurement in terms of "distributive" effects and "allocative" effects.[3] By distributive effects, we mean how the burden of maintaining a military labor force is shared by the various members of society; by allocative effects, we mean the real resource cost of maintaining a military labor force. The key economic issues thus center on how these effects differ according to the method of manpower procurement.

This chapter begins with the development of a general analytic framework for measuring the resource cost of military manpower. This framework will then be used to measure some of the allocative inefficiencies generated under alternative methods of manpower procurement, particularly in the utilization of labor under draft and no-draft methods and restrictions on labor mobility. We shall then consider some of the distributive effects—the conscription tax and the redistribution of income caused by the draft. The chapter concludes with a comparison of the economic and budget costs of manpower.

ECONOMIC COST AS A POLICY CRITERION

Chapter 2 demonstrated that cost has become an increasingly important issue in defense manpower. Although economic considerations are not the only input to the ultimate policy decision, the resource and cost implications of the various policy options do play a central role. In other words, the choice of public policy (e.g., whether or not to end the draft) is influenced by the amount of resources used by each policy alternative, so identifying these real resource costs is crucial if the proper policy choice is to be made.

There are several ways of viewing and measuring cost, two of which are particularly important in the case of defense manpower. The first, and more-or-less standard measure, is the budget cost (or budget expenditures), which reflects what the general taxpaying public pays, in the form of taxes, to maintain a military labor force.

The second measure—less visible, but equally if not more important from the public policy perspective—is what we can refer to as the *economic cost* of defense manpower, by which we mean the value of labor resources used in the defense mission. That is, maintaining a military labor force results in an opportunity cost to the civil sector, a cost that reflects the "value" of this labor as it could be used in other activities.

The distinction between economic and budget costs of defense manpower is particularly important during periods of conscription, since, as we have noted, the draft enabled the military services (and hence the general

taxpaying public) to pay less than the market wage for military personnel, especially for those in their first tour of duty.[4] Budget costs in this instance are thus

[3] Even though Hansen and Weisbrod develop this same basic framework, their interpretation of these terms (at least in their explicit discussion) would seem to be much more narrow than the definition presented here. See Hansen and Weisbrod, op. cit.

[4] Conversely, if the government paid more for military labor than necessary (whether for political, social, or other reasons), the budget costs would overstate the amount of society's real resources devoted to defense. As demonstrated by some recent unpublished research conducted by Cheryl Cook at The Rand Corporation, this appears to be the case in Great Britain and Canada, where the decision to pay an "x-factor" to military personnel (i.e., x-percent more than their civilian counterparts would earn) was politically, not economically, motivated.

more a measure of government policy toward conscripts than a measure of the value of the labor resources used by the military. Economic cost, on the other hand, specifically measures the economic value of labor resources used by the military. In competitive or free markets, the budget costs and economic costs will generally be coincident (at the margin). When there is government intervention (such as the draft) or certain noncompetitive behavior (such as monopolies), these two measures can diverge, and in some cases considerably.

Since efficient resource allocation is presumably one of the objectives of public policy, it is important to examine the real resource implications—i.e., the economic cost—of alternative policies, as well as the budget costs, particularly if there are institutional or other reasons to suspect that the budget costs do not fully capture the real resource costs. This was clearly the case for defense manpower under the draft.

Conceptual Framework

Evaluating the economic cost of maintaining a military labor force raises two sets of issues: (1) those related to the definition of economic cost and (2) those related to the difference between the economic cost of maintaining a force and the economic cost of those actually employed by the military. The latter is particularly relevant to the draft, since conscription resulted in considerable costs above the direct cost of individuals serving in the military.

We can begin by defining the economic cost of military labor resources as the *opportunity cost* for those individuals employed in the military. This general definition may be interpreted in either of two ways: (1) the opportunity cost *to the civilian economy*, in terms of productive output forgone; or (2) the opportunity cost *to the individual* serving in the military.[5]

The rationale for the first definition rests in the notion that by employing an individual in the military, the civilian economy forgoes the productive output that the individual could have achieved if employed in the civilian sector.[6] That is, since those serving in the military could otherwise be employed in the civilian economy, producing goods and services for civilian consumption (or investment), the value of their labor in these productive enterprises represents what the civilian economy as a whole forgoes when these individuals are employed in the military. Traditionally, and empirically, this narrow definition of economic cost has been measured as the individual's alternative civilian wage, under the assumption that this wage represents the value of his labor services in civilian employment.[7]

The rationale for the second interpretation of economic cost, on the other hand, is based on the fact that by serving in the military, the individual forgoes not only whatever monetary benefits he could have earned from civilian employment, but also whatever positive or negative nonmonetary benefits (relative to the military)

[5] In an earlier paper, the author referred to the narrower definition as "economic" cost and the broader definition as "social" cost. For simplicity, this distinction has been dropped here and the two definitions are presented as variants of the same concept. See Richard V.L. Cooper, *The Social Cost of Maintaining a Military Labor Force*, The Rand Corporation, R-1758-1-ARPA, August 1975.

[6] Note that this definition depends on the individual actually being employed in the civilian sector.

[7] Of course, an individual is likely to face more than one civilian wage offer. The appropriate alternative against which to compare military wages is the civilian wage offer preferred by the individual (which need not be the highest).

would have resulted from his preferred civilian employment. The monetary and the nonmonetary returns from civilian employment both represent opportunity "costs" from the individual's viewpoint—hence, this is the broader of the two definitions.

This broader definition can be measured in a straightforward manner as the individual's "supply price"—or, equivalently, his "reservation wage"—since supply price by definition measures the wage at which the individual would just be willing to serve in the military. The individual's supply price is simply his alternative civilian wage plus the monetized value of his perception of the nonmonetary aspects of military employment. Therefore, supply price puts both the pecuniary and nonpecuniary returns to military employment in the same general framework.

The relationship between these two views of economic cost can be visualized by comparing supply prices and alternative civilian wages in the standard labor supply model. If we array individuals according to supply price, then we have the standard supply curve of labor to the military. Against each individual on this supply curve, we can then plot the corresponding civilian wage opportunity, as shown in Fig. 5-1.

To begin with, we would expect an individual's military reservation wage to be a function of his civilian earnings opportunities so that, other things being equal, individuals with higher civilian earnings potential would be expected on the average to have a higher reservation wage; hence the positive correlation between the locus of supply prices and civilian wage offers shown in Fig. 5-1. Second, the relationship between the two is not exact, which is a reflection of differences in taste—some individuals are more favorably disposed toward military service than others. The difference between an individual's civilian wage opportunity and his supply

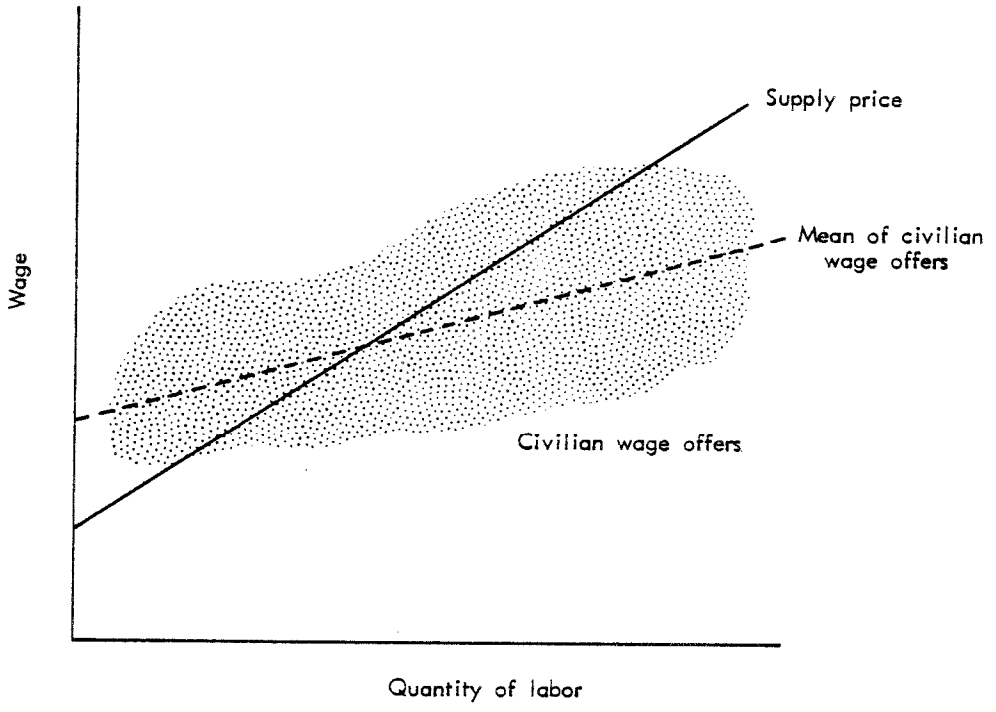

Fig.5-1—The relationship between supply (reservation wage) and civilian earnings opportunities

price to the military thus represents the monetized value of his relative preference (i.e., positive or negative) for military service.

Finally, Fig. 5-1 suggests that those on the upper reaches of the supply curve are, on the average, likely to judge the nonpecuniary aspects of military service in a less favorable light than those on the lower portion of the supply curve. In particular, those on the upper portion of the supply curve are likely to require a positive premium to be induced to serve voluntarily—to compensate them for what they judge to be negative nonpecuniary aspects of military service. Conversely, some of those on the lower end of the supply curve may actually be willing to take less than their civilian wage offer because of their favorable evaluation of these nonpecuniary aspects.[8]

An important corollary to the above discussion is that the extent to which the military must offer a positive wage premium to attract the desired number of volunteers depends in part on the proportion of the eligible population base that is required to serve in the military. As this proportion increases, other things being equal, the military has to offer a larger wage premium.[9]

For a variety of reasons, three of which are discussed below, supply price rather than the alternative civilian wage is to be preferred as the measure of economic cost. First, and most important, supply price represents the mechanism by which labor resources are allocated in a free market, so it is the *market measure* of the value of labor resources employed by the military.[10]

Second, supply price is the broader of the two definitions, since it includes the (monetized) value of the nonpecuniary aspects as well as the pecuniary opportunity cost of serving in the military. Third, the concept of the individual's alternative civilian wage is not in itself clearly defined, since the individual is likely to face more than one civilian wage offer, each with its own pecuniary and nonpecuniary returns. Thus, rather than the binary choice between military and civilian employment, the individual actually has a number of choices. This multiplicity of wage offers is usually resolved by taking the individual's preferred civilian wage offer, which need not have the highest pecuniary return, as the basis for comparison. Since this approach incorporates the individual's preferences vis-à-vis the choices he faces within the civilian sector, logical consistency would seem to require that these same preferences be included with respect to the choices between the military and civilian sectors—hence, the appropriateness of supply price as a measure of economic cost.

The discussion to this point has centered on the costs of those actually serving in the military. As noted at the outset, however, the appropriate policy variable is the economic cost of *maintaining* a military labor force. To the extent that there

[8] In a recent unpublished survey by Robert Gay, of The Rand Corporation, about 25 percent of all individuals joining the military reported that they had earned more in their most recent job than they actually received upon joining the service.

[9] In this respect, Sjaastad and Hansen argue that the military is an inferior occupation, since the area under the supply curve is larger than the amount of civilian wages forgone by those employed in the military. Note, however, that the relationship between these two is crucially dependent on the amount of labor resources demanded by the military. In particular, the larger the proportion of the cohort that serves, the greater we would expect the difference between total economic cost and total forgone wages to be. In general, then, Fig. 5-1 suggests that the relative inferiority or superiority of military employment can be judged only at the margin. See Sjaastad and Hansen, op. cit.

[10] The fact that supply price is the market measure of resource cost also means that we can avoid the distinction between the budget and economic costs of DoD civilian personnel, since, presumably, civilians must be attracted via the marketplace.

are costs other than those associated with the individuals serving in the military (for example, the costs of maintaining the Selective Service System during the draft or advertising expenditures for the volunteer force),[11] it is important to examine these incremental resource costs as well.

A more important example, and one that is particularly relevant to the problem of estimating the economic cost of conscription, is the draft-avoidance costs incurred by those individuals attempting to escape induction. Those individuals whose reservation wages exceed the draft wage would prefer not to serve in the military and thus have an incentive to engage in draft-avoidance activities.[12] These efforts to avoid the draft frequently result in the expenditure of real resources such as legal fees, medical expenses, etc. Moreover, because such costs have no socially beneficial outcome, they are only a drain on society's resources.

The Measurement of Economic Cost

Since economic cost is defined as the opportunity cost to the individual of serving in the military—i.e., the individual's supply price—the standard labor supply model provides the basic framework to measure economic cost. Individuals can be arrayed according to increasing supply price, which yields the familiar supply curve shown as SS′ in Fig. 5-2. For any given wage, this supply curve shows the number of individuals who will voluntarily join the military.

We will begin by assuming that military accession requirements (i.e., the *flow* demand for military personnel) are given beforehand. In Fig. 5-2, these accession requirements are shown as the distance OB out of the total eligible manpower pool. Since SS′ represents the voluntary supply of labor to the military, the military can attract OB true volunteers by paying a wage equal to w′—that is, the military's OB manpower requirements can be filled entirely by true volunteers if the military offers a wage of w′.

The economic cost corresponding to these OB labor resources is given by the sum of the reservation wages for those serving in the military, or in other words, the area under the supply curve between O and B. Since the supply curve represents the mechanism by which labor resources are allocated in a competitive market, this area is the appropriate measure of economic cost which should be used to evaluate various methods of manpower procurement. Moreover, this area represents the smallest possible economic cost when OB labor resources are demanded by the military.[13]

The economic cost of military personnel is far more difficult to identify on a priori grounds when the draft is used for procurement. The difficulty is attributable to the selection process. When the total eligible manpower pool exceeds requirements OB, there must be some mechanism to select who will serve. In a volunteer

[11] It is interesting to note that most of the other costs associated with the volunteer force (e.g., advertising) are included in the manpower budget costs shown earlier in Chap. 2, but those associated with the draft force (e.g., the Selective Service System) were not even in the DoD budget, let alone the manpower budget.

[12] This lends additional support to the use of supply price as the measure of economic cost, since the individual's propensity to engage in draft-avoidance activities is likely to depend on supply price, not just on his alternative civilian wage offer.

[13] Note, however, that this may not represent the minimum forgone productive output, since those on the lower portion of the supply curve are not necessarily the least productive members in the civilian economy.

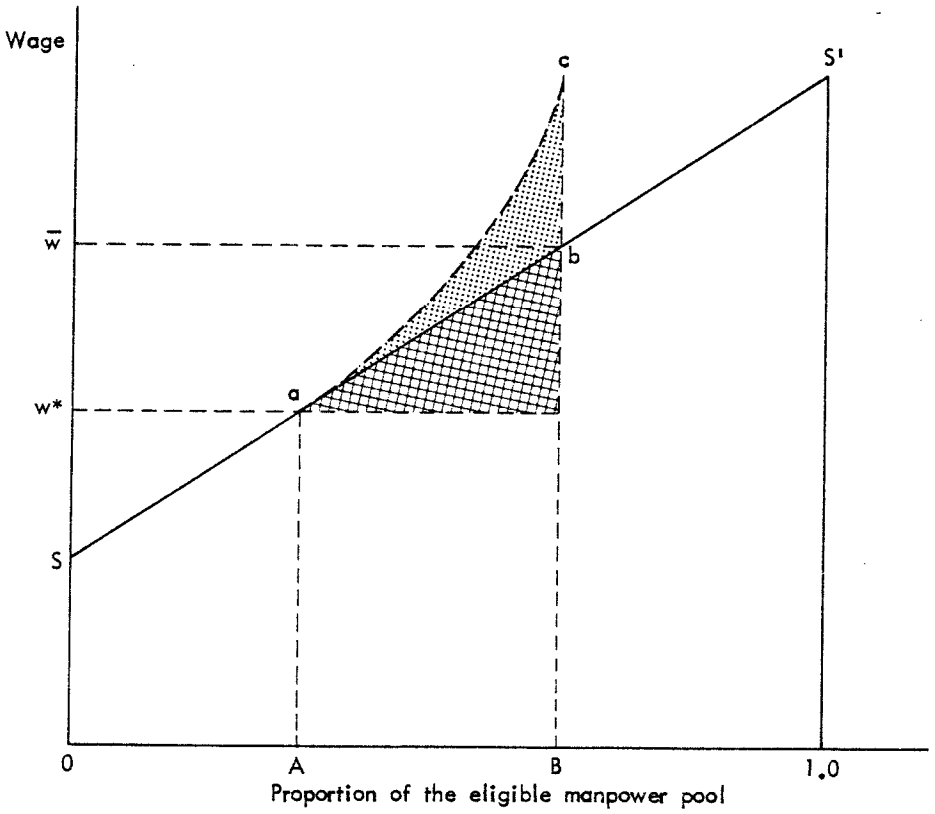

Fig.5-2—Measuring the economic cost of military manpower

military, this selection takes place in the marketplace via the military wage. During periods of conscription, the military wage equals w*, which yields only OA "true volunteers," so the remainder of the manpower requirements must be filled through the draft (or the threat of the draft). It is clear from Fig. 5-2, however, that the economic cost of this manpower depends critically upon *who is selected.*

To illustrate the effect of the selection process on the economic cost of military personnel during conscription, we consider some (not so) hypothetical alternatives. At one extreme, suppose that the draft is structured so as to conscript individuals according to supply price, with those having the smallest supply price drafted first. As discussed in Chap. 4, such a system is not altogether different from the conscription policy used in 1917. The result of this "lowest-supply-price-drafted-first" (LSPDF) conscription policy is that the OB accession requirements are filled by those falling on the Sb portion of the supply curve, the same individuals who would serve voluntarily if the military wage was set equal to w'. The economic cost of such a system would likewise equal that of the volunteer system—namely, the area under the Sb portion of the supply curve.[14]

The LSPDF conscription policy was repudiated by the United States following World War I as being socially repressive, and efforts were made to structure a more

[14] Indeed, the fact that LSPDF minimizes the economic cost of military personnel was implicitly part of the rationale for the draft policy followed in World War I, since many of the arguments for conscription at that time were based on the development of policies that would not disrupt industrial production.

random selection process when peacetime conscription was introduced after World War II. In terms of the analytic framework outlined earlier, the introduction of some randomness into this selection process means that some of those on the bS' portion of the supply curve in Fig. 5-2 will be induced to join the military, either as draftees or as draft-motivated enlistees.[15] Of course, those on the Sa portion of the supply curve will continue to join the military as true volunteers (assuming that they are allowed to join).

The result is that the locus of supply prices for these reluctant accessions is not given by the ab portion of the supply curve (as it is with the LSPDF conscription policy) but rather is given by the dashed line ac in Fig. 5-2. The more random the selection process—and, hence, the more representative of those on all portions of the supply curve—the further to the left this dashed line will lie.

For example, under the pre-lottery draft in the United States, those on the upper reaches of the supply curve stood a much smaller chance of being drafted than did those further down the curve. Because of the various deferments available to potential inductees, the pre-lottery draft offered numerous ways of avoiding induction for those who were willing to spend their efforts and resources toward that goal. For example, deferments were available for students, for those in certain sheltered occupations, for those in the reserves, and for fathers, among others.[16]

Since the probability of being inducted is to some extent endogenous, we would expect at least some of those on the aS' portion of the supply curve in Fig. 5-2 to participate in draft-avoidance activities. As noted earlier in this section, the amount any individual is willing to spend on such activities will be a function of, among other things, the difference between his reservation wage and the draft wage. Those on the upper end of the supply curve will tend to spend more trying to avoid the draft than those further down, because the former simply have the most to gain by not being drafted. And since an individual's probability of being inducted will in general depend on the extent of his draft-avoidance activities, those on the upper portion of the supply curve are less likely to serve in the military than those with smaller reservation wages.

The practical result is that those with very high reservation wages will be underrepresented in the military under a selective service draft. This means that the dashed line ac in Fig. 5-2 lies relatively close to the ab portion of the supply curve. Alternatively, the lottery draft deliberately introduces more randomness into the selection process, with the result that the dashed line ac lies further to the left.[17]

The economic cost of those serving in the military under these regimes is therefore given by the area under the locus of supply prices (which no longer coincides with the supply curve). This amount exceeds the economic cost of the LSPDF conscription policy (and thus of the volunteer military) by an amount equal to the shaded area in Fig. 5-2. The irony is that the more random the draft policy,

[15] For a number of reasons, an individual may join as a reluctant volunteer rather than wait to be drafted: A volunteer can choose when he will join, he can choose the Service he prefers, he stands a better chance of having some choice in his job assignment, etc.

[16] To illustrate the importance of this, in 1965, 71.5 percent of all 19 to 26 year old medically and mentally fit young men eligible for the draft had a deferment of some type.

[17] The lottery eliminated (or reduced considerably) the most commonly used methods of avoiding the draft—deferments—and therefore became more random, where the randomness was based on birthdate, even though there were still medical and legal means of avoiding the draft (as well as more extreme measures such as fleeing the country).

the larger the economic cost associated with those actually serving in the military.[18] In other words, achieving a representative selection of individuals is not costless. For example, the excess economic cost of the pre-lottery draft is estimated to have been $850 million in the pre-Vietnam benchmark year of 1964; had the more random lottery draft been in effect, this excess economic cost would have been $1,350 million.[19]

Not only do the economic costs associated with those serving under the fully random system exceed the costs under the mixed true volunteer/draftee system, the economic cost of military personnel under the lottery-type draft is larger than that under the pre-lottery draft. Therefore, the policymaker has the unenviable task of trading off economic cost against equity or "fairness." When the number of eligibles exceeds requirements, *there is no conscription policy that minimizes both economic cost and inequity.*

THE ECONOMICS OF LABOR UTILIZATION[20]

The analysis presented thus far has centered on the supply side of the problem. Demand is an equally important part of the overall problem, however, especially when the demand for military manpower is a downward-sloping function of cost.[21] The discussion below therefore builds on the basic supply-oriented findings and integrates them into a broader framework of supply and demand.

There are two principal reasons for suspecting that the demand for military personnel is a downward-sloping function of manpower cost. The first, which we refer to as the *substitution effect*, is that as manpower becomes more expensive relative to other inputs to the defense mission, the military will substitute less expensive inputs, so that the overall demand for manpower will be reduced.[22] The second, which we refer to as the *income effect*, is that as manpower becomes more expensive, other things being equal, it becomes more expensive to maintain a given level of national defense relative to other uses of society's resources, so that less defense—and hence less manpower—will be demanded.[23] Together, the income and substitution effects mean that in the long run we should expect the demand for military personnel to be a downward-sloping function of the *budget cost* of these

[18] Since the introduction of a more random selection process is generally accompanied by a closing of draft-avoidance loopholes, as was the case with the implementation of the lottery draft in 1970 (indeed, draft-avoidance loopholes were often originally introduced to reduce the size of the eligible manpower pool, thus easing the selection process because of the self-selection exercised by draft-age young men), the magnitude of draft-avoidance costs tends to be reduced. The net effect may therefore be to reduce the excess economic costs.

[19] See App. 5-A for the method of estimation.

[20] This section is based largely on a previous publication by the author. See Cooper, *The Social Cost of Maintaining a Military Labor Force*, op. cit.

[21] It is useful to think of the distinction between "requirements" and "demand" in terms of short run and long run, respectively: Whereas the demand for manpower refers to the long-run relationship between the numbers of personnel desired and their cost, manpower requirements refer to the number desired at any point in time.

[22] There may be certain institutional rigidities that impede the efficiency of such responses, as discussed at some length in Chaps. 12 and 13.

[23] A simple examination of the trends in manpower costs and end strengths over time bears out this point. Although part of the force strength reductions that have taken place since the early 1960s undoubtedly reflect changes in defense and foreign policy that might have occurred even in the absence of rising manpower costs, some of these reductions can probably be attributed to rising costs.

personnel[24]—that is, as manpower becomes more expensive, other things being equal, fewer personnel are demanded.[25]

The importance of this result derives from its implications for the numbers of personnel employed by the military under alternative methods of manpower procurement. The earlier analysis focused on the inefficiencies associated with alternative procurement strategies, given the numbers of personnel demanded. With the downward-sloping nature of the demand for manpower, inefficiencies may also result from the military employing too many or too few personnel relative to the social optimum, which, from a public policy perspective, is given by the intersection of the supply and demand curves.[26]

The basic problem arises because the budget costs of manpower may not fully reflect the economic costs. Therefore, if the DoD and the Congress respond to budget incentives, as we would expect, the actual number of personnel employed by the military may differ from the social optimum—under either conscript or volunteer forces. With a draft, the budget cost of military personnel is less than their economic cost, with the result that the military may employ too many people. In the absence of a draft, there is an upward-sloping supply curve for labor, so the military may employ too few people, if it acts as a monopsonistic employer.

Since we would expect the military to demand more labor under the draft than it would if it had to pay the economic cost (i.e., the market wage) for personnel, the draft causes more of society's labor resources to be diverted to military uses than is socially desirable. In other words, labor that has higher-valued uses outside the military ends up being used for military purposes when the draft is used to procure military personnel.

The results of this overemployment of labor under the draft, along with the corresponding costs, are shown in Fig. 5-3. We know from economic theory that OA labor resources—i.e., the intersection of the supply and demand curves in Fig. 5-3—represent the social optimum in terms of the amount of manpower used for military purposes. Because the draft wage w^* is less than the market wage w', the military uses OB labor resources, which is AB more than the socially desirable amount.

The costs associated with this overemployment of labor under the draft can be measured as the difference between the economic cost of these additional individuals employed by the military and their value to the military. Since economic cost is defined in terms of supply price, the economic cost for these individuals is given by the area under the supply curve (if the draft is structured so as to conscript those with the lowest supply price first.) The value of these individuals to the military is given by the area under the demand curve DD', so that the net cost, which economists refer to as "social welfare loss," is given by the shaded area below the supply curve SS' in Fig. 5-3.[27] When more random methods of conscription are used,

[24] Ideally, manpower requirements would be stated in terms of the economic cost to society. However, since the military faces various budget constraints, it can be argued that the military responds to the budget costs of the various inputs rather than the economic costs.

[25] The substitution effect is due largely to the military's efforts to make better use of its scarce resources. The income effect, however, is due principally to the President and the Congress attempting to economize on government expenditures.

[26] Weisbrod and Hansen consider only the inefficiencies due to high personnel turnover rates resulting from the draft. That is, they hold the number of effective labor units constant. See Weisbrod and Hansen, op. cit.

[27] The practical interpretation of this area is that the military consumes labor resources that have a higher value elsewhere in the economy.

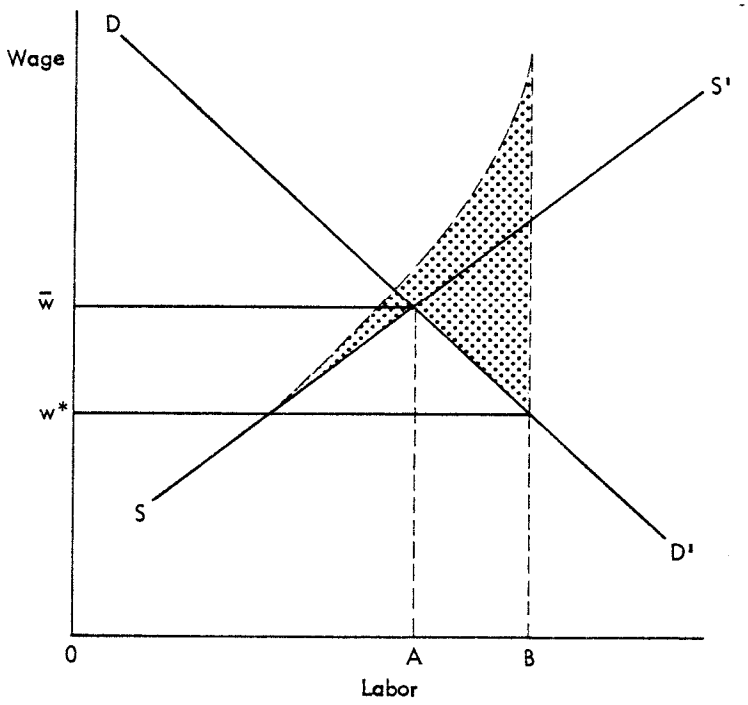

Fig.5-3—Overemployment of labor with the draft

there is the additional economic cost described earlier in this chapter, shown as the shaded area above the supply curve in Fig. 5-3. As a result, the total excess economic cost associated with those serving in the military under the draft (i.e., not counting the additional costs such as those that result from draft avoidance) is given by the entire shaded area.

We can make some rough estimates as to the magnitude of this social welfare loss by assuming that the supply curve has a constant elasticity equal to 1.25,[28] that the elasticity of demand for first-term personnel equals 1.5,[29] and that first-termers (i.e., personnel with less than four years' experience) were paid a draft wage equal to 75 percent of the market clearing wage w'.[30] Together, these assumptions imply that the military will demand about 55 percent more first-term personnel than is socially optimal, with the result that the shaded area lying below the supply curve in Fig. 5-3 equals about 16.5 percent of the entire compensation paid to first-termers

[28] Although it is argued in Chap. 9 that the logistic curve may provide a more appropriate representation of the supply of labor to the military, we will nevertheless rely on the constant elasticity formulation for the remainder of this chapter, simply because the latter is easier to deal with mathematically (e.g., to differentiate and integrate). Moreover, because the estimates of social welfare loss, etc., are intended only to illustrate some of the potential magnitudes involved, there is little to be gained by using the more theoretically appealing logistic supply formulation. (If anything, the constant elasticity formulation will tend to underestimate the costs involved).

[29] See Cooper, *The Social Cost of Maintaining a Military Labor Force*, op. cit., p. 12, for a justification of this.

[30] The assumption that those with less than four years of military service earned about 75 percent of the market clearing wage is based on calculations which show that the weighted average of pay for the first four years of enlisted military service equaled about 75 percent of what civilian workers of comparable age and education were paid in 1964.

(where first-term compensation equals w′ times OB).[31] Since the first-term compensation was about $4.2 billion in 1964, the social welfare loss due to overemployment of labor in the military was on the order of $700 million in that year. When combined with the approximately $850 million in excess economic cost due to the pre-lottery draft selection process (i.e., the shaded area lying above the supply curve in Fig. 5-3), the total social welfare loss associated with those first-termers was on the order of $1.5 billion in 1964, more than one-third the total compensation paid to them.

These are only rough estimates of the magnitude of the additional costs resulting from the draft. The more general—and more important—point is that the draft encouraged the military to misuse its resources by introducing inappropriate budget incentives. Moreover, the costs associated with these inefficiencies may have been substantial.

Indeed, if we take these preceding estimates seriously, we find that the $1.5 billion in additional economic costs associated with those serving in the military plus the $1.4 billion estimated in the next section as the costs of collecting the conscription tax add up to an amount that is nearly 75 percent as large as the entire amount of compensation paid to first-term personnel in 1964. The draft is clearly an inefficient means for maintaining a military labor force when such a small fraction of the eligible cohort must serve.[32]

Labor Turnover

While the analysis thus far has focused primarily upon labor stocks—i.e., the numbers of personnel employed by the military—the method of military manpower procurement may have an even more pronounced effect on labor flows. Because these labor flows—in the form of labor turnover rates[33]—affect the amount of productive labor services realized from a given number of personnel, the method of manpower procurement can have a significant effect on defense costs and capabilities through its effect on labor turnover.

To begin with, the relationship between personnel turnover and the method of military manpower procurement is in a sense obvious. That is, personnel turnover rates vary inversely with the average length of service, and the average length of service for personnel in the force will in general vary according to the method of

[31] This can be found by simply integrating under the supply and demand curves shown in Fig. 5-3. See Cooper, *The Social Cost . . .*, op. cit.

[32] A volunteer military, on the other hand, may use too few labor resources, a point first raised by Borcherding. Briefly, the argument is that the military faces an upward-sloping supply curve of labor in the absence of the draft, so the marginal cost of labor lies above the average cost. If the military responds to budget incentives, it will demand labor up to the point where the marginal cost of labor equals the value of labor to the military (i.e., the intersection of the marginal cost curve and the demand curve), which is less than the social optimum (i.e., the point at which the supply and demand curves intersect).

There are several factors that serve to mitigate the amount of the social welfare loss resulting from this underemployment of labor with a volunteer force. These factors include the fact that the military does not face a strictly upward-sloping supply curve because of the current "comparability" pay principle and the fact that the military can act partially as a discriminating monopsonist. The end result is that the social welfare losses under the AVF probably amount to less than $75 million per year.

For discussion, see Thomas E. Borcherding, "A Neglected Social Cost of a Volunteer Force," *American Economic Review*, 61, March 1971, pp. 195-196; and Cooper, *The Social Cost of Maintaining a Military Labor Force*, op. cit.

[33] By personnel turnover rates, we mean the flow of personnel into the military divided by force size.

manpower procurement. Conscripted forces, for example, tend to have higher personnel turnover rates than all-volunteer forces, simply because the use of conscription tends to decrease the average length of service.[34]

Conscripted forces themselves vary in that those with shorter tours will tend to have higher rates of personnel turnover. In other words, personnel turnover rates are not only a function of whether conscription is used, but also of the type of conscription used, since the length of the conscription tour will largely be determined by the method of conscription.

Personnel turnover is not in itself necessarily undesirable—there will always be some turnover, at least in the long run. Rather, it must be evaluated in the context of its effects on defense capabilities and costs, especially given that reductions in the personnel turnover rate are not costless either. We stated in Chap. 2 that capability is a function of the amount of labor input applied directly to the defense mission—that is, the amount of labor services provided by the stock of labor maintained by the military. Personnel turnover therefore has its effect on defense capabilities through the relationship between the flow of personnel into and out of the force and the amount of labor services that can correspondingly be applied directly to defense mission objectives.

For the military, personnel turnover affects the amount of labor services realized from a given stock of labor in three important ways. First, the "down time" resulting from accession, training, transit, etc., for new recruits means that fewer productive man-years are realized from a given number of recruits when personnel turnover rates are higher. That is, since higher personnel turnover rates mean a lower average length of service, the ratio of "productive" time to "unproductive" time decreases as the rate of personnel turnover increases, other things being equal. Second, higher personnel turnover means more recruits; more recruits mean more training; and more training means more trainers. Thus, higher personnel turnover means that more otherwise productive personnel are diverted from defense missions to the support of military training. And third, because inexperienced personnel cannot perform many jobs—especially very technical ones—as well as experienced personnel, very large turnover rates can degrade overall force capability, perhaps significantly. Although there are many jobs for which inexperienced personnel can be substituted for experienced (often on a more than one-for-one basis), there are other jobs that inexperienced personnel simply cannot do adequately.

One way of conceptualizing the effects that labor turnover has on the relationship between manpower procurement policy and manpower utilization is to consider the numbers of personnel required to provide a given amount of labor input, as a function of labor turnover. In the case of conscription, for example, we can examine the total number of personnel required to sustain a given number of conscripts in operational assignments as a function of the length of the conscription tour (which, in turn, affects the degree of personnel turnover).

To illustrate these effects, Table 5-1 shows, for example, that 1 million personnel would be required just to sustain 500,000 conscripts in operational assignments, assuming an 18-month conscription tour and six months of training (and further assuming that each man-year of conscript training requires a man-year of training

[34] For a variety of reasons, however, the AVF itself does not seem to have realized its potential in terms of reduced personnel turnover rates. See Chap. 9.

Table 5-1

Ratio of the Total Number of Personnel Required to the Number Assigned in Operational Billets, as a Function of Training Time and the Length of the Conscription Tour[a]

Length of Training	Commitment Length							
	9 mos.	12 mos.	18 mos.	2 yrs.	3 yrs.	4 yrs.	6 yrs.	8 yrs.
3 mos.	2.00	1.67	1.40	1.29	1.18	1.13	1.09	1.06
6 mos.	5.00	3.00	2.00	1.67	1.40	1.29	1.18	1.13
12 mos.	-	-	5.00	3.00	2.00	1.67	1.40	1.29
24 mos.	-	-	-	-	5.00	3.00	2.00	1.67

[a]Shows the ratio (r) of the total number of personnel man-years (p)--i.e., conscript man-years plus training support man-years--to the number of conscript man-years spend in operational billets (b), as a function of training time (t) and the length of the conscription tour (c). Assuming that each man-year of conscription training requires a man-year of training support (so that training support equals t), we have $r = (p/b) = [(c + t)/(c - t)]$.

support).[35] That is, because of the six months spent in training, 750,000 conscripts in the force will result in only 500,000 being assigned to billets with operational responsibilities; the remaining 250,000 will be in training. An additional 250,000 nonconscripts will therefore also be required for support of conscript training (i.e., instructors, support staff, and so forth). Under these assumptions, twice as many personnel would therefore be required as would be used in actual job assignments.

The results shown in Table 5-1 are, of course, only illustrative. For a given conscription tour, the exact number of personnel required to sustain a given number of conscripts in line activities depends on many factors, including the length of conscript training (which, in turn, depends on the types of assignments given to conscripts), the amount of training support required, attrition rates during the initial period of service, and so forth.

The results presented in Table 5-1 nevertheless serve to make two very important points. First, because conscripted forces generally have shorter tours of duty than all-volunteer forces, they tend to require more personnel to realize a given amount of labor input. Second, among conscripted forces, those with much shorter periods of obligated service tend to require far more personnel than those with longer periods, just to achieve the same amount of productive labor input. Indeed, when put into this perspective, it becomes clear why the U.S. military has historically been so reluctant to reduce the length of conscript service below two years.[36]

[35] It is shown in Chap. 14 that the number of man-years expended in support of military training was about equal to the number of trainee man-years in fiscal 1974 for the DoD. Thus, this assumption may not be very far off the mark.

[36] Given the more technical nature of many Navy and Air Force jobs—and, hence, their longer training times—Table 5-1 also helps to explain why both of these Services insist on four-year enlistment tours (and some six-year tours). Indeed, nuclear submariners receive about two years of training before they ever reach their first job assignment. For these individuals, the Navy not only requires a minimum obligation of six years but does its best (through financial incentives) to encourage them to extend their tours to seven or eight years.

In other words, conscription becomes a very inefficient means for maintaining a standing force when the length of conscription is very short, especially when that force requires significant numbers of technical personnel.[37] In fact, not only do very short conscription tours increase the economic costs associated with maintaining a military labor force (since they increase the ratio of total personnel required to the amount of productive labor input), they can also increase budget costs, since so many more personnel are required.

THE CONSCRIPTION TAX[38]

One of the consequences of the draft, as noted in Chap. 3, is the implicit tax that conscription imposes on young men of military age—the so-called conscription tax. Although this "tax" never appears on an IRS Form 1040 or in the accounts of any government agency, it is nonetheless very real for those forced to pay it.

Explicit consideration of the conscription tax is central to this study. First, though not necessarily by design, the conscription tax is in itself an important element of public policy in general and tax policy in particular. It reduces the amount of direct taxes that must be levied on the general public; it redistributes income within society; and it requires its own bureaucracy for administering and enforcing collection. The conscription tax thus has many of the attributes of other, more conventional methods for collecting tax revenue and, accordingly, should be examined in the context of tax policy in general.

Second, as we stated earlier, the selective nature of the conscription tax was one of the major contributing reasons for the move to end the draft. Not only was the tax restricted to a relatively narrow age cohort, the simple dynamics of a growing population base meant that only some within this narrow age range would pay the tax. Furthermore, because of the opportunities available for avoiding military service, those with the most to gain by not serving frequently were able to escape induction, with the result that those least able to pay the tax were penalized most heavily. Contrary to the general thrust of U.S. tax policy, then, the conscription tax was both selective in application and regressive in nature. Both of these aspects of the conscription tax were significant factors in the final decision to remove the draft.

Third, it was also argued earlier that the budget expenditures associated with manpower substantially understate the value of labor resources used by the military during periods of conscription. When combined with estimates of the amount of the conscription tax, however, these budget expenditures can be used to estimate the value of labor resources used by the military.

Finally, draft-avoidance costs—which, in the jargon of the public finance literature, are referred to as the costs of collection—constituted a significant additional economic burden for society. Thus, not only did the draft fail to reduce the economic cost of those serving in the military, it actually increased the economic cost of maintaining a military labor force.

[37] When the objective is not to provide a large standing force but is rather to maintain a large reserve force, however, short conscription tours can in fact be very cost-effective.

[38] This section is based largely on Sjaastad and Hansen, op. cit.

Concept of the Conscription Tax

In one sense, the conscription tax can be thought of as the difference between the wage that would induce an inductee or draft-motivated enlistee to volunteer and the actual draft wage.[39] That is, the tax equals the difference between supply price (i.e., reservation wage) and the military wage for those who enter the military as other than true volunteers.

The rationale for this measure of the conscription tax is essentially the same as that for the definition of economic cost. The individual who is coerced into the military as a draftee or reluctant volunteer forgoes not only his alternative civilian earnings potential but also (the monetized value of) the nonmonetary aspects of civilian employment (relative to military service), whether positive or negative. Thus, the conscription tax may be less than, equal to, or greater than the financial burden of being forced to serve, depending on how those who are forced to serve evaluate the nonpecuniary aspects of military service.

We can measure this tax analytically from Fig. 5-4, which in turn is based on the general framework given in Fig. 5-2. Since the curve ac represents the locus of supply prices for the draftees and reluctant volunteers serving, the conscription tax, as defined above, can be measured as the cross-hatched area in Fig. 5-4.

However, this interpretation of the conscription tax makes the implicit, but crucial, assumption that the confiscation of economic rent by the government does not constitute taxation. We can see this in Fig. 5-4, which shows that in the absence of a draft, the military would have to pay a competitive wage equal to w′ to attract the desired number of volunteers, with the result that those below point b on the supply curve would earn rent equal to the difference between this competitive wage and their own supply price. Thus, even though these inframarginal individuals do not need to be offered w′ to be induced to join the military, they would nonetheless receive this competitive wage if the military had to compete in the marketplace for volunteers.[40]

In this regard, Sjaastad and Hansen argue that[41]

> . . . [the] narrow definition of the conscription tax reflects an implicit assumption that the confiscation of economic rent does not constitute taxation. Conscription can be viewed as a means of coercion whereby the government reduces the budgetary cost of military manpower procurement, and only part of that reduction takes the [narrow] form of tax as defined above, the remainder being rents forgone. A persuasive argument can be made, however, that the tax should also include forgone rents. In procurement of manpower for civilian functions (i.e., the Post Office) or procurement of materials, the government does not normally employ coercion; that is, the government abides by the ethical norm of our society that surpluses, be they generated in production or consumption, are properly the property

[39] This is the same definition as used by Sjaastad and Hansen (their "narrow" definition) and by Oi. Hansen and Weisbrod define the tax as the difference between the individual's forgone civilian wage and the military wage; it is therefore equivalent to the financial burden described above. Finally, Fisher defines the tax as the maximum amount the individual would be willing to pay to buy his way out of the draft. As noted by Sjaastad and Hansen, Fisher's definition is always less than or equal to Oi's (and Sjaastad and Hansen's). Hansen and Weisbrod's measure, on the other hand, may be less than, equal to, or greater than Oi's, depending on the individual's valuation of the nonpecuniary aspects of military and civilian employment. See Sjaastad and Hansen, op. cit.; Oi, "The Economic Cost of the Draft," op. cit.; Hansen and Weisbrod, op. cit.; and Fisher, op. cit.

[40] Unless, of course, the military can act as a discriminating monopsonist.

[41] Sjaastad and Hansen, op. cit., p. IV-1-2.

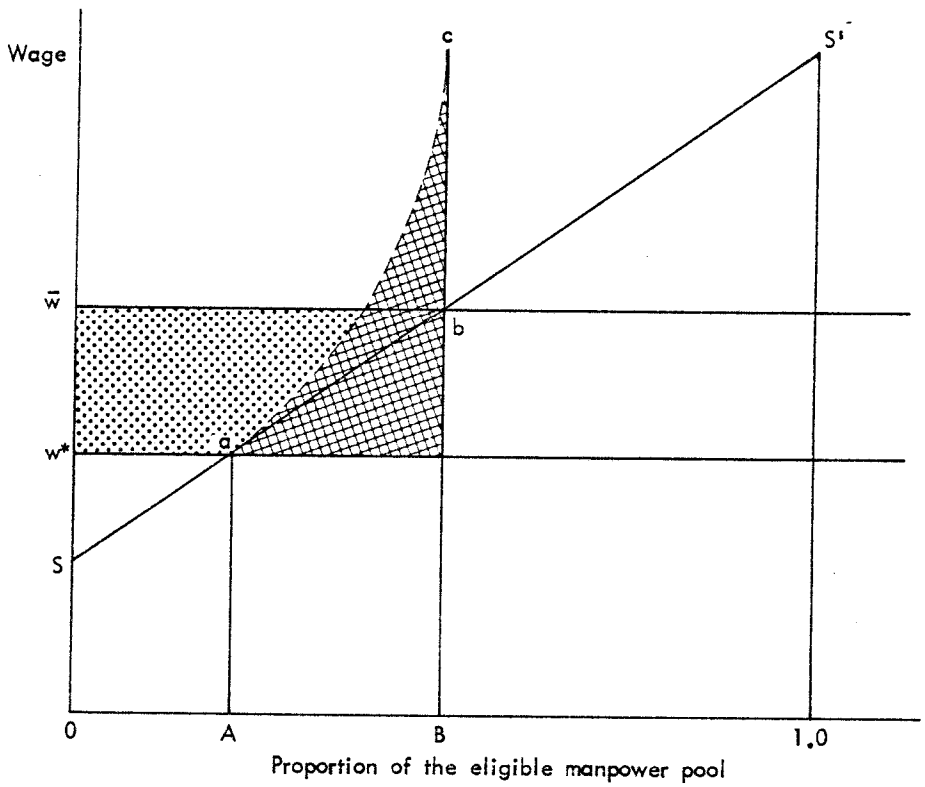

Fig.5-4—The conscription tax

of the person to whom they normally accrue. While it is true that these rents are not necessary to attract the affected individuals to military service, it is also true that similar rents are in fact collected by the sellers of goods and services to the government in virtually all other cases. It is only in the case of certain military manpower procurement that coercion is systematically employed to reduce rents.[42]

Thus, a strong case can be made for viewing these forgone rents as part of the conscription tax as well, since the United States has historically not deprived individuals of the rent they might earn from employment in other areas.

The conscription tax, under this broad definition, is therefore measured as the larger of (1) the difference between the competitive wage and the draft wage and (2) the difference between supply price and the draft wage. In Fig. 5-4 this is shown as the sum of the cross-hatched and shaded areas. As such, the broad definition exceeds the narrow definition by the amount of shaded area.

The importance of this distinction is not so much that the two measures of the conscription tax differ in magnitude, but rather that they have very different meanings with respect to the larger public policy questions concerning the income redistribution caused by the draft. The narrow definition views only those with

[42] Furthermore, economic rents earned elsewhere in the economy are not fully confiscated either. For example, in union-filled jobs, there will be inframarginal employees—inframarginal in the sense that some would work for less than the prevailing wage—yet these individuals are allowed to keep the rent they earn. More generally, U.S. tax policy has never differentiated between rent and nonrent income.

higher reservation wages as having to pay the tax, whereas the broad definition recognizes that the draft extracted a tax from all those serving in the military, including those on the lower portion of the supply curve, who are generally those with the least valued civilian employment and earnings opportunities.

The narrow definition does not recognize that these individuals are "taxed" because they enter military service as so-called true volunteers. In a sense, however, the same individuals may be the most severely penalized, since the tax, broadly construed, brought about by conscription is a much larger amount relative to their basic wealth position than it is for those higher on the supply curve. Therefore, the narrow definition of the tax disguises some of the most undesirable social and public policy effects of the selective service conscription tax.

Measuring the Conscription Tax

Unlike other, more conventional forms of taxation, conscription tax payments are not recorded in any government accounts, so estimates of the amount of this tax must be imprecise at best. Since the tax (narrow form) is defined in terms of supply price, the actual amount paid depends on two factors: (1) the shape and location of the supply curve and (2) who on the supply curve actually serves, where the latter is in turn a function of the selection mechanism.

Since neither of these two factors is known with certainty, we show instead what the conscription tax could be, as estimated by using several alternative assumptions about both the supply curve and the selection process. We look at pre-lottery and lottery-type draft systems under three alternative assumptions about the supply curve: (1) a constant elasticity supply curve (upward-sloping at a decreasing rate), (2) a linear supply curve (upward-sloping at a constant rate), and (3) a logistic supply curve (upward-sloping at an increasing rate toward the upper reaches of the supply curve).[43]

The main point illustrated by the estimates in Table 5-2 is that the conscription tax, no matter what specific assumptions are used, is sizable, even under the so-called narrow definition. It is smallest—about $2 billion annually (in 1964 dollars)—under the assumption of a pre-lottery-type selection process and a constant elasticity supply curve.

The tax is much larger, however, for the lottery-type draft with most deferments eliminated. It ranges from about $2.6 billion annually if the constant elasticity supply curve is the appropriate representation of supply to about $8.7 billion if the logistic supply curve is instead the right measure. The reason for these results is that there are fewer ways of avoiding military service under the lottery-type selection process, so that there is a more representative sampling of the supply curve serving in the military, including those on the upper reaches. Furthermore, the logistic supply curve rises more steeply than the other two supply curves. Therefore, if the logistic is in fact the appropriate representation of manpower supply to the military, there will be more high-supply-price individuals serving (those who were able to avoid induction under the pre-lottery-type system)—hence, the larger conscription tax.

[43] In each case, the supply curve was normalized so that the arc elasticity equals 1.25 between 20 percent and 40 percent of the age cohort.

Table 5-2

The Conscription Tax in 1964: Narrow Definition[a]
($ billions)

Selection Process	Supply curve: Decreasing Slope (Constant Elasticity)	Constant Slope (Linear)	Increasing Slope (Logistic)
Pre-lottery	$2.1	$2.3	$4.4
Lottery	$2.6	$3.0	$8.7

[a]See Appendix 5-A for method of estimation.

To put these figures in some perspective, recall that the 1964 costs for first-term personnel amounted to some $4.2 billion and that all active duty manpower budget costs were about $12.3 billion. The estimates thus far have been for the narrow definition of the tax. If we include the rents forgone under the broader definition, the total tax rises to about $3 billion for the pre-lottery-type draft under the constant elasticity supply assumption.[44] Thus, under this broad definition the amount of the conscription tax was nearly as large as the budget costs for first-termers.

The Costs of Collecting the Conscription Tax

Whenever a government imposes a tax on some or all of its citizenry, there are certain costs associated with collecting it, a fact well recognized in the theory of public finance. These costs of collection include, among other items, the costs for tax collectors, the costs of enforcing payment of the tax, and, particularly important in the case of the conscription tax, the costs incurred by those attempting to avoid payment.[45]

In general, we would expect the amount of costs incurred by those attempting to avoid the tax to be a function of (1) the magnitude of the tax itself and (2) the difficulty of escaping payment. In the first case, the relationship is clear: The larger the tax, the more will be spent attempting to avoid payment of it. In the second case, the relationship is a bit more subtle. When the authorities make it more difficult to avoid the tax, fewer individuals will pursue tax-avoidance activities, but those who do so are likely to spend more in their efforts. In other words, it makes sense to incur tax-avoidance costs only if those expenditures can be expected to have a reasonable chance of success and therefore, to be successful, more must be spent.

In the case of conscription, there were many legal (as well as illegal) means of escaping induction. To give some idea of the availability and prevalence of draft loopholes, of the 9,432,963 males between 19 and 26 years of age who were eligible

[44] See Sjaastad and Hansen, op. cit., p. IV-1-25.

[45] To illustrate the incentives, the 1966 DoD draft study reported that marriages by draft-age males increased by about 10 percent almost immediately after the marriage deferment was introduced in the early 1960s.

for the military in 1965, *71.5 percent had deferments exempting them from service.*[46] These deferments included marriage (5.0 percent), fatherhood (34.6 percent), belonging to the reserves (11.1 percent), enrollment in college (17.4 percent), occupation exemptions (2.4 percent), and miscellaneous (1.0 percent). Thus, exemption from military service was more the norm than the exception.

It is difficult to quantify the costs associated with the various draft-avoidance activities, but economic theory provides us with a general way of modeling the problem and getting at least a rough estimate of the magnitude of these costs. If we assume that individuals attempt to maximize their expected income and that they can reduce their probability of having to serve by expending resources in draft-avoidance activities, then we can develop a model of draft-avoidance expenditures from the basic labor supply model outlined earlier.[47]

The results of this procedure, as shown in Table 5-3, yield two important findings. First, the costs associated with attempts to escape induction were, by these

Table 5-3

The Conscription Tax (Narrow Definition) and the Costs of Collection: 1964
($ billions)

Selection Process[a]	Supply Assumption[b]	Conscription Tax (Narrow Definition)	Costs of Collection[c]	Total
Pre-lottery	Decreasing Slope	$2.1	$2.6	$4.7
	Constant Slope	2.3	2.9	5.2
	Increasing Slope	4.4	3.6	8.0
Lottery	Decreasing Slope	2.6	0.7	3.3
	Constant Slope	3.0	0.9	3.9
	Increasing Slope	8.7	3.7	12.4

[a]See Appendix 5-A for the methodology and assumptions.

estimates, very large. Indeed, in the case of the pre-lottery draft, the costs of collecting the conscription tax actually exceeded the tax itself (by the narrow definition). In the case of the lottery-type draft, the collection costs were less but were still about one-third as much as the tax.

[16] In 1965, there were 30,917,205 living and classified registrants recorded by the Selective Service System. Of these, 73,164 were over 26 years of age with liability extended; 545,159 were under 19 years of age; 2,040,000 were temporarily disqualified (IY); 2,443,436 were permanently disqualified (IV F); 471,733 had statutory student deferments for the remainder of the school year (e.g., high school); 2,370,124 had already completed their military obligation; and 13,540,626 were over the age of liability. Thus, of the 30,917,205 living and classified registrants, 9,432,963 were "eligible" for military service on September 30, 1965. ("Selective Service Classification, United States, Table 1, Number and Percent of Classified Registrants," Selective Service System, National Headquarters, Research and Statistics, Statistics Section, D(d)-115, October 21, 1965.)

[17] The model was first developed by Sjaastad and Hansen, op. cit., and is summarized in App. 5-A.

The second finding, as shown in Table 5-3, is the importance of the selection process. The introduction of the lottery, with its closing of many draft loopholes, reduced the costs of collection considerably. Those who drew high lottery numbers were virtually assured of not being inducted and therefore did not need to expend resources in draft-avoidance activities. Those with very low lottery numbers, on the other hand, were virtually assured of being drafted so, with little opportunity to avoid induction, they were not as likely to engage in draft-avoidance activity.

Combining these results, we see that the total costs—conscription tax plus draft-avoidance—will be less with the lottery system than with the pre-lottery system, except when the supply curve is very steeply upward-sloping. Together, these costs show the additional economic costs not captured by the budget expenditures.

Although these results are only rough estimates based on a simple model, they have a very important policy impact. They show not only that conscription extracted a considerable tax burden from those forced to serve in the military, *but also that conscription was an extremely inefficient means for collecting "tax revenue."* Indeed, for every dollar of tax collected under the pre-lottery draft, there was more than a dollar of tax collection costs.

REDISTRIBUTION OF INCOME UNDER THE CONSCRIPTION TAX

Because conscription is essentially a mechanism for collecting tax revenue, it should be examined within the broader context of U.S. tax policy in general. In this regard, two issues, which are basically corollaries of one another, warrant special consideration: the burden of paying the conscription tax, and the redistribution of income that accompanies the imposition of this tax burden. By examining the redistribution of income that takes place during the draft, we can evaluate the efficacy of conscription as a means for collecting tax revenue.[48]

The use of conscription leads to two types of income redistribution: intergenerational transfers and intragenerational transfers of income.[49] The former is a result of the fact that the burden of paying the conscription tax tends to fall on young men (generally between the ages of 16 and 35, depending upon the specific draft policy). This leads, then, to a redistribution of income from the younger generation to older generations.

Although the ethics of conscription can be argued ad infinitum, there is a certain equity to this intergenerational redistribution of income if all able-bodied young men must serve (and if it is accepted that women should not serve). Since other generations may not be as well equipped to bear the physical burdens and disruptions in their lives and, furthermore, may have already paid the tax, it can be argued that such a distributional effect is in some ways equitable.[50]

[48] The public finance literature has focused particularly on two principles for assessing the efficiency of tax instruments. Under the "benefits" principle, those individuals or groups that would benefit most from the government program financed by the taxes are taxed the most heavily. (An example is highway taxes.) Under the "ability to pay" principle, those with greater wealth and/or income bear a proportionately larger burden, thus leading to the use of "progressive" taxes, such as income taxes. Although it is probably preferable to use the "ability to pay" criterion for evaluating the conscription tax, it will be shown later that conscription actually violates both principles.

[49] Note also the redistribution of income from males to females under most draft systems.

[50] Note that this does not address the income redistribution problem. That is, although the older generations may not be best suited to bear the physical burden of military service, this does not imply that the younger generations should have to bear both the physical and financial burden.

Far more interesting—*and more important with respect to setting social policy*—is the intragenerational redistribution of income that takes place when some of those within the generation do *not* serve. When the military cannot absorb all of those eligible for military service, as became the case for the United States in the mid-1950s, only some within the generation will have to pay the conscription tax. This results in a redistribution of income from those forced to pay the tax to those who are able to escape payment—making the issue of who actually pays the tax a critical element in overall social policy.

This income redistribution under the draft can be measured if we know both the amount of the conscription tax and who pays it. Although it is difficult, if not impossible, to measure either of these precisely, we can obtain rough estimates of income redistribution, using the basic framework outlined earlier in this chapter. For the sake of illustration, we shall assume that individuals are neutral with respect to serving in the military, so that their reservation wages are simply equal to their alternative civilian wages. The conscription tax, under the narrow definition, is then given as the difference between the individual's alternative civilian wage and the draft wage; under the broad definition, the conscription tax is measured as the greater of (1) the above and (2) the difference between the market clearing wage and the draft wage.

The results from this procedure, as applied to various types of individuals in 1970, are shown in Table 5-4. We can estimate the conscription tax for the "average" individual in a particular socioeconomic group (e.g., race and education) from the estimates of the median earnings that year-round full-time employed males in that group would expect to receive for a three-year service tour. The results are basically what we would expect, as those who are white and/or have more education pay a larger tax, since they forgo more income. The range of this tax is quite substantial—as much as $20,000 (for whites with more than a college education) and as little as zero (for those individuals whose civilian earnings opportunities are less than the draft wage).[51]

A quite different perspective is gained if we interpret the conscription tax in the broad sense, since in this case everyone is seen as paying a "tax." That is, conscription enables the military to confiscate the rents that those who have smaller civilian earnings opportunities would otherwise earn if the military had to pay a competitive wage. The result, then, is that the narrow definition of the tax underestimates what those on the lower portion of the supply curve pay in the form of the conscription tax under a draft system.

These estimates make the implicit assumption that all those eligible must pay the tax; in other words, the estimates of the tax shown in columns (3) and (4) of Table 5-4 are for those who pay the tax. However, not all will in fact pay the tax and, moreover, the probability of paying the tax is a function of the size of the tax. Those with higher reservation wages would be expected to have a smaller probability of serving, since they would be willing to spend more to avoid payment of the conscription tax (and since legalized deferments and exemptions such as that for attending school were more readily available to those who could afford them).

This leads us to construct an "adjusted" estimate of the conscription tax, where

[51] Actually, the tax for college graduates and above may be substantially less, since many college graduates (about half) who serve will serve in the officer corps, where pay is substantially higher than in the enlisted ranks.

Table 5-4

Estimates of the Conscription Tax: 1970
(three-year service tour)

Race	Education[a]	Military Earnings[b] (1)	Civilian Earnings[c] (2)	Conscription Tax: Narrow[d] (3)	Conscription Tax: Broad[e] (4)	Probability of Paying[f] (5)	Adjusted Tax[g]: Narrow (6)	Adjusted Tax[g]: Broad (7)
White	SHS (18)	$11594	$12919	$ 1325	$ 4227	1.00	$1325	$4227
	HSG (19)	11594	15821	4227	4227	0.91	3865	3865
	SC (21)	11594	19074	7480	7480	0.52	3865	3865
	CG (23)	11594	23860	12266	12266	0.32	3865	3865
	C+ (26)	11594	30759	19165	19165	0.20	3865	3865
Black	SHS (18)	11594	8586	0	4227	1.00	0	4227
	HSG (19)	11594	12319	725	4227	1.00	725	4227
	SC (21)	11594	17244	5650	5650	0.68	3865	3865
	CG (23)	11594	20271	8677	8677	0.45	3865	3865
	C+ (26)	11594	29540	17946	17946	0.22	3865	3865

[a]Some high school (SHS), high school graduate (HSG), some college (SC), college graduate(CG), and more than four years of college (C+). Numbers in parentheses refer to the age of the individual at entry.

[b]Military earnings over the first three years of service, assuming enlisted service.

[c]Civilian earnings that would have been earned over the three-year period had the individual been in year-round full-time civilian employment. Based on median civilian earnings according to race, education, and age as provided in Richard V.L. Cooper, Gus Haggstrom, and Patricia Gowen, *Age-Earnings Profiles*, The Rand Corporation, forthcoming.

[d]Narrow definition of the tax calculated as the difference between columns (2) and (1), and thus assumes neutrality with respect to military service.

[e]Broad definition of the tax estimated as the greater of (1) the difference between the competitive wage (estimated to be $15,821 for three years, under the assumption that the competitive wage equals median civilian earnings for white high school graduates) and the actual military wage and (2) the narrow definition of the tax from note d above.

[f]Probability of paying the tax estimated as shown in Appendix 5-A.

[g]"Adjusted" tax equals the unadjusted conscription tax (i.e., column (3) or (4)) times the probability of paying the tax.

the adjusted tax simply equals the unadjusted estimate times the probability of paying the tax. Based on the probability of serving—and hence of paying the tax—we can estimate what various categories of individuals pay, on the average, in the form of the conscription tax. The results of this procedure, which are also shown in Table 5-4, are dramatic. For example, the average tax for whites with postgraduate college training is only $3,865—20 percent of the unadjusted tax estimate. That is, only one in five of these individuals will actually pay the tax, so the tax payment for the group as a whole is only 20 percent as large as the unadjusted estimate.[52]

Since the ability to pay is frequently used as a measure of the efficacy of alternative tax instruments, it is useful to compare these tax estimates with the individual's life-cycle earnings; the results of this comparison are shown in Table

[52] These hypothetical estimates are given some empirical validity in Chap. 10, where it is shown there that blacks served in the military at roughly twice the rate (relative to their population base) as did whites during the draft and thus were not as successful in avoiding military service.

5-4. At first glance, it would appear that the conscription tax is quite progressive. For example, using the unadjusted estimate of the narrow definition of the tax, we find that a black high-school graduate pays a tax equal to 0.4 percent of the expected present value of his lifetime earnings, in contrast to the 5.4 percent for the white with postgraduate training.

Yet, if we adjust these estimates to account for the probability of paying the tax, we find that the conscription tax, even under the narrow definition, loses most of its progressiveness. In fact, it actually becomes quite regressive, since those with large alternative civilian earnings are very unlikely to pay the tax. For example, the white college graduate who is forced to serve pays 4.1 percent of his lifetime earnings (present value) in the form of the conscription tax, but when this is adjusted for his probability of paying, the estimate falls to 1.3 percent. Those in the middle income range are penalized most heavily, since those in the low income range do not pay much of a tax (under the narrow definition), and those in the high income range are often able to avoid payment.

Finally, we consider the broad definition of the tax. When we adjust for the probability of paying the tax, we find that those with the smallest incomes pay the most (as a fraction of their lifetime earnings). Thus, the importance of the distinction between the narrow and broad definitions of the tax derives not so much from the difference in the magnitudes of the two approaches as from the implications for income redistribution. In the narrow sense, conscription enables the military to pay individuals less than the amount for which they would voluntarily serve. Far more important from the viewpoint of social policy, though, it enables the military—and hence the general public—to deprive relatively disadvantaged youths from the income earning opportunities they could have if the military had to compete in the marketplace for personnel. For example, Table 5-5 shows that black non-high-school graduates forgo an amount equal to 3.4 percent of the present value of their expected lifetime earnings, while whites with postgraduate schooling forgo an average of only 1.1 percent.

Therefore, the conscription tax, which on the surface appears to be quite progressive, is in reality just the opposite. It redistributes income away from the poor to the wealthy and thus runs contrary to most of the stated goals of U.S. social policy. The practical implication, then, is that conscription enabled the general public to pay less for military manpower—at the expense of those least able to afford the burden.

ECONOMIC AND BUDGET COSTS AS POLICY CRITERIA FOR A MANPOWER PROCUREMENT POLICY

The analysis thus far would seem to imply that volunteerism is unambiguously preferable to peacetime conscription on economic grounds, since the economic costs associated with conscript forces will usually be larger than those associated with volunteer forces. Yet, under certain circumstances, conscription may actually be preferable to volunteerism *on economic grounds.*

That such a possibility has not been identified is a result of the fact that the analysis to this point has focused on economic cost in only a limited sense. A more appropriate basis for choosing the method of manpower procurement would be to

Table 5-5

Conscription Tax and the Ability to Pay: Tax as a Percentage of Lifetime Earnings (1970)

Race	Education[a]	Life-Cycle Earnings[b] (000s)	Tax Burden: Percentage of Life-Cycle Earnings[c] Narrow (unadj)	Narrow (adj)	Broad (adj)
White	SHS	$188	0.7%	0.7%	2.2%
	HSG	210	2.0	1.4	1.8
	SC	246	3.0	1.6	1.6
	CG	301	4.1	1.3	1.3
	C+	357	5.4	1.1	1.1
Black	SHS	125	0.0	0.0	3.4
	HSG	164	0.4	0.4	2.6
	SC	200	2.8	1.9	1.9
	CG	256	3.4	1.5	1.5
	C+	342	5.2	1.2	1.2

[a] See note a, Table 5-4.

[b] Present discounted value of median lifetime earnings by race and education assuming 5 percent discount rate and 2 percent per annum productivity growth. Same estimating technique as for current median earnings: see note c, Table 5-4.

[c] The conscription tax (from Table 5-3), expressed as a percentage of the present discounted value of lifetime earnings.

consider economic and budget costs simultaneously, since the desirability of conscription or volunteerism is basically a reflection of the tradeoff between the excess *economic costs* resulting from conscription and the excess *economic rents* generated by volunteerism. In general, these two factors will be a function of the proportion of the eligible population base required to serve in the military. When this proportion is larger, for example, the excess economic costs caused by conscription will tend to decline, while the excess economic rents resulting from volunteerism will tend to increase.

Economic and Budget Costs

The importance of the proportion of the eligible manpower pool that must serve can be established by a simple comparison of the economic and budget costs of military personnel under conscription and volunteer procurement policies. In making this comparison, it is helpful at first to hold constant such other manpower policies as the length of the initial obligation, retention rates, and so forth. We can begin by examining the relationship between the excess economic cost of conscription and the proportion of the eligible pool that must serve. When all of the eligible population base must serve, both volunteer and draft forces provide a full sampling

of those on all parts of the supply curve. As a result, the excess economic cost of conscription that is attributable to the selection process diminishes. The costs of collecting the conscription tax likewise tend to decrease as the proportion of the eligible population base that must serve nears unity, since the government generally makes it more difficult to avoid induction when this proportion is very large.[53] That is, because the payoff from draft-avoidance activities is reduced, less will be spent in efforts to escape payment of the conscription tax.

The overutilization of labor that tends to accompany the use of conscription becomes less severe when nearly all in the eligible pool must serve, simply because of constraints on the size of the manpower pool. In other words, the undesirable economic consequences of conscription, vis-à-vis other procurement policies, are largely mitigated when a large fraction of the manpower pool must serve.

At the same time, the above arguments do not necessarily imply that conscription is to be preferred, even when the proportion of the manpower pool required to serve is large. The economic cost of a conscript force may not be larger than that of a volunteer force under such circumstances, but it has not been shown to be smaller either. To understand why conscription might be preferred on economic grounds, it is therefore important to recognize that although economic cost is (or should be) a key consideration in the public policy decision process, a number of other factors—not the least of which is budget cost—are also important. We therefore turn to a comparison of the economic and budget costs of military manpower under volunteer and draft regimes.

As was shown earlier in this chapter, economic cost equals the sum of the supply prices of those serving in the military, which in a volunteer military equals the area under the supply curve. Budget cost, on the other hand, simply equals the number of military personnel times the average wage rate (neglecting, for the present, the non-wage costs associated with military personnel). If the military cannot exploit its monopsony power, either in the traditional sense or as a discriminating monopsonist, then the average wage equals the wage required to attract the last volunteer—i.e., the point at which the demand curve for labor intersects the supply curve. Even though those further down the supply curve would serve for a wage less than that which must be paid to attract the last volunteer, they nevertheless earn this latter wage.

This gives rise to *economic rent*, which refers to the fact that some individuals will earn a wage larger than that for which they would be willing to serve voluntarily. The amount of economic rent a given individual receives is therefore equal to the difference between the wage he receives and his supply price. The key is that this economic rent does not reflect "real" economic activity but is instead merely a transfer payment from the general taxpaying public to those serving in the military. From the public policy standpoint, the question, then, is, How much (if any) economic rent is appropriate?

Before addressing this question, we first consider how the amount of economic rent varies according to the proportion of the population base that must serve. Suppose that defense objectives are such that the demand for military personnel is given by the curve DD in Fig. 5-5. Given the supply curve SS', manpower requirements will be m' and the wage necessary to attract all m' volunteers will equal w'.

[53] When the proportion that must serve becomes very small, the government often institutionalizes various forms of draft avoidance, as it did in the pre-lottery draft.

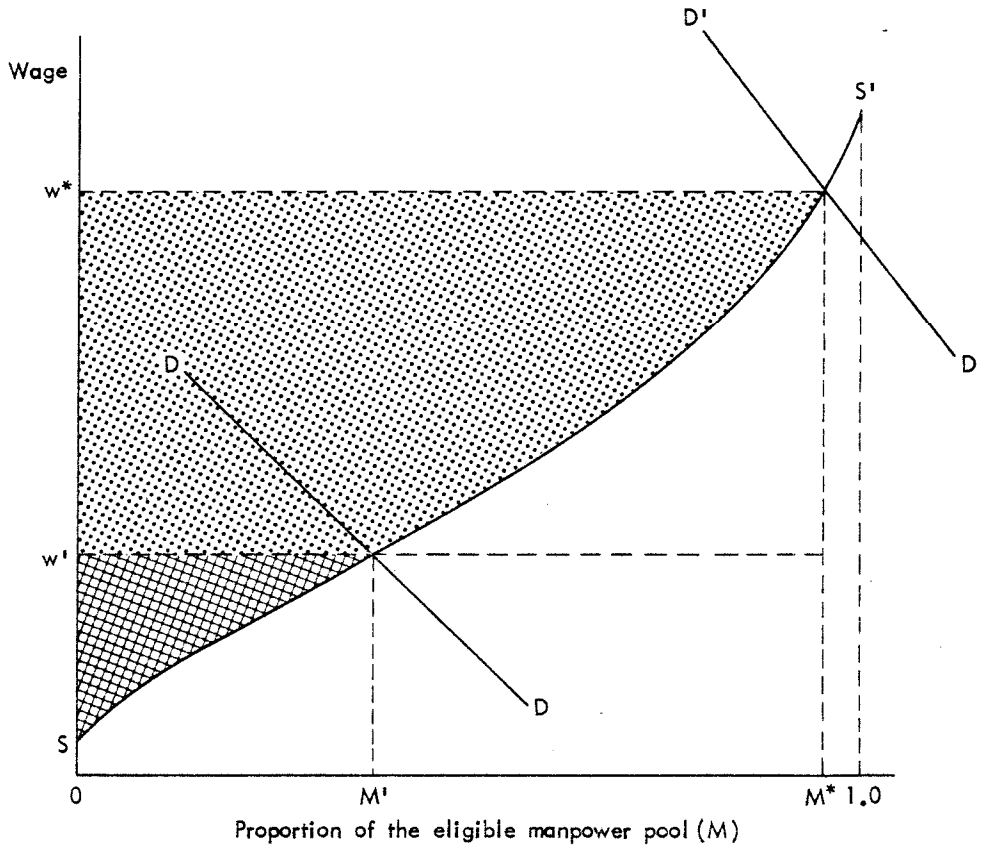

Fig.5-5—Economic and budget cost

The economic cost is then given as the area under the supply curve, so that the total budget cost, which simply equals w′ times m′, exceeds the total economic cost by the cross-hatched area. The amount of economic rent paid to volunteers thus equals the cross-hatched area in Fig. 5-5.

When defense and national security objectives are such that nearly all must serve, as illustrated by the demand curve D′D′ in Fig. 5-5, a much higher wage must be paid (and paid to everyone if the military cannot act as a discriminating monopsonist) to attract the desired numbers of volunteers. Specifically, to attract m* volunteers, a wage of w* must be offered. The budget cost (which equals m*) therefore exceeds the economic cost (the area under the supply curve) by the sum of the shaded area and the cross-hatched area, so that the economic rent paid to volunteers equals this sum.

This discussion serves to make two key points. First, budget costs increase dramatically as the proportion of the eligible population base required to serve in the military nears unity.[54] Second, a sizable fraction, perhaps even a majority, of this increased budget cost is not real resource cost but is merely economic rent.

[54] To illustrate, suppose that w′ equals $5,000 per year for a two-year enlistment when m′ equals 0.25, but that w* equals $25,000 per year when m* equals 0.875 (neither of which is unreasonable). If the eligible manpower pool has 2 million members, then the annual budget cost to attract 500,000 two-year enlistees (roughly consistent with a 2 to 2.5 million man force) would be $5 billion—i.e., $5,000 × 500,000 × 2 (for the two years). However, the annual budget cost to attract 1,750,000 two-year volunteers (roughly consistent with a 5 million man force) would be $87.5 billion—i.e., $25,000 × 1,750,000 · 2. (Note that these costs are only for those in the first two years of service; they do not include the manpower costs for those beyond the first two years.) Thus, to attract 3.5 times as many volunteers, the government must pay 17.5 times as much in the way of budget costs.

In contrast, the budget costs—and, hence, the economic rent paid to those serving in the military—can be reduced substantially by use of the draft. For example, if the draft wage equals w', then the military will pay a total budget cost equal to w' times m* for the m* military personnel, an amount considerably less than the w* times m* for the volunteer system.[55] Some of these "savings" are not really savings in the true meaning of the term since the economic, or real resource, cost of some of them exceeds the draft wage. At the same time, much of the savings (a majority, the way Fig. 5-5 is drawn) are in fact a reduction in the amount of economic rent paid, shown as the shaded area in Fig. 5-5. That is, by implementing the draft the government reduces the amount of budget cost that is a transfer payment from the general public to those serving in the military.

Choosing a Manpower Procurement Policy

As noted earlier, the policy problem centers on how much rent is desirable, though it is clear that there is no single or "right" solution to this problem. The resolution of this issue must therefore be intuitive and judgmental. When the amount of economic rent is very large, as will almost necessarily be the case under a volunteer procurement policy when a very large proportion of the population base is required to serve, there can be severe economic dislocations.[56] This explains, in part, why conscription is the standard method of manpower procurement when a country maintains a very large military force relative to its population base.

As will be discussed in the next chapter, the policy position adopted by the Gates Commission helps to define the other extreme. The Gates Commission argued that the wages for first-term personnel should be raised to a level comparable to that found in the civilian sector, irrespective of the decision to end the draft. The Commission interpreted "comparable" basically to mean the average wage paid to similarly aged and educated individuals in civilian employment. In other words, if the average civilian wage for 17 to 20 year old males equals w' in Fig. 5-5, paying economic rent of at least as much as the cross-hatched area would be consistent with public policy objectives. Therefore, as long as defense force posture would be such that m' or fewer individuals would be required to join every year, the analysis throughout this chapter implies that a volunteer military would be preferred on economic grounds.

We have thus defined the two extremes: Volunteerism is probably preferable for forces in which m' or fewer accessions are needed every year, while conscription is probably preferable for forces in which m* or more accessions are required every year. This, however, is likely to leave a large range over which the appropriate manpower procurement policy is not defined, at least according to the above criteria.[57] For example, when about 75 percent of the eligible manpower pool is

[55] Under the same assumptions as in the previous footnote, the annual budget cost would equal $17.5 billion for those in their first term (i.e., $5,000 × 1,750,000 × 2), *$70 billion per year less than under a volunteer regime.*

[56] It can be argued that huge economic rents of this sort could cause economic *costs* of their own in the civilian sector. That is, not only might these large economic rents be undesirable from the point of view of income redistribution, they might also lead to additional economic costs. The discussion thus far has failed to deal with these issues because we have analyzed the problem only in a partial equilibrium sense. A complete analysis would require a general equilibrium framework.

[57] Empirically, for the United States, m' is likely to be about 25 percent of the eligible manpower pool (i.e., those physically and mentally qualified for military service), based on the Gates Commission estimates. Conversely, a reasonable lower bound for m* would seem to be about 90 percent of the eligible manpower pool.

required to serve in the military, the budget cost of a volunteer force is still likely to be prohibitively expensive, but this proportion is small enough that the undesirable economic effects of conscription are far from inconsequential.

On the face of it, the policy problem would therefore seem to become one of choosing between two apparently undesirable alternatives. However, there are in fact other alternatives, which become apparent once we relax the assumptions stated at the outset of the analysis (i.e., that other manpower policies such as the length of the initial obligation and retention policies would remain unchanged).

To illustrate, suppose that military requirements are such that 75 percent of the eligible manpower pool must serve. Assuming that these accession requirements are based on a two-year conscript tour, then it would be possible to absorb the entire manpower pool by reducing the length of the tour to about 18 months. Although it was argued earlier in this chapter that such a reduction in the length of the conscription tour is not without its own economic costs, the additional economic costs caused by such a policy are probably small compared with the inequities of a selective service draft, on the one hand, or the enormous economic rents created by a volunteer force, on the other, when military requirements are so large relative to the eligible manpower pool. Moreover, such a policy change could be blended with other policy changes, such as reserve duty.

At the same time, if the objective is to maintain a viable standing force (as opposed to using active duty primarily for the purpose of training recruits), then shortening the conscription tour represents a viable option only within certain limits. That is, a 9- or 12-month conscription tour is probably not a realistic alternative. As a practical matter, then, universal military service is probably a reasonable alternative for maintaining an effective standing force only if the length of the conscription tour is not reduced below 18 to 24 months.[58]

At the other end of the spectrum, suppose that 25 percent of the eligible manpower pool will volunteer if the military wage equals the average wage earned by comparably aged and educated civilian workers. Then, a 25 percent pay "premium" for military service, coupled with a modest increase in the length of the initial obligation and more extensive use of women and civilians, could probably support a true volunteer force equal in size to a mixed volunteer-conscript force requiring between 40 and 50 percent of the eligible manpower pool.[59]

The basic point is that there are many ways for dealing with the manpower procurement policy problem. In general, universal conscription is probably to be preferred when very large peacetime forces are required (e.g., for the United States, at least 4 to 5 million members). Volunteerism, on the other hand, can be used to support a much larger military capability than might at first appear. A variety of specific policy options—e.g., modest pay incentives, other benefits such as post-service education, relaxation of screening criteria, increased use of women and civilians, and force structure changes[60]—enable volunteerism to support a

[58] The exact length of the minimally "acceptable" tour length depends, among other factors, on the force structure. For example, forces structured mostly around large numbers of ground combat units might be able to make effective use of 12- or 15-month conscripts, while those relying heavily on complex systems with heavy maintenance requirements might require 2-, 3-, or 4-year minimum tours.

[59] That is not to say that 50 percent of the manpower pool would volunteer. Rather, a volunteer force equivalent in capability to a draft-based force requiring 50 percent of the manpower pool could be sustained by these types of policy changes.

[60] For example, whereas the current force structure is based on such policies as performing most maintenance in-house, alternatives include having contractors conduct major maintenance and overhead. We saw in Chap. 2 that the dividing line between what is military and what is support is very flexible, so force structures can be changed to accommodate different manpower and personnel policies.

military equal in capability to a much larger draft-based force (probably in the neighborhood of 3 million members for the United States during the 1970s).

It is only in the middle range, where it is deemed inappropriate to induce further policy changes (such as increased pay) and where universal military service is not feasible, that selective service becomes "necessary." This range, however, is smaller than it might seem at first, and in such cases, the policy problem becomes one of minimizing the inequities of selective service.

Appendix 5-A

A MODEL OF PARTICIPATION IN THE MILITARY AND DRAFT AVOIDANCE UNDER CONSCRIPTION

Determination of who actually serves in the military under the draft is important for several reasons, including the economic cost of the draft and the redistribution of income caused by the draft. Accordingly, this appendix develops a theoretical model for estimating who serves under the draft and who does not, based on the innovative work in this area by Sjaastad and Hansen. Because data limitations preclude the estimation of exactly who did and who did not serve (or who would have and who would not have under alternative forms of conscription), we must resort to a theoretical approach. Yet, what little empirical evidence can be mustered suggests that this theoretical approach yields results that may not be too far off the mark.[1] The appendix concludes by applying the model to the specific problems raised in the text of this chapter.

THE MODEL[2]

We begin by assuming that individuals attempt to maximize their expected income y^* which, for those subject to the draft, equals (1) the probability of not having to serve times whatever they could earn from civilian employment less the amount of resources they expend attempting to avoid induction plus (2) the probability of having to serve times military pay less the amount of resources they expend attempting to avoid induction. That is,

$$y^* = (1 - p)(w - c) + p(1 - c), \tag{5.A.1}$$

where p = the probability of being inducted,
c = the costs spent attempting to avoid induction,[3] and
w = the individual's alternative civilian earnings opportunities (where the military wage equals unity).

Equation (5.A.1) can therefore be rewritten as

$$y^* = w - c - pw + p. \tag{5.A.2}$$

[1] For example, the results presented here suggest that because of their less advantageous economic position, more blacks than whites will serve during conscription, i.e., there are not as many opportunities for blacks to escape induction—a conclusion that is borne out by the actual evidence presented later in Chap. 10.

[2] This section provides a capsule summary of Sjaastad and Hansen's model. See Larry A. Sjaastad and Ronald W. Hansen, "The Conscription Tax: An Empirical Analysis," in *Studies Prepared for the President's Commission on an All-Volunteer Armed Force*, U.S. Government Printing Office, Washington, D.C., November 1970.

[3] Such costs include legal and medical expenses, the costs of going to school, fleeing the country, going to jail, and so forth.

Since y^* is a function of c—both because the probability of being inducted is presumably directly related to the amount of resources that the individual devotes to draft avoidance activities and because c enters Eq. (5.A.2) directly—the key variable at the individual's command is how much effort (i.e., resources) he is willing to expend for draft avoidance activities. That is, the individual will attempt to maximize y^* by his choice of c.

Individuals whose civilian earnings opportunities are less than the military wage (which equals 1) will of course not expend any resources attempting to avoid induction (since they would actually be worse off if they succeeded in doing so.[4] For individuals whose w exceeds 1, we can find the optimum c by differentiating y^* with respect to c:

$$\frac{\partial y^*}{\partial c} = \frac{\partial p}{\partial c}(1 - w) - 1. \tag{5.A.3}$$

Setting Eq. (5.A.3) equal to zero, we have

$$\frac{\partial p}{\partial c} = \frac{1}{1-w} \tag{5.A.4}$$

Thus, how much the individual is willing to expend in his attempts to avoid induction depends on the relationship between p and c.

As noted by Sjaastad and Hansen, a "plausible" functional relationship for p(c) is

$$p(c) = e^{-mc}, \tag{5.A.5}$$

where m is a variable subject to the control of the Selective Service System. Equation (5.A.4) seems "plausible," first, since if the individual spends nothing on draft avoidance, he is almost certain of being inducted (i.e., $p(c) = 1$ when $c = 0$).[5] Second, more draft-avoidance efforts (i.e., larger c) reduce the probability of having to serve, but at a decreasing rate with increasing c (e.g., doubling c reduces p, but by less than half). Finally, an infinitely large c reduces p to virtually zero.

Note further that Eq. (5.A.4) means that the Selective Service System (through its implicit choice of m) can affect the degree of success an individual can expect from his draft avoidance activities. For example, when the Selective Service System institutionalizes many forms of draft deferments, as it did during the pre-Vietnam draft, it is implicitly making m larger (thereby increasing the effectiveness of a given amount of draft avoidance expenditures).

Given Eq. (5.A.5),

$$\frac{\partial p}{\partial c} = -me^{-mc} = -mp \tag{5.A.6}$$

[4] Note that in assuming that the individual attempts to maximize expected income, we are implicitly assuming that he is entirely indifferent with respect to military service versus civilian employment if both pay the same. The analysis can, however, be easily generalized to the case of either a positive or negative "taste" for military service relative to civilian employment.

[5] If no one engaged in draft avoidance activities, the probability of induction for any given individual would be less than 1. However, because those who have the most to gain by avoiding induction will attempt to further reduce the odds of having to serve by engaging in draft avoidance activities, they in effect "drive up the ante" for those wishing not to serve.

Substituting Eq. (5.A.6) into (5.A.4), we have

$$p = \frac{1}{m(w-1)} \tag{5.A.7}$$

as the marginal condition. Note, however, that Eq. (5.A.7) cannot be satisfied for $w < (1 + m)/m$. From Sjaastad and Hansen,[6]

> The appropriate interpretation of cases where (5.A.7) implies $p > 1$ is that of a corner solution; persons who cannot satisfy condition (5.A.7) are those for whom the gains associated with reducing the probability of induction are so small that no expenditure to do so is justified. These persons will simply permit themselves to become drafted, or they may even volunteer but they would not do so in the absence of conscription. Persons able to satisfy (5.A.7) enter the military only as draftees.

Therefore, by setting p equal to 1 in Eq. (5.A.2), we have

$$w^* = 1 + 1/m \tag{5.A.8}$$

as the supply price below which individuals will not engage in draft avoidance activities. Above w^*, though, the individual will enter the military only as a draftee, and only after he has already expended resources attempting to avoid serving.

Therefore, everyone lying below w^* on the supply curve will serve—some as true volunteers, some as draft-motivated volunteers, and some as inductees—while only some of those lying above w^* will serve. The probability that any given individual lying above w^* on the supply curve will serve depends on the amount of resources expended in attempts to avoid the draft, which, in turn, depends on the individual's supply price. That is, those individuals with larger reservation wages have more to gain by not serving and will accordingly spend more to avoid serving—hence, they will have a smaller chance of being inducted.

The amount that any given individual will be willing to spend can be found by equating Eqs. (5.A.5) and (5.A.7):

$$e^{mc} = m(w - 1), \qquad \text{for } w > w^* \tag{5.A.9}$$

or, equivalently,

$$c = [\ln m + \ln(w - 1)]/m, \qquad \text{for } w > w^*. \tag{5.A.10}$$

Thus, assuming for the moment that m equals 2, the individual whose reservation wage is three times the prevailing military wage will spend (from Eq. (5.A.10)) an amount equal to 60 percent of the prevailing military wage to avoid induction.[7] From Eq. (5.A.7), he therefore faces a 17 percent chance of being inducted.[8]

[6] Sjaastad and Hansen, op. cit., p. IV-1-7.

[7] That is, $c = [\ln 3 - \ln(3 - 1)]/3 = 0.6$.

[8] That is, $p = 1[3(3 - 1)] = 0.17$.

Assuming that s^* percent of the eligible manpower pool have reservation wages less than w^*, the total amount of costs expended by those attempting to avoid induction equals

$$\text{Total Costs} = \int_{s^*}^{1} c[w(s)]\,ds \tag{5.A.11}$$

where $c[w(s)]$ is defined in Eq. (5.A.10), and $w(s)$ is the supply of labor to the military.

Thus, Eqs. (5.A.1) through (5.A.11) provide the model developed by Sjaastad and Hansen for determining who serves and how much is spent in attempts to avoid the draft. Though this approach may seem at first glance to be somewhat sterile, it offers a powerful tool for investigating the effects that various forms of conscription have on who serves and the amount of effort spent in draft avoidance activities.

Application of this model to the various problems posed in the text of this chapter is described below.

EXCESS ECONOMIC COST OF THE DRAFT

It was stated in the text of Chap. 5 that the excess economic cost of the pre-lottery draft was estimated to be $850 million in 1964, and that it would have been about $1,350 million had the lottery been used.

Based on the earlier discussion (see Fig. 5-2), the minimum economic cost (achieved with either a volunteer force or an LSPDF draft) is calculated as

$$E_v = N \int_0^B w(s)ds, \tag{5.A.12}$$

where N = number in the eligible manpower pool in 1964 (assumed to be 500,000),[9]

B = proportion of the manpower pool required to serve, and

$w(s)$ = supply of volunteers (a constant elasticity supply curve with an elasticity of 1.25, normalized so that $w(0.20) = w^*$, where $w^* = \$6500$ for two years of service).[10]

The economic cost of the pre-lottery draft was calculated as

$$E_{PD} = N \int_0^{1.0} p(s)\, w(s)ds, \tag{5.A.13}$$

[9] Refers to the Category I-III high-school graduate 18 year old population (see Chap. 8). Source: Sjaastad and Hansen.

[10] Sjaastad and Hansen estimate that the annual military pay (including payments in kind) in 1964 was $3250 per year, and that this yielded about 100,000 true volunteer Category I-III high-school graduates (so that $A = 100{,}000/500{,}000 = 0.2$).

where $p(s) = 1$, for $w \leq (4/3)w^*$,
$= 1/3\,(w - 1)$, for $w > (4/3)w^*$.[11]

The economic cost of the lottery draft was calculated as

$$E_{LD} = N \left[\int_0^A w(s)ds + \left(\frac{B-A}{1-A} \right) \int_A^{1.0} w(s)ds \right], \qquad (5.A.14)$$

assuming that all those with supply prices greater than w^* stood an equal chance of serving.[12]

The excess economic costs of the pre-lottery and lottery drafts can therefore be calculated directly from Eqs. (5.A.12) through (5.A.14).

The Conscription Tax: Narrow Definition (Table 5-2)

The conscription tax (narrow definition) T was calculated for the pre-lottery draft as

$$T = N \int_A^{1.0} p(s)\ [w(s) - w^*]ds, \qquad (5.A.15)$$

where $p(s) = 1$, for $w \leq (4/3)w^*$
$p(s) = (1/3(w - 1))$, for $w > (4/3)w^*$,[13] and

where w(s) is defined as in Table 5-2.[14]

For the lottery draft, the tax was calculated as

$$T = \left(\frac{B-A}{1-A} \right) N \int_A^{1.0} [w(s) - w^*]ds. \qquad (5.A.16)$$

The Costs of Collection (Table 5-3)

For the pre-lottery draft, the costs of collection, C, were estimated as

$$C = N \int_{s^*}^{1.0} \frac{1}{m} [\ln n + \ln(w(s) - w^*)]ds, \qquad (5.A.17)$$

[11] Sjaastad and Hansen show that

$$\int_0^{1.0} p(s)ds = \frac{250{,}000}{500{,}000} = 0.5,$$

if m = 3 (see Eq. (5.A.8)).

[12] This, of course, is not entirely true, but it does not substantially bias the results.

[13] See Eq. (5.A.8).

[14] For the logistic supply curve, the integral was truncated at 0.99. That is,

$$T = N \int_A^{0.99} p(s)\ [w(s) - w^*]ds.$$

where $m = 3$, s^* is such that $w(s^*) = ((m + 1)/m)w^*$.

For the lottery draft, draft avoidance costs were assumed to be zero for those with lottery numbers greater than 240, so the total costs of collection were estimated as

$$C = \frac{2}{3} N \int_{S^*}^{1} \frac{1}{m} [\ln m + \ln (w(s) - w^*)] \, ds,$$

with all variables defined as above, except that m was (somewhat arbitrarily) set equal to 1 (to reflect the fact that most deferments were eliminated under the lottery draft).

Estimates of the Conscription Tax (Table 5-3)

The probability of paying the tax (column (5)) was estimated as

$p = 1.0$, for $w \leq 4/3$ (i.e., $m = 3$)
$p = 1/(3(w - 1))$, for $w > 4/3$,

where w equals the ratio of column (2) to column (1).

Chapter 6

THE DECISION TO END THE DRAFT

The preceding chapters have focused on the substantive concerns that surfaced during the debate of the 1960s. By the late 1960s, conscription had emerged as a major public policy issue in its own right, and more and more, the nation began to question whether the draft was worth the price—both economic and noneconomic.

This chapter examines how the decision to end the draft actually evolved. The creation of the AVF is a unique example of the public policy decision process. There has probably never been a public policy decision as significant as that which ended the draft where the issues were so systematically examined as part of the decision process and where research and analysis played such a crucial role in the final policy outcome.

STRUCTURING THE DEBATE: THE FORMATION OF THE GATES COMMISSION

In the late 1960s it became clear that opposition to the draft was more than a passing fancy. The dialogue that had served to bring the draft to the forefront of public attention would likewise serve to keep it there. Indeed, the fact that the Selective Service System came up for regular review in Congress almost guaranteed in itself that the draft issue would continue to be scrutinized carefully by the public.

The first major step toward actually structuring the draft debate occurred when President Richard Nixon, in accordance with his campaign pledge to abolish the draft, announced the formation of the President's Commission on an All-Volunteer Armed Force on March 27, 1969, less than three months after he assumed the Presidency. The Commission—usually referred to as the Gates Commission, after its Chairman, former Secretary of Defense Thomas S. Gates, Jr.—was a remarkable achievement in a number of respects.

The Commission's members were drawn from a broad cross-section of America's leaders, including individuals with backgrounds in the government, the military, academia, the business community, and public interest groups. Together with its professional research staff of about 40, the Gates Commission was one of the most impressive groups of its type ever formed. The Commission was able to provide a reasonably comprehensive review and analysis of most of the major issues related to the draft and also came to substantive conclusions, all within a year of its formation. Unlike many efforts of this sort, the Commission's recommendations were actually adopted, almost to the letter, by both the President and the Congress. While some might question certain specific findings or the coverage of particular issues, the Gates Commission is nevertheless unique as an example of the public policy decision process, both for the quality of the effort and for the subsequent recommendations that resulted in the removal of the draft.

The Commission's explicit charter, as outlined in the original announcement of

its formation, was to study "the estimated costs and savings resulting from an all-volunteer force, as well as the broader social and economic implications of this program."[1] From a practical standpoint, and as noted in the first chapter of the Commission's final report, the Gates Commission was thus charged with advising the President on the "feasibility and desirability" of ending the draft.

This restatement of the Commission's charter is particularly important, since if the Commission's estimates had shown that an all-volunteer force would result in tremendous budget increases, it is unlikely that both the President and the Congress would have agreed to end the draft. In fact, previous estimates compiled in support of the 1966 DoD draft study suggested that it would cost from $4 to $17 billion more per year (in 1965 constant dollars) for a volunteer military force of 2.7 million members than for an equivalently sized force under the draft.[2] To put these figures in perspective, we recall that total defense manpower expenditures were about $25 billion in 1965. In other words, prior estimates implied that a volunteer force might increase defense manpower costs by as much as 70 percent.

THE GATES COMMISSION FINDINGS

Three key issues dominated the final stages of the debate about the draft: the inequities of conscription, the possibility of undesirable side effects from ending the draft, and the feasibility of a volunteer military. Although the Commission looked into a broad array of other defense manpower policies and issues, these three constituted the core of the debate and the basis for the subsequent recommendations by the Commission.

Of the three, none generated more concern than the inequities that had characterized the more than two decades of postwar draft policy. A key Commission finding was the pay discrimination that had been practiced against junior military personnel, especially enlisted members, for most of the postwar era. Since, as was shown in Fig. 3-2, military pay for enlisted personnel during their first two years of service had, by 1965, fallen to about half the comparable civilian pay, the financial burdens of conscription (i.e., the conscription tax) were considerable.

This pay discrimination was, in the Commission's eyes, particularly insidious because it was applied selectively to only some members of society, frequently those least able to bear the burden. Although the inequities associated with conscription certainly included more than the conscription tax, this form of discrimination alone was sufficient to cause draft policy as it had come to be applied in the postwar era to be rejected. At the very least, the Commission argued, junior military personnel should not have to bear a tremendous financial burden in addition to the other burdens of being forced to serve, particularly since so many of their peers would have to bear neither.

Irrespective of what was decided about the draft per se, the Gates Commission

[1] With respect to the discussion in Chap. 3, it is important to note that this statement of the Commission's charter did not really encompass a broad investigation of the advantages and disadvantages of all different forms of manpower procurement. Thus, whereas it could be argued that the Commission's effort was too narrowly focused on the economic issues, as in fact critics have charged, this is basically a result of the Commission's original charter.

[2] See the "Review of the Administration and Operation of the Selective Service System," op. cit., pp. 10042-10043.

urged, in its first and strongest recommendation, that the pay for junior military personnel be raised to a level comparable to that found in the civilian sector. In other words, equity grounds alone called for a substantial increase in first-term military pay.

The Gates Commission's second, and probably most significant finding was that this "equity" pay raise would be sufficient to sustain an all-volunteer military force of up to 2.5 million members.[3] *This meant that a volunteer force would not require pay increases over and above those recommended to merely eliminate the pay discrimination that had been practiced against junior military personnel throughout most of the postwar draft period.*

This result contributed significantly to the third major Gates Commission finding, the feasibility of a volunteer force. Specifically, the budgetary implications of the pay raise (whether viewed as an equity pay raise or a volunteer pay raise) would be to increase the net annual budget outlays by between $2 and $3 billion (in 1970 constant dollars), considerably less than previous estimates had implied. The Commission was quick to point out that this was not a "true" cost increase, but rather a shifting of the burden of payment from those young men serving in the military to the general taxpaying public. In fact, if we view the Commission's equity pay raise as the basis for comparison, the budget outlays for a volunteer force would actually be less than those for an equally capable force under the draft because of certain savings due to reduced personnel turnover and the like.[4]

Thus, in marked contrast to the 1966 DoD draft study estimates, which projected that a volunteer force would add somewhere between $5 and $21 billion (in 1970 constant dollars) to the manpower budget (or, eliminating the outlier estimates, between $6 and $10 billion),[5] the Gates Commission estimates projected only a $2 to $3 billion increase. The differences between the conclusions of the two studies are not basically a result of different methodologies or faulty estimates but are rather a reflection of the importance of timing and demographics. The 1966 DoD draft study projections were made on the assumption that a 2.65 million man volunteer force would be established by 1969, whereas the Gates Commission estimates were based on maintaining a 2.5 million man force by the late 1970s.[6]

Between the late 1960s and the late 1970s, however, the number of 18 year old males would increase by more than 20 percent—from less than 1.8 million to more than 2.15 million.[7] The timing of the DoD draft study was therefore such that the

[3] The Commission estimated that larger pay increases would be needed for force sizes larger than 2.5 million, however.

[4] It is perhaps ironic, but a volunteer force might also require smaller pay increases than equity arguments would imply were needed for a draft force. That is, the equity argument implies that the pay of military personnel should be brought up to a level comparable with wages in the civilian sector because individuals are involuntarily forced into the military. When individuals have the option of not serving, such as under a volunteer force, this argument no longer prevails. Instead, pay should be set at the amount required to attract just enough volunteers, an amount that might be less than would be required on "equity" grounds.

[5] The 1966 DoD draft study estimates were given in 1965 constant dollars; these were merely adjusted to 1970 constant dollars (to put them in comparable terms with the Gates estimates) by using the GNP implicit price deflator.

[6] Although the long-run Gates estimates were stated in terms of the 1977 to 1979 time frame, the Commission recommended ending the draft in 1971. The Commission further suggested that to provide sufficient manpower during these interim years (i.e., before the population base had increased sufficiently), the numbers of Category IV personnel could be increased to a maximum of 20 percent of total accessions, and modest strength deficits could be tolerated.

[7] Over this same period, the number of 17 to 21 year old males, the primary recruiting pool, increased similarly from about 9 million to about 10.7 million.

share of the 17 to 21 year old population base required to volunteer was nearly 30 percent more than the share required under the timing and force sizes of the Gates Commission projections[8]—hence, the large difference in the cost estimates.[9] This puts into a somewhat different context the argument presented in Chap. 3 that the volunteer force (or at least the end of selective service) was simply a policy whose time had come by the early 1970s.

The Commission argued further that in addition to the budgetary impact there would be substantial savings in the "true" costs of maintaining a military labor force because many of the inefficiencies engendered by the draft, such as the costs of collecting the conscription tax, would be eliminated under a volunteer regime. Together, these results implied that a volunteer force was indeed economically feasible.

Finally, having explored some of the basic problems and inequities of conscription, the Commission examined the other side of the coin. Specifically, were there offsetting problems with a volunteer military, problems that might be sufficient to argue for retaining the draft, despite its undesirable aspects? For example, would ending the draft lead to a loss of civilian control over the military? Would a volunteer military become an army of the poor and the black? The Commission agreed that such concerns, if they could be substantiated, would indeed weigh heavily against a volunteer force and therefore needed to be studied carefully.

Unlike some advocates of the draft, who argued that the merest possibility of these outcomes, no matter how far-fetched, was sufficient to preclude a volunteer military, the Gates Commission attempted to study these issues in a more systematic fashion. The Commission's basic approach was to accept the null hypothesis of no adverse effects unless the contrary could be proven (with at least some degree of certainty). That is, unless it could be demonstrated that a volunteer military would differ substantially from its draft-induced counterpart, the Commission assumed that there would in fact be no substantial difference.

In its actual investigation of these issues, the Gates Commission was not able to reject this null hypothesis. For example, the Commission projected that black participation in the male enlisted ranks would increase to 14.1 percent under the draft by the mid to late 1970s; it would increase to 14.9 percent in a volunteer environment.[10] Similarly, the Commission argued that the fears about a volunteer

[8] That is, assuming that personnel turnover rates (i.e., the same accession demand) for the two forces both equal k percent of the total force size (F), the shares (S) of the population base (P) required to support the force sizes of the DoD draft study (D) and Gates Commission study (G) are

$$S_D = \frac{kF_D}{P_D} = k\,(2.65)/9.0,$$

$$S_G = \frac{kF_G}{P} = k\,(2.5)/10.7.$$

Therefore, $S_D/S_G = 1.3$.

[9] It is interesting to note that the Gates Commission estimates for maintaining a 3 million man force are about $6 billion per year in additional manpower budget expenditures, about the same costs as reported in the 1966 DoD draft study. (Because of the higher personnel turnover rates that would be incurred, this larger force would require approximately the same share of the 1977 to 1979 population as the DoD draft study force of 2.65 million would require of the 1969 to 1971 population.)

[10] Although the results presented in Chap. 10 show that black participation in the enlisted ranks has risen considerably above what the Commission suggested, the analysis supports the Commission's more substantive conclusion—that black participation rates would be roughly similar in draft and volunteer forces. In other words, the increase in black participation during the 1970s would have happened whether or not the draft had been ended.

force posing a threat to civilian society were entirely ungrounded, since for nearly 200 years American volunteers had safely served in such sensitive and critical positions as the police, the FBI, and, in fact, the military. Thus, finding no evidence to the contrary, the Commission concluded that an all-volunteer force would not constitute a threat to society in general or the military in particular. Indeed, the Commission argued that "... our society has more to gain than to fear from an all-volunteer force."[11]

In summary, after nearly a year of intensive debate, discussion, and analysis, the Commission recommended strongly in favor of increasing the pay for junior military personnel to eliminate the considerable pay discrimination. In addition, because (1) this pay raise would be sufficient to attract both the quantity and quality of volunteers needed to man a post-draft military, (2) conscription led to substantial economic and social inequities, and (3) society would be better, not worse served by a volunteer force, the Gates Commission recommended that peacetime use of conscription be terminated and that a standby draft be reserved only for periods of national emergency:

> We unanimously believe that the nation's interests will be better served by an all-volunteer force, supported by an effective stand-by draft, than by a mixed force of volunteers and conscripts; that steps should be taken promptly to move in this direction; and that the first indispensable step is to remove the present inequity in the pay of men serving their first term in the armed forces.[12]

OUTSIDE CRITICISMS OF THE GATES COMMISSION

The Gates Commission findings and recommendations were far from universally accepted or applauded. Some felt that the Commission had merely caved in to the desires of those middle class families who did not want to see their sons have to serve in the military. But there were also substantive criticisms of the Commission's work, criticisms that were in many cases well founded. Because these criticisms are important for evaluating both the specific Gates recommendations and also the longer-run viability of the AVF, they are examined briefly below.

The first and probably most frequently voiced criticism was that the Commission focused almost solely on pay and economics, to the exclusion of other, equally important considerations. In support of this viewpoint, consider the fact that (1) the key arguments used to support the volunteer force, such as the pay discrimination associated with the draft, were chiefly economic in nature; (2) more than half the chapters and all three appendixes in the Commission's final report were directed to essentially economic issues; (3) more than half of the special studies conducted in support of the Commission's activities were likewise economically oriented; and (4) about two-thirds of the Commission's activities and recommendations emphasized economics in general and pay in particular.

It is important to put this emphasis on pay and economics in the proper perspective, since one of the principal tasks confronting the Commission was to determine

[11] *The Report of the President's Commission on an All-Volunteer Force*, U.S. Government Printing Office, Washington, D.C., 1970, p. 131.

[12] Ibid., pp. 5-6.

the cost of an all-volunteer military—an economic issue. With respect to the more general proposition of the feasibility of the volunteer military, the questions centered on the costs required to attract and retain a sufficient number and quality of volunteers.

The Gates Commission did focus on pay as the primary instrument to achieve this objective but, as the statement below indicates, recognized that the problem was more than just one of pay:

> Pay is not the only, and perhaps not even the primary motivating force for joining or remaining in the military services. A sense of duty, a desire for adventure or travel, society's esteem for military service, a desire for training, the quality of military life and the general conditions of military service—all affect individuals' decisions. Some of these non-pecuniary factors are beyond the control of the services. Others, however, can be controlled, and the Commission is recommending a number of changes in military manpower procurement and management practices to improve the non-monetary conditions of military life and thereby help increase the attractiveness of military careers. These steps will contribute to the attainment of an all-volunteer force, but are not sufficient in themselves. Military compensation in the early years of service is now so low that it will not sustain an all-volunteer force of the quality desired. Until that condition is corrected, an all-volunteer force cannot be realized.[13]

There are two key arguments implicit in the above statement. First, pay was so out of line with that found elsewhere in civilian employment that a volunteer force of the desired size and composition was simply not achievable in the near term without pay increases for first-termers; and second, although pay is certainly not the only means by which the number of volunteers desired can be achieved, it is both an important factor and perhaps the most easily manipulated in the short run.

As shown in Fig. 6-1, given the supply curve of volunteers to the military (SS) and the requirements for volunteers (DD), the draft wage w^* will leave a shortfall of new volunteer recruits. There are essentially three ways of eliminating this recruiting deficit without resorting to the draft and without lowering the standards. The first is to simply increase military pay from w^* to w^{**}, thereby moving along the supply curve SS. An alternative way is to *shift* the supply curve to the right, in contrast to moving along it. This can be done, for example, by increasing the nonpecuniary benefits from military employment. It is important to remember that the supply curve shows the relationship between military pay and the number of volunteers, *other things being equal.* Altering these other aspects of military employment will shift the entire supply curve, either to the right or to the left, depending on whether these changes are viewed as favorable or unfavorable. Finally, as an alternative to or complementary with the shifting of the supply curve to the right, the requirements for volunteers can be shifted to the left by such means as reducing personnel turnover and substituting civilians for uniformed personnel.

The simple framework illustrated in Fig. 6-1 shows a way to conceptualize the problem of achieving and sustaining a volunteer force. As a practical matter, the Commission felt that shifting the supply curve or changing the requirements for volunteers were both long-run propositions and that pay increases represented the only viable alternative for achieving a volunteer force in the near term. In other

[13] Ibid., p. 49.

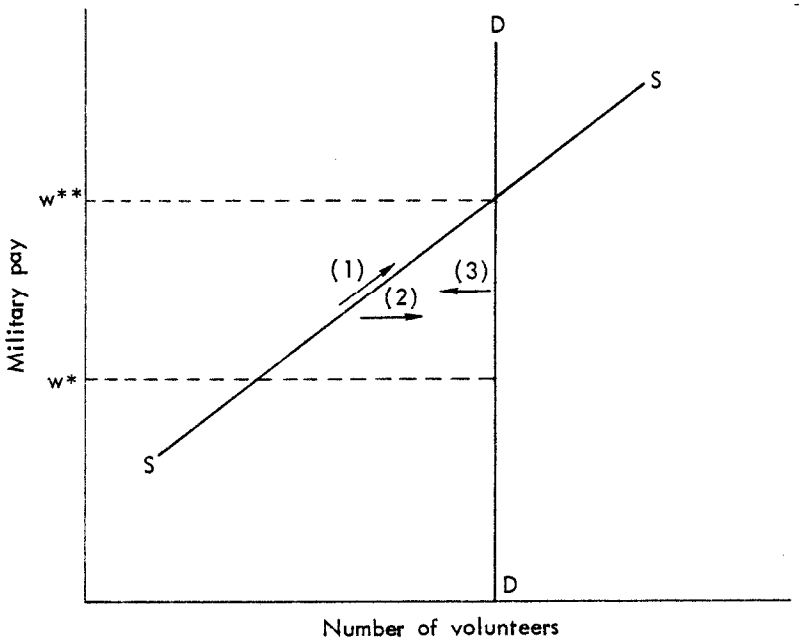

Fig.6-1—Eliminating recruiting deficits by
(1) moving along the supply curve SS,
(2) shifting the supply curve, and
(3) shifting the requirements for volunteers

words, although the Commission certainly recognized the importance of nonpay factors in the overall management problem—and indeed made several recommendations in that regard, such as reducing personnel turnover—the emphasis on pay stemmed primarily from the concern that the other types of changes simply could not be implemented in time to achieve a volunteer force in the near term.

A second major criticism was that the Commission tended to focus on the short-run problem of achieving a volunteer force at the expense of the longer run and more difficult problems associated with sustaining a volunteer military in particular and managing the defense personnel system in general. Although the Commission did provide some guidance on these longer-run issues, the view that it tended to focus more on the problems of how to achieve a volunteer force and *whether* it could be sustained, rather than how best to sustain it, is probably correct.[14]

Finally, a third major criticism, and one related to the second, was that the Commission neglected some of the longer-run social implications of ending the draft. Some, such as Janowitz,[15] felt that the Commission did not give adequate

[14] Indeed, issues such as the mix of manpower (e.g., according to experience), training policy, career management, and compensation are all important to the future of the volunteer force (see Chaps. 12 through 15), yet most of these were given only passing reference by the Commission.

[15] See, for example, Morris Janowitz, "Toward an All-Volunteer Military," *The Public Interest*, 1973; Morris Janowitz and Charles C. Moskos, Jr., "Racial Composition of the Volunteer Armed Forces," *Society*, May/June 1975; Charles C. Moskos, Jr., "The Emergent Army," *Parameters*, Vol. IV, No. 1, 1974; Charles W. Brown and Charles C. Moskos, Jr., "The American Volunteer Soldier: Will He Fight? A Provisional Attitudinal Analysis," *Military Review*, Vol. LVI, No. 6, June 1976; and John Sibley Butler, "Assessing Black Enlisted Participation in the Army," *Social Problems*, Vol. XXIII, No. 5, June 1976.

attention to the issues concerning the social representation of the enlisted and officer ranks under a volunteer regime. Again, the Commission did its best to deal with these issues in the face of severely limited data.

To some extent, then, the criticisms of the Gates Commission's effort are appropriate. In defense of the Commission, however, time and resource constraints probably did not permit a more thorough analysis of these longer-run issues, which were in many instances only tangential to the volunteer force per se. Considering the magnitude of the issues that confronted the Commission, it is remarkable that it accomplished as much as it did in such a short period of time. The fact that more has not been done with respect to these longer-run issues of management, utilization, and social implications is probably more an indictment of the current manpower policy and research communities than of the Commission.

IMPLEMENTING THE VOLUNTEER FORCE

With the completion of the report by the Gates Commission and its corresponding recommendations, the debate about the draft moved from the analytic and research community to the political environs. The Commission urged elimination of pay discrimination against junior military personnel and argued that a volunteer military was both economically feasible and socially desirable. It was then up to the Administration and the Congress to make the actual decisions.

The first step in the decision process occurred in early 1971 when the Administration sponsored legislation in Congress that would substantially increase first-term military pay. Although this legislation called for the pay raise to take place on May 1, 1971, about a year later than the Commission's recommended date of July 1, 1970, and requested a two-year extension of the draft to July 1, 1973, in contrast to the Commission's suggested July 1, 1971, starting date for the volunteer force, the proposed pay levels were remarkably close to the Commission's original proposal.

The House of Representatives acted promptly and by May had passed a pay bill that was substantially larger than the Administration's request—$2.7 billion versus $1.0 billion.[16] This bill also differed from the Administration's request in that it distributed a substantial amount of the initial pay increase to career personnel (see Table 6-1). The Senate, which at one time seemed close to killing the pay/draft bill altogether,[17] ended up passing legislation that was much closer to the Administration's original request, as also shown in Table 6-1.

The House-Senate Conference Committee resolved the differences between the two bills in July, essentially "splitting the difference" between the two.[18] After escaping a threatened filibuster in the Senate, the compromise pay/draft bill passed both houses by September, so that the increases were scheduled to take place on

[16] The Administration had originally proposed that the pay increase be introduced over a two-year period. The first year's increase would go entirely to first-termers; the second year's increase would be somewhat more evenly distributed.

[17] Indeed, to even reach a vote, the Senate finally had to resort to cloture, ending seven weeks of filibustering on the Senate floor.

[18] It is interesting to note that the Conference settled on pay levels for junior personnel less than either the House or Senate version. This in itself caused considerable uproar on the House and Senate floors and almost resulted in sending the entire pay package back to Conference.

Table 6-1

The 1971 AVF Pay Raise: RMC

	Years of Service	1971 Pre-Pay Raise	Gates Recommendation[a]	Senate Bill[b]	House Bill[b]	Enacted: Nov. 1971
Enlisted	1 - 2	$ 3,509	$ 5,387	$ 5,530	$ 5,509	$ 5,313
	3 - 4	6,033	7,086	6,798	6,936	6,648
	5 - 8	7,153	7,524	7,527	7,987	7,639
	9 - 12	8,078	8,226	8,151	9,003	8,635
	13 - 20	9,059	9,065	9,086	10,056	9,656
Officer	1 - 2	7,719	9,582	9,611	8,985	8,713
	3 - 4	10,735	11,370	11,667	12,020	11,570
	5 - 8	12,998	13,034	13,075	14,454	13,950
	9 - 12	14,778	14,800	14,778	16,319	15,765
	13 - 20	17,945	17,978	17,945	19,789	19,145

[a]The Gates Commission recommendations given in the final report were specified in terms of 1970 pay scales. The estimates shown here were adjusted to reflect 1971 pay scales.

[b]Source: *Armed Forces Journal*, July 1971. As reported there, the Senate and House pay raise figures were given in terms of average RMC by pay grade. The estimates shown here were therefore adjusted to a years-of-service basis.

October 1, 1971. Because of the wage-price freeze, however, President Nixon delayed implementation until November 14, 1971. Thus, after a lengthy and hotly contested debate in Congress, the Gates Commission's first recommendation, the elimination of the discrimination against junior military personnel, became a reality.

The actual end of the draft came much more quietly, as the basic issues had been debated as part of the Administration's joint pay/draft proposals in 1971. With the passage of the enabling legislation, the demise of the draft came in early 1973. Thus, with the exception of a short hiatus following World War II, the United States would rely solely upon true volunteers to man its Armed Forces for the first time in more than three decades.

PART II

THE ALL-VOLUNTEER FORCE

Chapter 7

TRANSITION TO THE VOLUNTEER FORCE[1]

Would the All-Volunteer Force actually work? This, in contrast to the often more theoretical concerns of the 1960s, is clearly the key question of the 1970s. To be sure, the decision to end the draft was preceded by considerable research and analysis indicating that a volunteer force could be successfully achieved and maintained. Yet it remained for the draft to actually end to determine whether the volunteer force would work in fact as well as in theory.

The first few years without conscription thus provide the opportunity to assess the effects of one of the largest experiments in public policy ever conducted. Accordingly, Chaps. 7 through 11 review this experience, laying the foundation for an evaluation of the AVF in the broader sense—namely, its viability as a means for meeting U.S. defense objectives throughout the remainder of the twentieth century.

Examination of this experience is motivated further by the fact that the AVF has not been without its own debate and controversy. The basic problem with this debate, however, is that more attention has been given to the symptoms than to the causes—that is, it has tended to focus only on the most immediately observable indicators, rather than upon the underlying determinants. The intent of these five chapters is therefore to shed some light on the AVF experience, not only to understand the events that have already transpired but, more important, to identify the underlying determinants and assess their implications for the longer-run prospects for the AVF.

This chapter reflects on some of the characteristics of the transition to the volunteer force, beginning with the process of transition itself. It then turns to the debate about the volunteer force and concludes by using the issues raised during the debate as a vehicle for examining the volunteer experience.

THE PROCESS OF TRANSITION

The beginnings of the transition can be traced to at least the early 1960s when policies that would eventually become cornerstones of the AVF began to evolve. For example, as the pressure to remove the draft was gaining momentum, there was a corresponding pressure to change policy regardless of whether or not the draft was to be terminated. The most obvious such policy change was, of course, the 1971 first-term pay increase.

In addition to the changes instituted because of pressure to end the draft, a number of other policy changes, such as the introduction of the variable reenlistment bonus in 1966, were implemented simply because they made good sense from

[1] For an excellent review of the historical background regarding the decision to end the draft and the implementation of the volunteer force, see Gus C. Lee and Geoffrey Y. Parker, *Ending the Draft—The Story of the All Volunteer Force*, Human Resources Research Organization, FR-PO-77-1, Alexandria, Virginia, April 1977.

the viewpoint of management effectiveness. That is, because the draft did not entirely insulate the military, the military was forced to accommodate to at least some of the changes that were taking place in the civilian world.

Of all the policy changes that took place before the actual removal of the draft, the changes in pay policy probably did the most to ease the transition. There were four significant revisions to pay policy during the 1950s and 1960s that, together with the 1971 pay increase for first-termers, helped set the tone for paying military personnel in a volunteer environment.

Two such changes concerned the overall *level* of pay, the first of these occurring in 1964 when annual military pay increases were introduced. Prior to 1964, military pay had been adjusted at only irregular intervals at the sole discretion of the Administration and the Congress, and as such, frequently became a "political football." Consequently, as illustrated in Fig. 7-1,[2,3] military pay often went for long periods with little or no adjustment. Annual increases became institutionalized in 1967 with the passage of the so-called Rivers Amendment, when military pay increases became tied to private sector wage increases.[4]

The second major change affecting the level of pay was the legislation instituting catch-up pay increases for career personnel in 1968, the effects of which are also shown in Fig. 7-1. This legislation established the principle of "pay comparability" for those in the career force. Implicit in these two policy changes was the principle that the military had to compete with the civilian sector for qualified personnel—at least those required to man the career force—and would have to set pay accordingly. The other two changes in pay policy concerned the introduction of pay differentials. While the military had historically viewed pay in terms of "equal pay for equal rank and years of service," supply and demand conditions of the 1950s and 1960s argued for a revision in this attitude. Chronic shortages began to appear, particularly in some of the highly technical enlisted specialties where experience, education, and mental aptitude were most important. As a result, the proficiency pay (or so-called pro-pay) program, which authorized additional monthly pay for those in designated shortage skill areas, was introduced about 1958. The variable reenlistment bonus, or VRB, program evolved out of similar concerns. Specifically, to increase the input to the career force, the VRB program authorized a sizable bonus for first-time reenlistees and, again, the amount was variable according to specialty.

Other policy changes that would serve to ease the transition to the volunteer force also began to take shape before the actual removal of the draft. For example,

[2] It should be emphasized that Fig. 7-1 shows an *index* of pay over time, with each index set to 100 for 1950. The question of the *amount* of pay is deferred to Chap. 15. In fact, the results shown in Chap. 15 indicate that career military officers have actually enjoyed better pay than their civilian counterparts, even under the draft.

[3] The index of civilian pay shown in Fig. 7-1 is calculated from average gross weekly earnings for production and nonsupervisory personnel, as reported in the *Economic Report of the President*, 1976; the index of recruit pay is based on calculations of regular military compensation (RMC) earned during the first year of service; and the index of career military pay is based on calculations of average RMC earned for career enlisted and officer personnel (with between 5 and 20 years of service).

[4] Actually the linkage introduced was more complex. Percentage increases in military pay were tied to the percentage increases for general-schedule civil servants which, in turn, were linked to private-sector wage increases in the Professional, Administrative, Technical, and Clerical (PATC) survey administered by the Bureau of Labor Statistics (BLS). See Robert Shishko, "Military Pay and Comparability: Some Observations about the PATC Index as the Basis for Adjusting Military Pay," The Rand Corporation, unpublished paper, March 1975.

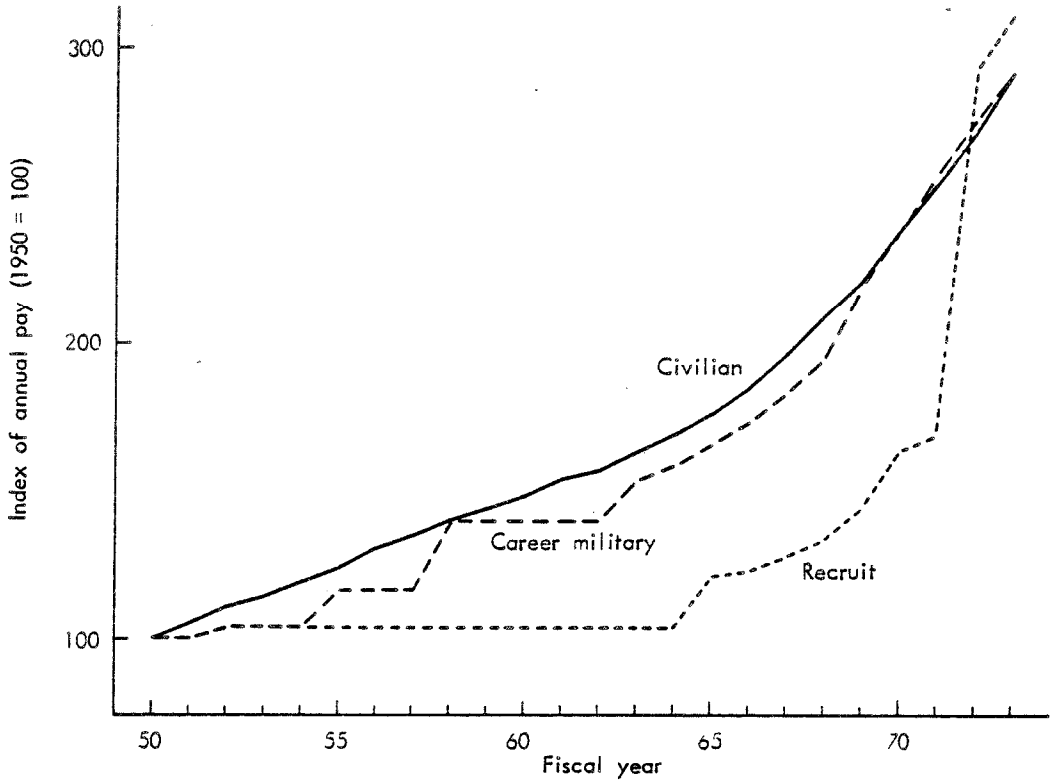

Fig.7-1—Indexes of pay for civilians, career military, and recruits
SOURCES: See text.

between fiscal 1970 and fiscal 1973, the number of recruiters was increased by some 65 percent and recruiting expenditures more than doubled. In addition to these volunteer-oriented policy changes, the process of transition also benefited from the removal of troops from South Vietnam and the corresponding reductions in force sizes.

Besides these readily observable factors, manpower policy began to change in a number of other, more subtle ways. The introduction of enlistment options, where the prospective recruit could select his or her future job assignment, type of training, and/or specific unit, among other choices, is a case in point. The Services began to use desirable overseas tours such as assignments in Europe as an inducement to join. The early 1970s also marked the beginnings of major Service personnel planning efforts, which were designed to integrate manpower needs with such factors as grade control and career advancement.[5]

In retrospect, we can see how the process of transition evolved through the 1960s and began to accelerate during the early 1970s. The results of these policy changes can be seen in Fig. 7-2,[6] where the numbers of "true volunteers" joining

[5] See, for example, Department of the Air Force, *The USAF Personnel Plan: Volume One, Personnel Management Objectives*, Washington, D.C., January 1970. For a review of some of the planning models, see David Jaquette, Gary R. Nelson, and Robert J. Smith, *Manpower Planning Models in the Department of Defense*, The Rand Corporation (forthcoming).

[6] True volunteer enlistments for fiscal years 1964 and 1969 are calculated from Gates Commission estimates of true volunteer enlistment rates; estimates for calendar years 1970 through 1972 are based on lottery draft data provided by the Manpower Research and Data Analysis Center (MARDAC) of the DoD (for a description of the methods for calculating true volunteer enlistment rates from these data,

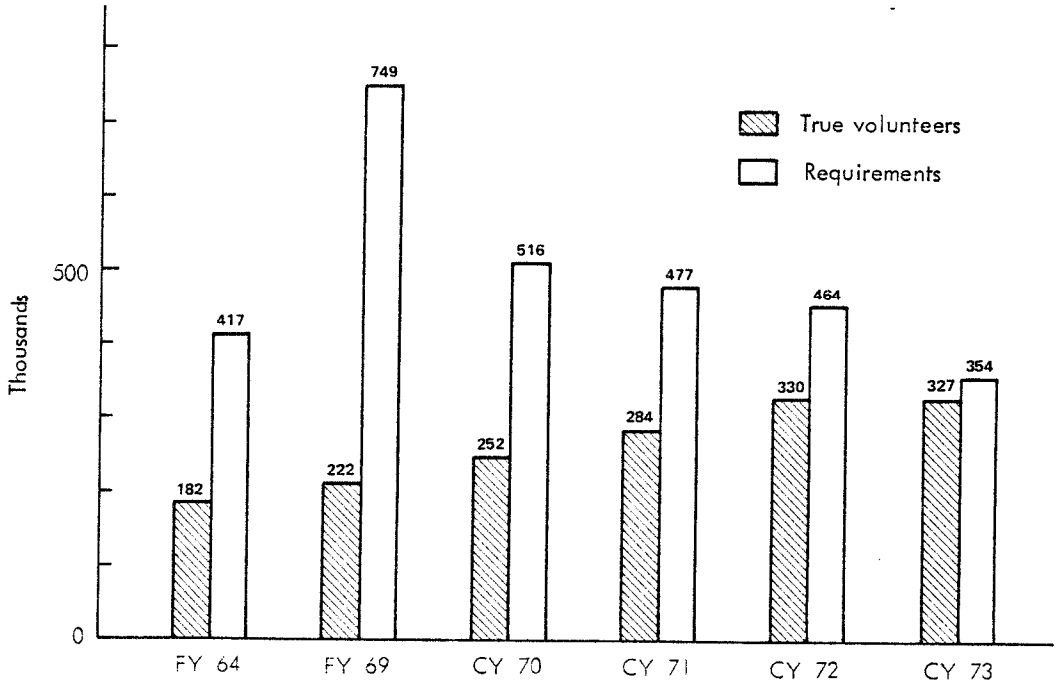

Fig.7-2—Non-prior-service male true volunteers and annual enlisted accession requirements

SOURCE: See text.

the military are shown to have increased by more than 30 percent between 1970 and 1972 and by more than 50 percent between 1970 and 1973. The two-year extension of the draft enacted in 1971 thus served its principal purpose: to provide the time necessary to achieve an all-volunteer military.

Despite these changes in pay and recruitment policy, though, the volunteer force is not yet entirely free of the draft environment, as policies engendered by the draft still remain. Most important, the basic structure of the system governing the management and utilization of military personnel continues largely unchanged from that which characterized the draft era, despite the fact that the underlying conditions have changed dramatically. The AVF is thus paying the price for some of the inefficiencies that became institutionalized during the draft.

THE VOLUNTEER DEBATE

"As a nation, we moved too fast in eliminating the draft . . .," declared former Army Chief of Staff, General William Westmoreland, scarcely one week after the authority to draft had expired.[7] Thus marked the beginnings of a new debate—one

see App. 9-A); and calendar year 1973 data are based on actual enlistments as reported by MARDAC. "Requirements" estimates for fiscal 1964 through calendar 1972 are measured as the actual numbers of enlistments and inductions, as reported in *Selected Manpower Statistics*, op. cit.; and calendar 1973 requirements are based on data provided by the Office of the Assistant Secretary of Defense (Manpower and Reserve Affairs).

[7] William C. Westmoreland, "We Moved Too Fast in Ending the Draft," *Los Angeles Times*, July 8, 1973.

dealing with the progress of and prospects for the AVF. Because this debate may greatly influence the ultimate disposition of the AVF, it is helpful to examine the nature and substance of it in some detail.

Such a review is further warranted, since the dialogue following the demise of the draft has tended to ignore the most fundamental issues in favor of more readily observable, but often less important aspects of the volunteer experience. As a result, the post-draft debate has misrepresented much of the early AVF experience and, accordingly, wrong conclusions may have been reached about the future of the volunteer force. Moreover, the failure to focus on the underlying determinants of the early AVF experience—and their implications for the future—means that opportunities that would both ensure the long-run viability of the volunteer force and lead to more cost-effective management of defense resources may never be realized.

Chronology of the Volunteer Debate

In the absence of a more formal structure, the initial stages of the post-draft debate were carried on largely in the journalistic media and some academic and military journals. The early media coverage was of the standard form: traditional news reporting, some "in-depth" news analyses, and editorial comment. For example, newspapers reported the monthly recruiting progress of the volunteer force for much of its first two years, though not usually as a front-page item. As the AVF experience accumulated, this coverage was extended to include a series of in-depth news analyses of the prospects for and problems with the volunteer force.[8]

Fueled by some early recruiting difficulties, editorials soon began to proliferate —both for and against the volunteer force. The flavor of this controversy, which at times has been quite intense, can be captured by excerpting from some of the early AVF editorial commentary.

As noted earlier, Westmoreland was one of the first to enter the foray, declaring:[9]

> As a nation, we moved too fast in eliminating the draft and there are uncertainties as to the wisdom of the program. With Vietnam behind us, why not develop a better system for providing manpower for our armed services? We cannot afford to gamble with our security.

A more stinging criticism of the volunteer force was delivered by academician Richard Kohn, when he stated that:[10]

> Money is the root of all-volunteer armies—just as it was the root of Civil War recruitment. And, because this is so, most of today's volunteers will step forward from the ranks of the poor. While this may seem to be a bargain all around, America may not be getting its defense dollarsworth from a disadvantaged soldiery led by an increasingly alienated officer corps.

A somewhat more self-serving appraisal of the volunteer force was delivered by the *Los Angeles Times* in one of its lead editorials:[11]

[8] See, for example, James P. Sterba, "In the (Volunteer) Army Now," *The New York Times Magazine*, June 15, 1975; Bruce Bliven, Jr., "A Reporter-At-Large—All Volunteer I," *The New Yorker*, November 24, 1975; and Donald Smith, "The Volunteer Army," *Atlantic*, July 1974.

[9] Westmoreland, op. cit.

[10] Richard H. Kohn, "The All-Volunteer Army: Too High a Price?" *U.S. Naval Institute Proceedings*, March 1974.

[11] Unsigned lead editorial, *Los Angeles Times*, December 24, 1973, emphasis added.

> Whether the volunteer Army was a well-intentioned experiment with honest expectations of success, or whether—*as we frequently argued*—it was an essentially selfish and foredoomed effort to free the middle class from the burden of military service is now irrelevant. The important thing is that the volunteer approach clearly has failed, and that it must be replaced by a system that will assure adequate manpower of necessary quality.

The early AVF commentary was, of course, far from one-sided. One of the central concerns among AVF supporters was that the public was being misled about the progress of the volunteer force, a point of view reflected by columnist George Will:[12]

> Some government officials are spreading misinformation designed to destroy support for the all-volunteer armed force.

Indeed, to help combat the problem of misinformation, Assistant Secretary of Defense (Manpower and Reserve Affairs) William Brehm institutionalized monthly AVF progress reports early in the fall of 1973.

Economist Milton Friedman, a former member of the Gates Commission, was a bit more pointed in his evaluation of the so-called failure of the volunteer force:[13]

> The alleged failures have all been in the Army. They have been significant, though fairly small .... Far more important, the failures have been the result of either gross incompetence or deliberate sabotage by some middle-rank Army officers, including some retired officers in civilian positions. This is a harsh judgement, so let me document it ....
>
> I have limited myself to points that are objective and readily checked. They are nevertheless adequate to demonstrate that the Army has chiefly itself to blame for its failure. They suggest also that the Army cannot be counted on to reform itself ....

Finally, in one of the most succinctly stated rebuttals to the AVF opposition, columnist James Kilpatrick concluded simply that:[14]

> So, the development of an all-volunteer armed service appears to be working fairly well, and you can hardly say that about much of anything, anymore.

In contrast to the first two years with the draft, which saw considerable interest in the AVF, the third year of the AVF was without much public controversy. The nation was in the midst of the worst economic recession since the Great Depression, and the military services were more than able to meet their recruiting needs.

It thus remained until 1976 for the debate to reopen. Given the several years' experience with the volunteer force, the AVF began to receive more attention in the academic literature and national press. This renewed interest in the AVF and concern for it is amply illustrated by the following excerpt from *Newsweek*:[15]

> Even high Pentagon officials who continue to tout the all-volunteer force concede that its future is hazy ... the evidence suggests that the AVF will need help from somewhere before very long.

[12] George F. Will, "Taking Aim at the All-Volunteer Army," *The Washington Post*, January 25, 1974.

[13] Milton Friedman, "Volunteer Armed Force: Failure or Victim?" *Newsweek*, February 11, 1974.

[14] James J. Kilpatrick, "All Volunteer Armed Service Plan Seems to Be Working," *Los Angeles Times*, September 10, 1973.

[15] David M. Alpern and Tony Fuller, "The New-Look Army," *Newsweek*, March 28, 1977.

In addition to the media and academic input to the debate, it is important to recognize the politics involved. Specifically, as problems with military manpower began to develop, some Congressional leaders—primarily the same conservative Southern Democrats that only reluctantly supported the AVF in the first place—began to publicly express their reservations about the volunteer force and its future. Senator Sam Nunn's concern is illustrative:[16]

> The All-Volunteer Force may be a luxury that the United States can no longer afford.

Moreover, although the AVF was indeed the result of a bipartisan effort—and has continued to enjoy considerable bipartisan support throughout the post-draft environment—it has nevertheless been seen in some circles as a Republican policy. Not only was the AVF the product of a Republican administration, it has also been seen, in the words of the *Los Angeles Times*, as an "effort to free the middle class from the burden of military service."

The other political consideration that needs to be kept in mind is the role of the Carter Administration. Although both President Carter and Secretary Brown publicly indicated that they would go to the draft as only a "last resort," they have in effect taken a "wait and see" position on the AVF. Thus, by not formally committing themselves to the concept or policy of an all-volunteer military, they have helped to keep open the post-draft debate.

The claims and counterclaims that have surfaced during the first four years without the draft thus provide some insight into the nature of the controversy surrounding the volunteer force. In many ways, this controversy has actually been more intense than that which preceded the removal of the draft and has indeed raised a number of genuine issues which deserve to be explored in more detail.

The Substantive Issues

Among the issues raised during the course of the post-draft debate, none is more important than whether the military services can attract a sufficient number of volunteers in the absence of a draft. This concern has centered, first, on the recruiting shortfalls that characterized much of the first year without the draft; second, on whether continued success of the volunteer force depends on continued high unemployment rates; and third, on what the decrease in the number of men reaching military age that will begin in about 1980 means for the future of the AVF.

Since the Army fell short of its stated recruiting objectives for 9 of the first 10 months of the volunteer force, it was not uncommon to see headlines such as "Army Enlistments Fall Short of Goal for Seventh Month in a Row: August Total is 19% Below Target."[17] These recruiting shortfalls led Westmoreland to assert that "in the final analysis, the size of our forces will be determined by the number of men that can be recruited—not by the security requirement."[18]

Just as pessimism was mounting, the recruiting picture began to turn around. The military services—particularly the Army—began to meet, and even exceed,

[16] Sam Nunn, "Another Look at the All-Volunteer Force," *Washington Post*, March 28, 1977.

[17] *New York Times*, September 12, 1973.

[18] William C. Westmoreland, "If Not a Volunteer Army, What Then?" *New York Times*, August 17, 1973.

their recruiting quotas. Amidst these improvements in recruiting, though, a new concern emerged, centering on whether the second- and third-year recruiting successes under the AVF were attributable to the 1974-1975 economic recession.

This widely held view has led some to conclude that the longer-run viability of the volunteer force will in fact be dependent on continued economic and unemployment problems. For example, the Defense Manpower Commission concluded that:[19]

> The prospects for sustaining a peacetime all-volunteer force during the next ten years will be determined basically by the economic situation .... If rapid economic growth is realized, the supply of recruits will probably not be large enough to afford service needs under current policies and programs.

For the most part, these early concerns about recruiting centered on the active forces. However, the failure of the reserve forces to attract the desired number of personnel has also raised questions about the ability to maintain an effective mobilization capability without the draft. Indeed, Army Chief of Staff Bernard Rogers suggested that a return to the draft might be needed in order to man the reserve forces.

Although most of the attention has been focused on the numbers of personnel recruited, the post-draft debate has also demonstrated concern for the "quality" of the new recruits. For example, the Army could not maintain the very stringent recruiting standards that it used for the first six months of the AVF—standards more restrictive than those used at any time during the draft. Accordingly, the numbers of recruits without a high-school diploma and from the below-average portion of the mental aptitude spectrum increased relative to the first few months of the AVF. The decrease in the number of college graduate enlistments led King, for example, to conclude:[20]

> To many, this implies that the enlisted force is less representative and therefore less able to deal intelligently with the complex issues which are the basis for national defense policy.

In addition to the concern about declining quality, the post-draft debate has raised questions about the social representativeness of the AVF, one of the major issues of the 1960s debate. This issue gained new momentum during the first year without the draft, since the numbers of blacks entering the force increased by much more than the Gates Commission had originally predicted. In the words of one critic, "Undoubtedly, most [volunteers] will come from the poor, the undereducated, and those who cannot get the training or jobs in the civilian economy .... Obviously the middle class, and to some extent the working class are not interested in the service."[21]

In the same vein, Senator Kennedy stated that:[22]

> In the past, I have warned that a Volunteer Army could result in an Army consisting largely of disadvantaged citizens. Indications now are that there are greater proportions of poor whites, blacks, Chicanos, Puerto Ricans,

[19] Defense Manpower Commission, op. cit.

[20] King, William, op. cit.

[21] Kohn, op. cit.

[22] Press Release from Senator Edward Kennedy's Office, May 7, 1974.

> Indians, and other minorities in the Volunteer Army than in the general population.

Senator Kennedy went on to note that this was "economic coercion," and that "our democratic society should not have to rely on this segment of our population to defend the rest of the country."[23]

The rising proportion of blacks in the service—at one point, in July 1973, more than 30 percent of new Army recruits were black—gave a certain credibility to this viewpoint. At the same time, it should be emphasized that this was the only month that black enlistments reached that level. Moreover, it is not clear how much of an issue this should be, since all participants serve voluntarily and receive a fair market wage for their service.

The fourth major issue to emerge from this debate concerns cost—specifically, whether the volunteer force has been responsible for much of the dramatic increase in costs since the 1960s. To illustrate, columnists Roland Evans and Robert Novak remarked that:[24]

> Nothing could more dismally underline the dangerous predicament of U.S. defense today. *Thanks to the crushing burden of the All-Volunteer Armed Services*, military pay makes up an ever larger percentage of the budget. Thus, the grim prospect: rising defense spending that fails to prevent dangerous Soviet superiority in weaponry—in other words, running as fast as possible but still not keeping up.

A somewhat different point of view, however, is reflected by Will:[25]

> . . . It is demonstrably untrue that the size of the U.S. personnel costs can be blamed on the decision to achieve an All-Volunteer Force.
>
> The crucial decision regarding military pay, the decision primarily responsible for today's pay costs, was made in 1967. Then Congress declared that henceforth pay—for everyone but first-term military men and women—would be comparable to civilian pay . . . .
>
> This was three years before the President recommended an All-Volunteer Force, and four years before Congress passed the only pay raise that can be "blamed," even in part, on that idea.

THE AVF ISSUES

The specific issues raised during the course of the AVF debate—along with the more general concerns about the feasibility and desirability of the volunteer force which dominated the Gates Commission deliberations—help to set the stage for analyzing the volunteer experience.

To begin with, the question of the feasibility of a volunteer military is two-sided. Initially, the issue was one of determining what it would cost to implement and sustain an all-volunteer military of the desired size and composition and whether

[23] It is noteworthy that out of this concern, Senator Kennedy was one of several members of Congress who were instrumental in enacting legislation establishing minimum "quality" standards for new recruits. As shown in Chaps. 8 and 10, the imposition of these quality standards has important implications for the socioeconomic composition of the force.

[24] Roland Evans and Robert Novak, "The Growing Cost of National Defense," *The Washington Post*, January 7, 1974, emphasis added.

[25] Will, op. cit.

it would be worth it to bear these costs. Given the pay raise and other policy decisions that were implemented as part of the overall decision to end the draft, however, the issue has become one of assessing how well the military services have fared in meeting their quantitative and qualitative recruiting objectives.

The feasibility issue thus reduces primarily to one of military manpower procurement. The largest single question mark, both from the early studies of the volunteer issue and as raised by the post-draft debate, has centered on enlisted personnel in the active duty forces. The draft most directly affected the active duty enlisted forces; and the enlisted manpower recruitment problem is the largest in sheer numbers, as the Services must attract about 400,000 new recruits each year.[26]

In addition to the issues of recruiting progress, which have centered on the quantity and quality of manpower attracted to the Armed Forces, the AVF debate also raised questions concerning social representation. Again, the key questions have resolved around enlisted manpower—specifically, would the AVF lead to an Armed Force manned primarily by the poor and minorities? Finally, because of the rapid increases in manpower costs that have taken place since the removal of the draft, cost has once again become an AVF issue.

Recognizing that the major concerns have centered on enlisted manpower procurement, the main thrust of the next four chapters is the analysis of the enlisted manpower recruitment problem. Specifically, Chap. 8 focuses on the quantity and quality of new enlisted recruits—active and reserve—during the first few years without the draft. Chapter 9 builds on this evidence and develops estimates of enlistment supply and demand in the post-draft environment. Chapter 10 addresses the impact of the volunteer force on social representation in the Armed Forces. And Chap. 11 assesses the cost of the AVF.

[26] Other manpower procurement issues include officers and medical doctors. Although both are important, this report is primarily addressed to the questions surrounding enlisted personnel, especially in the active duty forces. First, there has been little or no difficulty in attracting sufficient personnel for the officer corps; in fact, because they need only about 25,000 new officers each year, the Services have actually experienced queues waiting to join the officer corps. (The reason for this will become clear in Chap. 15, when it is shown that officers earn between 25 and 50 percent more than comparably aged and educated civilians.)

On the other hand, the Services have had some difficulty in attracting "adequate" numbers of medical doctors. However, ongoing research by David Chu at The Rand Corporation suggests that there are reasonable, cost-effective alternatives. Four policies in particular deserve attention: (1) expanded use of the Services' medical scholarships program, (2) expanded use of physician extenders, (3) establishment of a "nuisance" charge for the use of medical facilities by dependents and retirees, and (4) elimination of policies that require active duty personnel to see a physician in order to be eligible for sick leave.

Chapter 8

MANPOWER PROCUREMENT: QUANTITY AND QUALITY

Can the military services attract the numbers of new recruits required to sustain force strength objectives without the pressure of the draft? Will these new recruits be of sufficient quality? The answers to these questions play a crucial role in evaluating the decision to implement the AVF.

This chapter and the next analyze the quantity and quality of manpower procurement in an all-volunteer environment, centering on the recruitment of enlisted personnel for the active forces, although the last section of this chapter reviews enlisted manpower procurement in the reserves.

CONCEPTUAL FRAMEWORK

Before turning to consider the evidence, a simple framework for analyzing enlistment quantity and quality should be outlined. Such a framework is particularly important because observed quantity and quality are frequently as much a reflection of Service policies as they are a measure of actual supply behavior. It is necessary to separate the policy-driven effects from the supply-driven effects if we are to fully recognize the long-run implications of enlistment supply and demand in a zero-draft environment.

This simple framework has three main elements: (1) the demand for enlistees, (2) the supply of applicants, and (3) the applicant screening process. Ideally, we would like to observe enlistment supply, but because of variations in the demand for enlistments and in the criteria for screening applicants, observed supply will not necessarily correspond with true supply behavior.

Enlistment Supply and Demand

Military employment differs from its civilian counterpart in two important respects: the barriers to entry, and the barriers to exit. The fact that the military obligates new entrants for a period of service via the enlistment contract constitutes the barrier to exit. Conversely, because the military maintains a "closed" personnel system, in that it fills its upper ranks almost solely from within, there are barriers to entry (into the career ranks). This implies, per the discussion in Chap. 2, that the analysis can be focused separately on those in their first term of military service and on those beyond the first term, the so-called career force.

Translating this into a simple model of labor supply and demand directs the analysis to the *flow* of personnel into the first term. To begin with, the demand for recruits is a downward-sloping function of the cost of first-term labor, at least in the long run. As first-termers become more expensive relative to other inputs to the defense mission, fewer first-termers and more of these other inputs will be demanded by the military. This is shown as the curve DD in Fig. 8-1.

In the short run, though, recruiting objectives (i.e., the demand for enlistees) may be relatively inflexible, since for a given force structure, it may take consider-

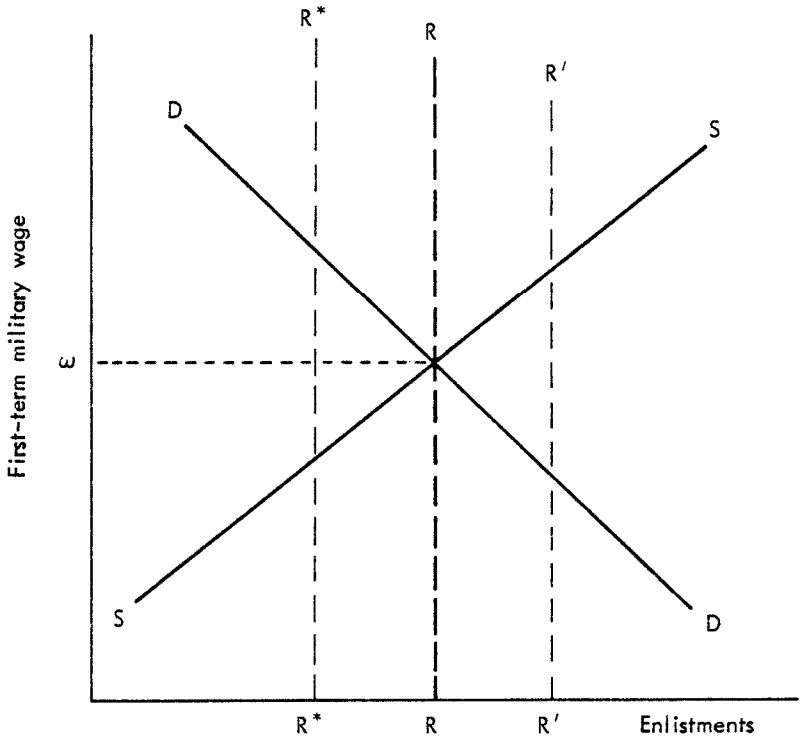

Fig.8-1—Enlistment supply and demand

able time to substantially alter the mix of inputs to the defense mission. This is shown by the line RR in Fig. 8-1. In equilibrium, a wage of w′ is paid, recruiting objectives are set equal to RR, and the military is able to attract a sufficient number of volunteers. At any point in time, there may be mitigating factors which result in recruiting objectives that are either less than the equilibrium amount (R*R*) or more (R′R′). To the extent that recruiting objectives change substantially, we must be careful to identify which observed results correspond with supply behavior and which reflect demand phenomena.[1]

The supply of enlistees similarly depends upon a variety of factors, including military wages over the course of the first term, alternative civilian wages, employment (or unemployment) conditions in the civilian work force, and the conditions of work. Other things being equal, however, we would expect the supply of enlistees to the military to be an upward-sloping function of the wages paid to first-term personnel, shown as the curve SS in Fig. 8-1.

This framework can be further disaggregated into the three major sources of enlistment supply: non-prior-service (NPS) males, non-prior-service females, and prior-service (PS) enlistees.[2] The reason for this disaggregation is simply that the

[1] This becomes particularly important, for example, in assessing the supply of volunteers to the Air Force, since for all practical purposes, variations in the numbers of Air Force enlistments have been limited by demand constraints throughout the volunteer period.

[2] Non-prior-service enlistees, as the name implies, have never before served in the military, whereas prior-service enlistees have had some previous military service. Although the exact DoD and Service regulations regarding PS enlistees have varied somewhat over time, these are basically individuals who elected to rejoin the military after separation. (For example, after separating from the military, some

supply and demand conditions differ considerably for each of these sources. The bulk of enlistment requirements are for NPS males; and, accordingly, it is the ability of the volunteer force to attract sufficient numbers of NPS males that has most often come into question. Non-prior-service females, on the other hand, have historically been in excess supply, because of restrictions placed on the number of women accepted into the military. Prior-service enlistees, like women, have also constituted a relatively minor source of enlisted personnel procurement, for both supply and demand reasons.[3,4]

The importance of this simple analytic framework rests in its implications for the future of the AVF. Given the seemingly obvious nature of this simple model, it is indeed surprising that so little attention has been paid to the demand side of the issue. Whereas Fig. 8-1 points to the importance of *both* supply and demand, virtually all previous analyses have centered on the supply issues.

The Applicant-to-Enlistment Process

The third major element of our analytic framework concerns the process by which applicants become actual enlistees, since not all those who apply are accepted and not all those who are accepted actually enlist. It is important to examine this process separately, particularly the determination of an applicant's acceptability, because the policies governing whether an individual could join the military have varied over the years—in some cases, considerably.

Simply structured, the applicant-to-enlistment process consists of the initial examination, the decision to enlist, and the actual acceptance into the military. This process is illustrated in Fig. 8-2 for NPS male first-time applicants.[5]

In the initial examination, the military—like most employers—uses a series of screening criteria to sort out those individuals who would not be expected to perform satisfactorily on the job. This means determining whether the individual is *trainable*, whether he can perform his *job duties* satisfactorily, and whether he will pose significant *disciplinary* problems.

The screening process consists of medical, moral, and mental examinations and evaluations.[6] For example, the individual must pass a physical examination; and to meet moral fitness criteria, he must not, for instance, have any felony convic-

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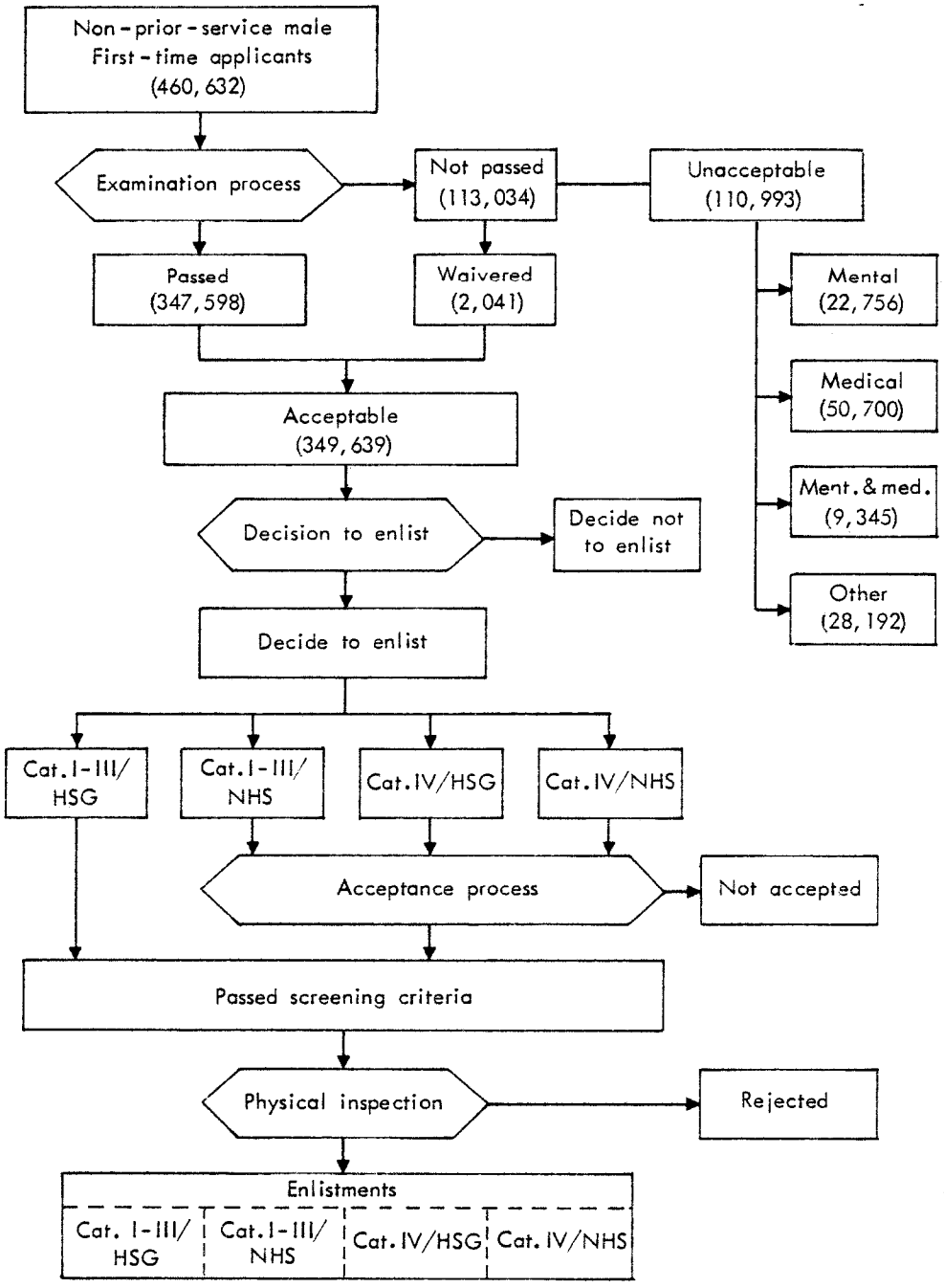
individuals cannot find satisfactory civilian employment and thus attempt to rejoin.) These PS enlistees may be forced to accept a reduced pay grade in order to rejoin the service; and in addition, they are not usually eligible for the bonuses that are normally paid to reenlistees. Traditionally, an individual could reenlist during the period up to 90 days following separation; after that, he would be a PS reenlistee. More recently, the DoD redefined PS enlistees to be those who have separated for more than 24 hours.

[3] On the supply side, the potential reduction in grade means that relatively few of those separating will attempt to rejoin as PS enlistees (note that they have already forgone other reenlistment benefits). Similarly, there is some reluctance on the part of the Services to accept too many PS enlistees.

[4] Of the 413,024 enlistments recorded during fiscal 1974, 85.7 percent were NPS males, 7.5 percent were NPS females, and 6.8 percent were PS enlistees.

[5] Also subject to this same process are NPS female first-term applicants, NPS applicants who have previously failed the entrance examination, and NPS applicants who passed the initial examination more than one year before attempting to enlist. Applicants who have passed the examination within the previous year are not required to retake it.

[6] The final decisions, however, are based on more than test results. For example, part of the determination of moral fitness is an examination of previous schooling records, employment records, and police records. With respect to mental ability, educational attainment (particularly whether the individual is a high-school graduate) is used as a criterion, in addition to test results.



LEGEND: Category I-IV (see text); HSG = high-school graduate; NHS = non-high-school graduate.

Fig.8-2—The enlistment process: calendar year 1972

tions. The medical and moral criteria differ from the mental criteria in that they are applied on a binary basis: The individual is deemed either fit or not fit for service.[7]

The applicant is also tested for his mental aptitude and is classified into one of five so-called mental categories (Category I through Category V),[8] with those in Category I at the upper end of the mental spectrum (the top 7 percent), and those in Category V at the bottom of the spectrum (the bottom 10 percent).[9] Those in Categories I and II are above average; those in Category III are average; and those in Category IV are below average, but legally acceptable. Category V individuals are not legally eligible to join the Services.

As shown in Fig. 8-2, about 75 percent of all NPS male applicants were found acceptable for military service in calendar 1972, including those waivered into acceptability. The remainder were unacceptable for medical, mental, medical and mental, or "other" reasons.

The next step concerns the decision to enlist; as shown in Fig. 8-2, not all who are acceptable in fact enlist. The reasons for not enlisting are many—as examples, the individual may simply change his mind, or the military may not be able to guarantee the particular enlistment options he had hoped to gain. Up to 20 percent or more of the total number found eligible for service may decide not to enlist after completing the full battery of tests and examinations.[10]

The last part of the applicant-to-enlistment process is the actual acceptance process. Although an individual meets the minimum acceptance criteria, he will not necessarily be accepted. As shown in Fig. 8-2, acceptables can be grouped into four main categories: (1) Category I-III high-school graduates, (2) Category I-III non-high-school graduates, (3) Category IV high-school graduates, and (4) Category IV non-high-school graduates.

The Services prefer high-school graduates from the average and above portions of the mental attitude spectrum, so almost all NPS males in the first group are

[7] There are exceptions to this rule. For example, the Medically Remedial Enlistment Program (MREP) is designed to accept some individuals for a probationary period who would otherwise not be eligible on medical grounds (the primary MREP exemptions are for problems of overweight and underweight).

[8] During the 1960s, all the Services employed the AFQT (Armed Forces Qualifying Test) to determine general mental ability. In addition, each Service generally administered its own vocational aptitude examinations, which were used for occupational assignment. In the early 1970s, the AFQT was dropped (except by the Marine Corps), and each Service used its own exam to classify individuals according to mental ability. Finally, the Services have recently returned to a single examination battery, ASVAB (Armed Services Vocational Aptitude Battery), so that better indicators of relative mental aptitude can be made across the Services.

[9] Actually, for Categories III and IV, a finer classification is used: III, A and B; IV, A, B, and C. The percentile breakdowns for Categories I through V are:

Category	Percentile	Category	Percentile
I	93-100	IVA	21-30
II	62-92	IVB	16-20
IIIA	50-64	IVC	10-15
IIIB	31-49	V	0-9

[10] There are no figures available on the number of individuals deciding not to enlist. However, we can infer from Fig. 8-2 what the number might be. By matching calendar year 1972 examinees found acceptable for military service with those who actually enlisted, we find that about 80.1 percent of Category I-III high-school graduates subsequently enlisted within three years, about 80.8 percent of

accepted.[11] Many Category IV and non-high-school graduate acceptables are not allowed to enlist, depending on Service policy. Category IV non-high-school graduates are obviously the least desirable, but Category IV high-school graduates and Category I-III non-high-school graduates may also be subject to constraints; the estimates in Fig. 8-2, however, suggest that most Category I-III non-high-school graduates are accepted.[12]

The foregoing makes two key points: First, projections of the quantity and quality of enlistments must take into account both the supply and demand for enlistments; second, variations in Service policy toward Category IV and non-high-school graduate applicants must be considered when evaluating actual enlistment results.

The next three sections of this chapter apply this basic analytical framework to develop an understanding of the quantity and quality of enlistments since the removal of the draft.

ENLISTMENT QUALITY

The potential and real problems associated with obtaining adequate numbers of recruits might seem to take precedence over those associated with the quality of new entrants. However, it is not possible to assess fully the quantitative aspects of volunteer recruitment without first considering quality and qualitative restrictions. That is, to the extent that they set qualitative standards that exclude potential applicants, the Services are affecting observed supply. Thus, in order to understand enlistment quantity, we must first examine quality.

In a general sense, "quality" refers to those aspects and attributes of military personnel that are deemed desirable and that contribute to a more productive,

Category I-III non-high-school graduates, about 72.4 percent of Category IV high-school graduates, and about 68.3 percent of Category IV non-high-school graduates, as shown below:

	Mental Category/Education			
Number of Applicants	I – III, HSG	I – III, NHS	IV, HSG	IV, NHS
Found acceptable for service in CY 1972	**154,646**	**121,244**	**28,991**	**44,578**
Subsequently enlisted				
CY 1972	107,568	87,877	18,043	26,718
CY 1973	15,302	9,071	2,573	2,914
CY 1974	1,055	1,046	374	802
Total	**123,925**	**97,994**	**20,990**	**30,434**

The proportion of those Category I-III high-school graduates who do not subsequently choose to enlist has remained remarkably constant at about 20 percent over the period 1972 through 1975. More than 20 percent of the Category IV personnel subsequently fail to enlist, since not all are actually accepted.

[11] Occasionally, the Services have placed restrictions on Category IIIB enlistments.

[12] The estimates in Fig. 8-2 understate—perhaps substantially—the numbers of Category IV and non-high-school graduate "acceptable" applicants not actually accepted, since the estimates are based on individuals processed by the Armed Forces Entrance and Examination Stations (AFEES). Many Category IV and non-high-school graduate applicants may never get to the AFEES, however, because they are turned away by the recruiters, who are aware that they will not be accepted.

capable, and better motivated force. The problem, of course, is that there is no ready measure of quality, let alone a precise definition. In the absence of such measures, quality has come to be interpreted in terms of certain measurable attributes possessed by those in or entering into the military, such as mental aptitude and education.

Traditionally, the numbers and percentages of marginally acceptable applicants—Category IV and non-high-school graduates—are used to describe the quality of enlisted accessions; smaller non-high-school graduate and Category IV percentages are thus viewed as indicating higher quality.

Rationale for Qualitative Restrictions

The rationale for restricting the numbers of marginally acceptable enlistments stems from three principal concerns: performance on the job, trainability for occupational assignment, and potential disciplinary or motivational problems.

The key reasons for limiting the Category IV intake relate to trainability and job performance. Category IV personnel are generally thought not to be as trainable—meaning that they have higher failure rates during formal training courses—or as productive on the job as higher-mental-aptitude individuals. The reasons for preferring high-school graduates are somewhat different in that the failure to complete high school is viewed as much as an indicator of potential disciplinary or motivational problems as a measure of unsatisfactory performance.

Perceived trainability has become a major determinant of Service quality standards. This emphasis on trainability as a criterion for measuring job performance is at least partially attributable to the lack of good performance measures. Yet the relationship between trainability and mental aptitude does have some empirical foundation, since those scoring lower on mental aptitude tests generally do not do as well in formal training courses. For example, in one of the studies conducted for the Gates Commission, Sullivan shows that Category IV personnel require more extra help during basic military training and tend to have higher attrition rates during entry-level skill training.[13] This is because formal military training, as traditionally taught, tends to rely heavily on cognitive skills, which Category IV enlistees do not possess to the same degree as those scoring higher on mental aptitude tests.

Though certainly as important as trainability, job performance or productivity has historically been far more difficult to measure. Whereas trainability can be measured in terms of training failure rates, percentages requiring remedial assistance, and the like, quantification of productivity is at best imprecise. As a result, the policymakers and researchers have tended to rely on such measures as the proportion of enlistments reaching a certain skill level or attaining higher pay grades. Flyer, for instance, shows that mental aptitude scores are strongly related to the achievement of higher rank.[14] In 1969, only about 9 percent of Navy Catego-

[13] Sullivan shows that the percentages of Category IV personnel requiring extra help during training (about 9 percent) and the Category IV attrition rates during training (about 10 percent) are both roughly twice as high as those for Category I-III personnel (4 percent and 5 percent, respectively). See John Sullivan, "Qualitative Requirements of the Armed Forces," in *Studies Prepared for the President's Commission on an All-Volunteer Armed Force*, U.S. Government Printing Office, Washington, D.C., November 1970.

[14] Eli S. Flyer, "Promotion Opportunities of First-Term Enlisted Personnel by Race, Aptitude, Educational Level, and Military Occupation," Directorate for Manpower Research, Office of the Assistant Secretary of Defense (Manpower and Reserve Affairs), Manpower Research Note, April 1971.

ry IV personnel had achieved pay grade E-5 after 46 months of service, in contrast to some 25 percent of Category III first-termers and 40 percent of Category IIs. These results are not surprising, since promotion and skill-level awards have historically been based largely on the results of paper-and-pencil job knowledge tests—tests that rely heavily on cognitive skills—and since promotion rates in the less technical skills, where lower-aptitude individuals are more likely to be assigned, tend to be lower.

Only recently has much headway been made in measuring productivity on the job.[15] Two techniques in particular have been used with some success: actual "hands-on" performance tests and supervisory evaluations of individual contributions to unit productivity.[16,17] These techniques indicate that both mental aptitude and educational attainment are important determinants of individuals' productivity on the job. In general, those scoring higher on mental aptitude tests are estimated to do better on the job, as do those with more education. As shown in Table 8-1, Category IV enlistees are estimated to be about 10 percent less productive on the job, on the average, than their Category I-III counterparts. Similarly, non-high-school graduates appear to be about 15 to 20 percent less productive on the job than those with at least a high-school diploma.

Table 8-1 also allows an assessment of the joint effects of mental aptitude and education on job performance. For example, Category IV non-high-school graduates appear to do markedly worse on the job than either Category I-III non-high-school graduates or Category IV high-school graduates. On the other hand, controlling for mental category, there does not appear to be much difference between the job performance of college graduates, those with some college, and high-school graduates. In other words, the result that those with at least some college are more productive than high-school graduates can be attributed primarily to the fact that those with at least some college are more likely to be in Categories I and II than are high-school graduates.

A third major factor contributing to Service preferences concerns the disciplinary and motivational problems that seem to accompany those with less education and lower mental aptitude. As shown in Table 8-2, non-high-school graduates experience a much higher incidence of disciplinary problems. Indeed, courts-martial and nonjudicial punishments occur from 1.5 to 3 times more frequently for non-high-school graduates than for high-school graduates. Moreover, although lower-mental-aptitude personnel also show higher rates of disciplinary action received, a high-school diploma appears to be far more important as a predictor of potential disciplinary problems than is mental aptitude.

The foregoing results illustrate why, other things being equal, the military services prefer high-school graduates and Category I-III enlistees to non-high-school graduates and Category IV enlistees. There are, or should be, two important caveats to these preferences, however. First, there are some jobs that require only

[15] See, for example, Robert M. Gay, *Estimating the Cost of On-the-Job Training in Military Occupations: A Methodology and Pilot Study*, The Rand Corporation, R-1351-ARPA, April 1974.

[16] It is noteworthy that the Army is moving toward greater use of hands-on performance tests for determining skill-level awards and promotion.

[17] Though supervisory evaluations themselves are certainly not new and, indeed, have long been a cornerstone of personnel policy, only recently have techniques been developed for relating these evaluations to quantitative measures of productivity. See, for example, Richard V. L. Cooper and Gary R. Nelson, *Analytical Methods for Adjusting Subjective Rating Schemes*, The Rand Corporation, R-1685-ARPA, June 1976.

Table 8-1

Estimated Productivity of Enlisted Personnel at the End of Four Years of Military Service[a] (percent)[b]

Education	Mental Category I	II	III	IV	All
College Graduates	107	107	108	(c)	*108*
Some College	113	105	106	100	*107*
High School Graduate	108	103	100	96	*103*
GED[d]	94	92	90	82	*90*
Some High School	96	90	83	75	*85*
All	*109*	*102*	*98*	*90*	*100*[e]

Source: Unpublished tabulations provided by Robert M. Gay, The Rand Corporation.

[a]Supervisors were asked to rate specific individuals in their charge on a percentage scale relative to the average four-year specialist. Estimates based on 25,000 individuals from 50 occupational specialties in the Army, Navy, and Air Force.

[b]100 percent equals the average four-year specialist.

[c]Less than 10 observations.

[d]"GED" refers to general education degree and reflects individuals who do not have a high school diploma but who have passed a high school equivalency test.

[e]Estimates were normalized so that the entire population averaged 100 percent. The actual sample-wide average was 97.9. Thus, the raw score for each cell was adjusted by dividing by 0.979.

Table 8-2

Percentage of First-Term Enlisted Men Receiving Disciplinary Action by Mental Category and Education:[a] Calendar Year 1967 Accessions as of 31 December 1969

	Army		Navy		Marine Corps		Air Force	
	I-IVA	IVB-C	I-IVA	IVB-C	I-IVA	IVB-C	I-IVA	IVB-C
HSG	7.5	16.1	n.a.	10.8	22.1	25.7	2.1	5.6
NHSG	21.0	28.4	n.a.	18.4	50.9	38.9	6.6	10.4

Source: "Analysis of Disciplinary Actions Affecting First-Term Negro and Caucasian Servicemen," Directorate for Manpower Research, Office of the Assistant Secretary of Defense (Manpower and Reserve Affairs), April 1971, Tables 1 and 2.

n.a. data not available

[a]Includes courts-martial and non-judicial punishment. Of the total offenses reported, about 20 percent were courts-martial and 80 percent non-judicial punishment. The distributions of each are approximately the same, hence only the total is reported.

minimal mental ability, and for these, Category IV personnel may be more than adequate or even preferred. (Higher-mental-aptitude individuals may become very dissatisfied in such jobs because of the lack of challenge.) Second, the preceding discussion ignores the fact that Category I-III and high-school-graduate enlistees are more difficult to recruit. Therefore, it is necessary to carefully balance the additional costs (in the form of higher pay) required to obtain more Category I-IIIs and high-school-graduate recruits against the benefits of having such personnel.

Mental Aptitude and Educational Attainment

Our evaluation of the actual quality experience since the removal of the draft begins with an examination of the distribution of enlisted accessions (enlistees under the volunteer force and enlistees and inductees under the draft) by mental category and educational attainment. Three broad findings stand out, as detailed in Table 8-3. The first is simply the general similarity between the draft and volunteer periods. That is, although certain specifics differ, the removal of the draft has not produced any marked change, either up or down, in the mental category or education distributions of enlisted accessions.[18]

The second major finding shown in Table 8-3 is that both the mental category and educational attainment distributions have shown a tendency to shift toward the center since the end of the draft. For example, the Services are attracting fewer Category I applicants (whereas 6 percent of all enlisted accessions during the last 13 years of the draft were in Category I, the figure is down to a little less than 4 percent during the AVF).[19] At the same time, the Services have cut their Category IV intake substantially, from 19 percent during the last 13 years of the draft (and about 21.5 percent during the last 8 years of the draft), to somewhat more than 6 percent under the volunteer force. A similar trend has been observed for educational distribution: Fewer college graduates and individuals with some college have joined the military since the beginning of the AVF. On the other hand, fewer new recruits with only an elementary education have joined.

Thus, the military services are accepting and/or attracting fewer individuals at the extremes; instead, the mental category distribution has shifted toward Category IIs and IIIs (74 percent under the draft as opposed to 90 percent under the AVF), while the educational distribution has shifted toward high-school graduates and those with some high school.

[18] In fact, the productivity estimates implied by Gay's data suggest that overall quality during the first 3 years without the draft is about the same as it was during the last 2½ years of the draft (fiscal 1970 to fiscal 1973/1). That is, we can construct a quality index Q of enlisted accessions according to

$$\overline{Q} = \sum_{i=1}^{4} \sum_{j=1}^{2} p_{ij} a_{ij},$$

where p_{ij} = productivity of those in the i^{th} Category (I, II, III, and IV) and the j^{th} education group (HSG, NHS), and a_{ij} = proportion of enlisted accessions in the i^{th} Category and j^{th} education group.

Using the estimates of p_{ij} given later in Table 8-7, estimated quality equals 95 for both the draft and AVF periods.

[19] Part of the decline in the Category I percentage may be attributable to the mid-1960s revision of the AFQT, which had the effect of redistributing individuals previously classified as Category I to Category II. In this regard, Karpinos shows that 9.0 and 23.2 percent of 1958 to 1963 pre-inductees were classified as Category I and II, respectively. The corresponding figures for 1964 through 1972 were 6.5 percent and 29.5 percent. As a result, the 1970 to 1973 draft period probably offers the best basis for comparing draft and AVF Category I and II percentages. As shown in Table 8-3, the draft percentages for Is and IIs were 5 percent and 30 percent, as compared with about 3.5 percent and 32 percent for the AVF—not much difference. See Bernard D. Karpinos, *AFQT: Historical Data (1958-1972)*, Human Resources Research Organization, Special Report ED-75-12, Alexandria, Virginia, June 1975.

Table 8-3

Distributions of Non-Prior-Service Male Enlisted Accessions by Mental Category and Education for the DoD (percent)

	Draft[a] (fiscal years)				AVF[b] (fiscal years)				
	60-64	65-69	70-73/1[c]	60-73/1[c]	73/2[c]	74	75	76	73/2-76
Education									
CG	2	3	4	*3*	1	1	1	1	*1*
SC	11	15	11	*13*	8	4	5	6	*5*
HSG	51	56	51	*54*	60	55	61	60	*59*
GED	(d)	(d)	2	*(d)*	2	4	3	4	*3*
SHS	29	22	28	*26*	28	35	29	29	*31*
Elem	6	3	3	*4*	1	2	1	nil	*1*
Mental Category									
I	7	6	5	*6*	4	3	4	5	*4*
II	31	32	30	*31*	32	31	31	33	*32*
III	49	41	45	*43*	57	57	59	57	*58*
IV	14	21	22	*19*	7	10	6	5	*6*

[a]Source: Unpublished tabulations furnished by the Office of the Assistant Secretary of Defense (Manpower and Reserve Affairs).

[b]Source: Tabulations made from computer tapes provided by Manpower Research and Data Analysis Center (MARDAC), Office of the Assistant Secretary of Defense (Manpower and Reserve Affairs).

[c]"73/1" refers to the first half of fiscal 1973 (July-December); "73/2" refers to the second half of fiscal 1973,

[d]Not available; GEDs included in "some high school" total.

Third, and possibly most important from a policy standpoint, the Services have cut—in some cases drastically—their Category IV intake, but at the expense of an increased percentage of non-high-school graduates. That is, the enormous reduction in Category IV enlisted accessions has been achieved by allowing the non-high-school graduate intake to increase modestly—from 30 percent during the last 13 years of the draft (33 percent under the lottery draft) to 35 percent under the AVF.[20]

The individual Services, however, have varied much more than the DoD as a whole with respect to the Category IV and non-high-school graduate enlisted accessions, as shown in Table 8-4. The Air Force and Navy have clearly improved overall quality, at least as reflected by the Category IV and non-high-school graduate

[20] Even though GEDs are legally counted as high-school graduates, they are counted here as non-high-school graduates.

Alternatively, if GEDs are counted as high-school graduates, the distributions for the draft and AVF periods are much more similar: 30 percent non-high-school graduates for the draft period, versus 32 percent for the AVF.

Table 8-4

The Quality of Non-Prior-Service Male Enlisted Accessions: Mental Category IV and Percentage Non-High-School Graduates[a] (percent)

		Draft					AVF						
		53-59	60-64	65-69	70-73/1	60-73/1	73/2	74	75	76	TQ	771	73/2-77/1
Army	IV	n.a.	19	26	23	*24*	11	18	10	8	9	7	*11*
	NHSG	n.a.	36	28	37	*33*	33	51	43	42	41	51	*44*
Navy	IV	n.a.	9	14	22	*14*	2	3	5	4	3	2	*4*
	NHSG	n.a.	43	22	27	*30*	24	31	26	23	28	30	*27*
Marine Corps	IV	n.a.	10	19	22	*18*	11	8	5	3	4	4	*5*
	NHSG	n.a.	44	40	53	*45*	60	53	41	41	36	39	*45*
Air Force	IV	n.a.	10	12	14	*11*	3	1	nil	nil	nil	nil	*1*
	NHSG	n.a.	22	6	16	*15*	18	14	13	11	12	13	*13*
DoD	IV	24	14	21	22	*19*	7	10	6	5	5	4	*6*
	NHSG	n.a.	35	25	33	*30*	31	40	33	32	32	38	*35*

n.a. = not available

Sources: See Table 8-3.

[a]GEDs counted as non-high school graduates.

percentages. For example, the Navy modestly reduced its non-high-school graduate intake, from 30 percent during the draft to 27 percent under the AVF, while at the same time reducing its Category IV intake by more than two-thirds, from 14 percent to 4 percent. The improvement in the Air Force is even more dramatic, as the non-high-school graduate percentage has been reduced from 15 percent to 13 percent,[21] whereas the Category IV percentage has fallen from 11 percent to less than 1 percent.

The changes in the Army and the Marine Corps are less clear. Both have substantially reduced their Category IV intake since the removal of the draft, from 24 percent to 11 percent for the Army and from 18 percent to a little more than 5 percent for the Marine Corps. At the same time, both have allowed the non-high-school graduate percentage to increase.

The results shown in Table 8-4 also help to explain the emergence of the quality issue during the post-draft debate. That is, because of unusually restrictive quality standards, the Army suffered recruiting difficulties during the first six months of the AVF. To alleviate these quantitative recruiting problems, the Army lowered its quality standards during the first part of fiscal 1974. Thus, the higher rates of Category IV and non-high-school graduate accessions during this period can be traced back to the unusually restrictive standards imposed during the first six months of the AVF.

Perhaps the most important finding to emerge from these comparisons, however, is the observed preference for non-high-school graduates relative to Category IV accessions. In substantially reducing their Category IV percentages, the Army

[21] If GEDs are counted as high-school graduates, the Air Force non-high-school graduate percentage has fallen from 13 percent to 8 percent.

and Marine Corps both allowed the non-high-school graduate percentage to increase. Even though the Air Force and Navy reduced both their Category IV *and* non-high-school graduate percentages, they each placed a greater emphasis on reducing the Category IV accession percentages. In fact, for all four Services, the Category IV percentages experienced during the volunteer force are lower than those witnessed *at any time* during the preceding 12 years with the draft. Reducing Category IV accessions has thus clearly been the driving factor behind Service policies with respect to quality.

Given the emphasis placed upon the mental category distribution of enlisted accessions, it is useful to go one step further and compare the actual mental category distributions against stated Service quality standards. As part of the transition to the AVF, the Services were required to estimate their quality requirements, the results of which are shown in Table 8-5. With the exception of the Navy, which has fallen modestly short of its Category I and II objective, the actual AVF quality results have exceeded the Services' own estimates of their needs during this period. Furthermore, the actual AVF results have in every case exceeded the OSD's estimates of the Services' quality needs, especially for Category IV accessions.[22] Thus, we have the important result that informal Service policy calls for tighter restrictions on Category IV accessions than either formal Service policies or the recommendations of the Central All-Volunteer Task Force.

As discussed earlier in this section, productivity on the job and disciplinary problems are a function of *both* mental aptitude and education. In this regard, the AVF results offer an interesting contrast to those evidenced during the draft years, as shown in Table 8-6.[23] In general, the Services have increased their male Category I-III high-school graduate percentages and decreased their male Category IV non-high-school graduate percentages, thus indicating that there has been an increase in overall quality since the removal of the draft.

The Army is the only Service for which the Category I-III high-school graduate percentage decreased (by 6 percentage points), but this decrease has been compensated by an equal reduction in its Category IV non-high-school percentage. The results for the other Services are more clear-cut, as each increased its Category I-III high-school graduate percentage while simultaneously reducing its Category IV non-high-school graduate percentage: The Navy went from 64 to 68 percent for the former, and from 9 percent to nearly zero for the latter; the Marine Corps, up by 10 percent and down by 10 percent; and the Air Force, up by 9 percent and down to almost zero.

The second major observation to emerge from Table 8-6 concerns the implicit tradeoffs that the Services made with respect to Category I-III non-high-school graduates as opposed to Category IV high-school graduates. Each Service has witnessed an increase in numbers of Category I-III non-high-school graduates but has decreased its Category IV high-school graduate percentage.

[22] Also shown are the recommendations of the OSD's Central All-Volunteer Force. These recommendations were primarily concerned with putting the Services' own estimates of quality requirements on a comparable basis. For example, the Army estimated that 10.5 percent of the enlisted accessions filling combat arms specialties would have to be in Category I or II; the Marine Corps' estimates for a comparable group of specialties was 24 percent. Though never officially adopted by the OSD, these standards nevertheless provide a useful base for comparison.

[23] Because of their use in the next chapter for projecting NPS male supply in the future, the distributions shown in Table 8-6 are for NPS males (unlike Tables 8-3 and 8-4, which showed all NPS accessions, i.e., males and females).

Table 8-5

Distribution of Non-Prior-Service Enlisted Accessions by Mental Category: Actual versus Objective

		Actual[a]		Objective	
		Draft	AVF	Service Stated[b]	OASD(M&RA) Adjusted[c]
Army	I & II	34	29	19	23
	III	43	59	63	57
	IV	24	11	18	20
Navy	I & II	45	38	43	34
	III	41	57	42	56
	IV	14	4	15	10
Marine Corps	I & II	32	34	27	31
	III	50	61	59	54
	IV	18	5	14	15
Air Force	I & II	46	45	46	36
	III	43	55	49	54
	IV	11	1	5	10

[a]"Draft" refers to the period from fiscal 1960 through the first half of fiscal 1973; "AVF" refers to the second half of fiscal 1973 through the first half of fiscal 1977. Source: see Table 8-3.

[b]Source: Central All-Volunteer Task Force, Office of the Assistant Secretary of Defense (Manpower and Reserve Affairs), *Qualitative Accession Requirements*, November 1972.

[c]Source: Office of the Assistant Secretary of Defense (Manpower and Reserve Affairs), *Defense Manpower Quality Requirements*, January 1974.

Table 8-6

Quality of Male Non-Prior-Service Enlisted Accessions: Joint Distribution by Mental Category and Education[a] (percent)

Mental Category/ Education	Army		Navy		Marine Corps		Air Force		DOD	
	Draft	AVF	Draft	AVF	Draft	AVF	Draft	AVF	Draft	AVF
I-III/HSG	53	47	64	68	39	49	75	84	57	59
I-III/NHS	25	40	18	28	40	45	13	15	23	33
IV/HSG	10	7	9	4	8	3	9	1	10	5
IV/NHSG	12	6	9	nil	13	3	3	nil	10	3

Source: Data Tapes Provided by Manpower Research and Data Analysis Center (MARDAC), Office of the Assistant Secretary of Defense (Manpower and Reserve Affairs).

[a]Draft, July 1970 through December 1972; AVF, January 1973 through December 1975.

Physical Standards for Enlistment

Although not usually viewed as part of the quality issue, the medical standards used to screen potential recruits are an important element of the overall screening process.

The purpose of the medical part of the screening examinations is to determine, first, whether the recruit can stand the physical rigors of military service and, second, whether he has a significant risk of future medical problems. As a practical matter, though, the former objective becomes that of determining whether the potential recruit can withstand the rigors of basic military training, since for the vast majority of enlistees, basic training is the most physically demanding time of their military service.[24]

Disqualification for military service because of medical reasons is not a trivial matter: Between 14 and 17 percent of all applicants for enlistment fail to pass the minimum medical criteria for enlistment (excluding those waivered into acceptance).[25] The reasons for failure are many, but the predominant causes concern weight (both overweight and underweight), blood pressure, hearing, eyesight, the feet and extremities, and skin ailments.

There are several reasons to suspect, however, that current physical standards for enlistment, which are little changed since World War II, may be too restrictive.[26] For example, comparisons of the current U.S. standards for enlistment with U.S. reenlistment medical standards, standards employed in other nations' military forces, and those found in the U.S. civilian sector all show that the United States maintains stricter physical standards for potential recruits than are found elsewhere.[27] Similarly, analysis of the reasons for disqualification show that many of the factors leading to the rejection of an applicant for enlistment have little, if any, effect on job performance, the number of days lost from work, or future health problems.[28]

Another reason for suspecting that standards could be relaxed with virtually no loss of force effectiveness is the fact that the military uses the same physical standards for almost all enlistment applicants, regardless of the prospective job.[29] The only exceptions to this policy are certain particularly rigorous job assignments, such as parachute jumping, which tend to have their own physical standards.

Chu and Norrblom estimate that by relaxing standards in nine areas—weight, blood pressure, lungs and chest, abdomen, genitourinary system, upper extremities, spine, skin, and hearing—disqualifications could be reduced by 25 to 40 percent. Such a relaxation would increase the numbers of individuals qualified for military service by 5 to 10 percent, and Category I-III high-school graduate enlistments would increase by a like amount.

[24] Recall from Table 2-4 that only about 10 percent of all enlisted personnel are engaged in what might be referred to as "combat" jobs.

[25] See, for example, David S. C. Chu and Eva Norrblom, *Physical Standards in an All-Volunteer Force*, The Rand Corporation, R-1347-ARPA/DDPAE, April 1974; and Anita S. West et al., *Reducing Physical Standards for Navy Recruits*, Denver Research Institute, University of Denver, July 1973.

[26] Chu and Norrblom, op. cit., and Anita S. West et al., op. cit.

[27] Chu and Norrblom, op. cit.

[28] Ibid.

[29] It will be argued in Chap. 15 that this may be a result of the fact that under the draft, administrative simplicity was an important criterion in setting policy. Although this may not have been too costly in a draft environment, because the draft guaranteed a virtually unlimited supply of manpower, the limited supply under the AVF might make such policies very expensive.

Thus, at a time when there is so much concern for enlistment quality, it would appear worthwhile to reevaluate current Service policies toward physical standards.

Policy Implications

From a policy perspective, the key quality issue to emerge from the AVF experience is the emphasis that the Services have placed upon reducing the numbers of Category IV enlistments. As noted earlier, this reduction has often come at the expense of accepting increased numbers of non-high-school graduates. Since the military usually has an excess of Category IV and non-high-school graduate applicants, the relevant question centers on how the Services should choose from among these groups of individuals. Most evidence indicates that Category IV non-high-school graduates are the least desirable of all applicants (Category V individuals are legally ineligible to serve); therefore, the Services' policy problem amounts to choosing between Category IV high-school graduates and Category I-III non-high-school graduates. Although the Services have implicitly opted in favor of Category I-III non-high-school graduates, a variety of evidence points to the importance of placing more controls on the numbers of these individuals allowed to enlist.[30]

The selection problem is analogous to an investment decision, where the investment costs must be weighed against the potential benefits. A number of factors affect both the costs and benefits associated with selecting individuals with particular attributes. Job productivity, trainability, and disciplinary problems all affect the benefits; equally important is attrition during the first term, since losing individuals before completion of their first term means that much of the Services' investment costs are never recouped. These criteria therefore can be used to evaluate the "investment potential" of particular types of individuals, specifically Category IV high-school graduates as compared with Category I-III non-high-school graduates.

The data in Table 8-1 showed that non-high-school graduates are estimated to perform less well than Category IV personnel. This is more clearly detailed in Table 8-7, which shows that Category IV high-school graduates average some 10 percentage points higher than Category I-III non-high-school graduates.

A closer look at the productivity estimates in Table 8-7 helps to explain why and where certain types of individuals are likely to fare the best. For example, in high-skill military occupations such as avionics repair and nuclear reactor operations, where cognitive skills are particularly important, Category I-III non-high-school graduates are estimated to be considerably more productive than Category IV personnel. For less technical assignments, however, Category IV high-school graduates appear to be more productive.

As a general proposition, then, mental aptitude is an important determinant of trainability and job performance, but it appears to be far less crucial for medium- to low-skill jobs than for high-skill and more technical occupational assignments. In fact, for the less technical jobs, it appears that Category IV high-school graduates do much better than higher mental aptitude non-high-school graduates.

[30] It has been argued that the emphasis on reducing Category IV accessions is driven at least partially by a desire to hold down the numbers of blacks accepted (because blacks make up a disproportionately large share of the Category IV population, as shown in Chap. 10). See, for example, Donald Srull, "Marine Corps Accession Policies," Department of Defense, briefing given in April 1974, and Reginald J. Brown, "Recruitment Malpractice and Racial Representation," statement before the Subcommittee on Military Personnel, Committee on Armed Services, House of Representatives, June 29, 1976.

Table 8-7

Estimated Productivity of Enlisted Personnel at the End of Four Years of Military Service, Expressed as a Percentage Relative to the Average Four-Year Specialist[a]

Job Type[b]	Education	Mental Category I	II	III	I-III	IV
All Jobs	HSG+	109	103	100	*102*	*95*
	NHSG	96	90	83	*85*	*75*
High Skill	HSG+	111	103	93	104	83
	NHSG	(d)	98	95	96	(d)
Medium Skill	HSG+	106	104	100	104	95
	NHSG	103	94	83	88	94
Low Skill	HSG+	105	101	99	100	96
	NHSG	(d)	83	82	82	72

[a]See note a, Table 8-1.

[b]The 50 military occupational specialties in the sample were categorized according to skill level. High skill specialties include such jobs as electronics repairman, nuclear reactor operator, etc.; medium skill specialties include such jobs as mechanic, radio operator, etc.; and low skill specialties include such jobs as infantry, cook, seaman, etc.

[c]"HSG+," high school graduate or above; "NHSG," non-high school graduates.

[d]Fewer than 10 observations.

Source: See Table 8-1.

This suggests that Category IV high-school graduates can be valuable members of the military, particularly in jobs that place less emphasis on cognitive skills. As shown in Table 8-8, a sizable proportion of jobs in the military—indeed, a majority—could be broadly classified as medium- to low-skill. In other words, there are many jobs in the military for which Category IV personnel, particularly those with high-school diplomas, are more than adequate, and may even be preferred.

Furthermore, we recall from Table 8-2 that non-high-school graduates exhibit much higher rates of disciplinary problems than do individuals with a high-school diploma. In fact, Category I-IVA non-high-school graduates average about one-third more disciplinary infractions than do Category IVB-C high-school graduates.

Finally, Table 8-9 shows that non-high-school graduates experience much higher rates of attrition during the first term for failing to meet minimum behavior and performance standards than do high-school graduates. Indeed, more than 20 percent of the fiscal 1971 non-high-school graduate enlisted accessions failed to complete their first tour of duty. Moreover, the attrition rates due to unsuitability are

Table 8-8

Distributions of Enlisted Occupations
by Skill Level: Fiscal 1974
(percent)

Skill Level[a]	Army	Navy	USMC	USAF	DOD
High	18	29	13	23	22
Medium	43	44	33	60	47
Low	39	27	54	17	31
All	100	100	100	100	100

[a]Approximately defined only. "High" includes DOD occupational codes 1, 2, 4 (see Table 2-4 for description); "medium" includes codes 3, 5, 6, 7; "low" includes codes 0, 8, 9.

Source: "Defense Manpower Quality Requirements: Report to the Senate Armed Services Committee as Required by Report No. 93-385," Office of the Assistant Secretary of Defense (Manpower and Reserve Affairs) January 1974, p. 21.

Table 8-9

Percent of Enlisted Accessions Discharged for Failure
to Meet Minimum Behavior or Performance Criteria:
Fiscal 1971 Enlistees Separated as of 30 June 1973
(percent)

	Mental Category			
Education	I-II	III	IV	All
HSG	6.6	9.4	13.7	*8.6*
NHSG	20.7	24.5	26.8	*24.6*
All	*8.8*	*15.7*	*21.1*	*14.3*

Source: "Attrition Rates for Failure to Meet Minimum Behavior or Performance Criteria by Geographical Region of Entry," Directorate for Manpower Research, Office of the Assistant Secretary of Defense (Manpower and Reserve Affairs), Manpower Research Note 74-2, February 1974, Table X.

nearly twice as high for Category I-III non-high-school graduates as they are for Category IV high-school graduates.[31]

To summarize, two major conclusions emerge from this review of enlisted personnel quality: The first is simply that quality, broadly defined, has not changed substantially since the removal of the draft. The Services have continued to attract approximately the same or somewhat larger numbers of the group they value most highly, Category I-III high-school graduates.

Second, Service policy appears to have shifted toward non-high-school graduates in preference to Category IV applicants. In particular, formal and informal Service policies have emphasized the reduction of Category IV enlistments, frequently at the expense of an increased non-high-school graduate intake. The major policy question is therefore whether this policy shift is appropriate.

Both Category IV and non-high-school graduate personnel appear to be less desirable than their Category I-III high-school graduate counterparts. However, the bulk of evidence suggests that Category IV high-school graduates are a better "investment" than Category I-III non-high-school graduates.[32] Thus, it would seem that the armed services have placed a disproportionate emphasis on reducing their Category IV intake. A preferable policy would be to accept more Category IV (particularly IVA) high-school graduates. Moreover, by failing to reexamine the appropriateness of the physical standards for enlistment, the Services have missed an opportunity to increase the numbers of Category I-III high-school graduates.

ENLISTMENT QUANTITY

Since the central issue in the 1960s draft debate concerned the ability of the Armed Forces to attract the desired *numbers* of enlisted personnel without the pressure of the draft, the success of the volunteer experiment will more than likely be ultimately judged primarily in terms of *quantity*. This section describes the quantity experience since the removal of the draft in December 1972 and, as such, is limited to questions of what rather than why. Two aspects of the quantity experience are considered: recruiting progress and the subsequent impact of recruiting on enlisted force strengths.

Recruiting Progress

Quantity can be viewed in either flow or stock terms—that is, the numbers of personnel entering the system or the numbers of personnel in the system. Although

[31] The results shown here are for the cohort of men joining the Services in 1971, but a number of studies conducted by the DoD over the past 20 years have reached essentially the same conclusion. That is, although the magnitude of attrition has varied over the years, the relative differences according to mental aptitude and education (as illustrated in Table 8-9) have remained remarkably similar.

[32] At the same time, many individuals outside this "prime" pool also turn out to be more than satisfactory service members. Care should therefore be exercised in interpreting these results, since the analysis presented here is not meant to imply that non-high-school graduates should not be accepted. Indeed, the discussion in Chap. 14 points to the importance of revising the Services' traditional view of quality. That is, "non-high-school graduate" and "Category IV" are very crude quality screens, so to the extent that these are used to deny enlistment to some applicants, many potentially acceptable applicants will end up being rejected. This suggests that a principal management issue confronting the AVF is the development of better screens.

Thus, the point of this discussion is that, to the extent that the Services use these two screens, the emphasis has probably been misplaced.

the stock measure, force strengths, is clearly the key with respect to maintaining military capability, force strengths are achieved through the input of new recruits into the system. Therefore, recruiting progress provides an important gauge of the long-run prospects for the volunteer force.

As part of their manpower planning process each year, the Services must estimate the numbers of new recruits that they need (which are then usually allocated on a monthly basis) to meet force strength objectives. These so-called recruiting objectives provide the basis against which actual recruiting progress can be compared, as illustrated by Table 8-10.

When viewed in these terms, the Services are seen to have fared quite well since the removal of the draft. Cumulatively, the Services fell less than 1.5 percent short of their recruiting objectives during the first four years of the AVF. Indeed, with a cumulative recruiting objective of some 1,815,000 over this period, the Services fell only about 26,000 short of their total objective, and most of these shortfalls occurred during the first year without the draft.

There have been modest recruiting shortfalls throughout the period of the AVF, however, though they have been limited almost entirely to the Army and Marine Corps. Indeed, the one result that dominates throughout most of our discussion of enlistment supply and demand is that the Air Force and, to a lesser extent, the Navy appear to be in an excess supply position. Thus, the major questions about

Table 8-10

AVF Enlistments and Objectives by Service:
All Sources[a]
(thousands)

		Time Period[b]								
		73/2	74/1	74/2	75/1	75/2	76/1	76/2	TQ	77/1
Army:	Enlistments	71	93	107	112	97	92	100	57	87
	Objectives	83	104	108	110	95	92	99	59	89
Navy:	Enlistments	37	44	44	63	47	56	46	33	50
	Objectives	44	44	41	62	47	57	47	35	50
USMC:	Enlistments	25	25	25	32	28	28	25	15	21
	Objectives	25	29	27	32	27	28	25	15	24
USAF:	Enlistments	45	38	38	38	39	39	35	21	37
	Objectives	45	37	38	38	37	38	35	21	37
DOD:	Enlistments	179	199	214	246	210	214	207	126	194
	Objectives	187	215	213	244	206	214	207	131	198

[a]Includes enlistments from all sources; nonprior service males, nonprior service females, and prior service.

[b]The first number refers to the fiscal year; the second number refers to which half of the fiscal year. "TQ" refers to the transition quarter (i.e., July to September 1976), between the switch from the July to June fiscal year basis in 1976 (and earlier) to the October to September basis that began in FY1970.

SOURCE: Unpublished tabulations furnished by the Office of the Assistant Secretary of Defense (Manpower and Reserve Affairs).

the ability of the volunteer force to sustain military force strengths will focus primarily on the Army and on the Marine Corps.

A different perspective on enlisted manpower procurement can be gained by examining recruiting objectives and actual enlistments by sources, as shown in Table 8-11. The Services have generally exceeded their recruiting quotas for NPS women and PS enlistees throughout the volunteer period—in fact, they continue to turn away significant numbers of these applicants—so recruiting shortfalls have been limited to NPS males. Thus, the key question with respect to the long-run viability of the volunteer force is the Services' ability to attract a sufficient number of NPS male enlistees.[33]

Table 8-11

DoD Enlistments and Objectives by Source
(thousands)

Source		Time Period								
		73/2	74/1	74/2	75/1	75/2	76/1	76/2	TQ	77/1
NPS Male:	Enlistments	154	173	181	207	174	189	177	111	166
	Objectives	171	190	183	210	173	189	177	116	170
NPS Female:	Enlistments	12	14	17	20	17	16	15	9	15
	Objectives	14	13	16	18	17	16	15	9	15
PS:	Enlistments	13	12	16	19	19	10	15	7	13
	Objectives	12	12	13	16	17	9	15	7	13
Total:	Enlistments	179	199	214	246	210	214	207	126	194
	Objectives	191	215	213	244	206	214	207	131	198

SOURCE: Data were furnished by OASD(M&RA).

A comparison of the Services' Category I-III NPS male enlistees with their (implied) recruiting objectives is even more impressive.[34] With the exception of the first year of the volunteer force, the military as a whole has actually exceeded its (implied) Category I-III recruiting objectives, substantially so in some cases (see Table 8-12).[35]

These results emphasize the importance of examining quantity and quality simultaneously. To illustrate, the Army's recruiting shortfall for the first six months of the AVF can be traced primarily to the unusually restrictive quality standards imposed during this period. Indeed, the Army's implicit Category I-III recruiting shortfall of 5,000 for this period (from Table 8-12) is substantially less than the 12,000 total recruiting shortfall (from all sources) shown earlier in Table 8-10.

[33] As shown later, though, several analyses indicate that the Services ought to increase the number of women in the force.

[34] The Services do not issue formal Category I-III recruiting objectives. However, their implied quantitative objectives can be estimated as their stated Category I-III percentage objectives (from Table 8-5) times their NPS male recruiting objectives.

[35] The results are even more impressive if the OSD's Central All-Volunteer Task Force recommendations are viewed as the basis for comparison. Indeed, in this regard the Services have exceeded Category I-III recruiting objectives in *every* period since the beginning of the AVF.

Table 8-12

Non-Prior-Service Male Category I-III
Enlistments and Objectives[a]
(thousands)

		Time Period								
		73/2	74/1	74/2	75/1	75/2	76/1	76/2	TQ	77/1
Army:	Enlistments	54	63	72	75	72	74	76	45	68
	Objectives	59	76	75	74	63	66	69	42	61
Navy:	Enlistments	30	37	36	52	38	46	39	29	42
	Objectives	31	32	29	49	33	42	34	27	37
USMC:	Enlistments	20	21	21	26	23	26	22	13	18
	Objectives	20	23	22	26	22	22	20	13	19
USAF:	Enlistments	39	33	33	33	33	34	31	18	31
	Objectives	37	30	31	30	30	31	29	17	30
DOD:	Enlistments	143	154	162	186	166	180	168	105	159
	Objectives	147	161	157	179	148	161	153	99	147

[a]Actual Category I-III enlistments. "Objectives" estimated as the Services stated NPS male recruiting objectives times their stated Category I-III quality objectives (from Table 8-5).

SOURCE: Data were furnished by OASD(M&RA).

Similarly, although the Services (particularly the Army, but also to some extent the Navy and Marine Corps) experienced modest recruiting shortfalls again in the transition quarter and the first three months of fiscal 1977, each of them actually exceeded its implied Category I-III NPS male recruiting objectives during this period.

In other words, the Services, especially the Army and the Marine Corps, seem to have accepted recruiting deficits, at least implicitly, in order to decrease the numbers of Category IV recruits accepted. Thus, to the extent that there have been modest recruiting shortfalls, they would appear to be less a measure of inadequate supply than they are an indicator of unusually restrictive quality standards.

It should be remembered in this regard that the Gates Commission estimated that the Services might have to accept up to 20 percent Category IV enlistees during the transition to the AVF in order to meet total recruiting objectives. Because the results from Tables 8-10 through 8-12 show that almost all recruiting deficits could in fact have been eliminated if the Services had admitted up to 20 percent Category IV personnel, the early AVF recruiting experience squares reasonably well with the initial Gates projections.

To put this quantitative and qualitative experience into perspective, we can compare the AVF recruiting experience with the recruiting results during the most recent draft years, as illustrated by Fig. 8-3. Total "true volunteers" increased from some 253,000 in fiscal 1971 to 457,000 in fiscal 1975—an increase of about 67 percent. The increase in NPS male Category I-III high-school graduates is even more impressive—from 108,000 in fiscal 1971 to 243,000 in fiscal 1975, a nearly 100 percent improvement.

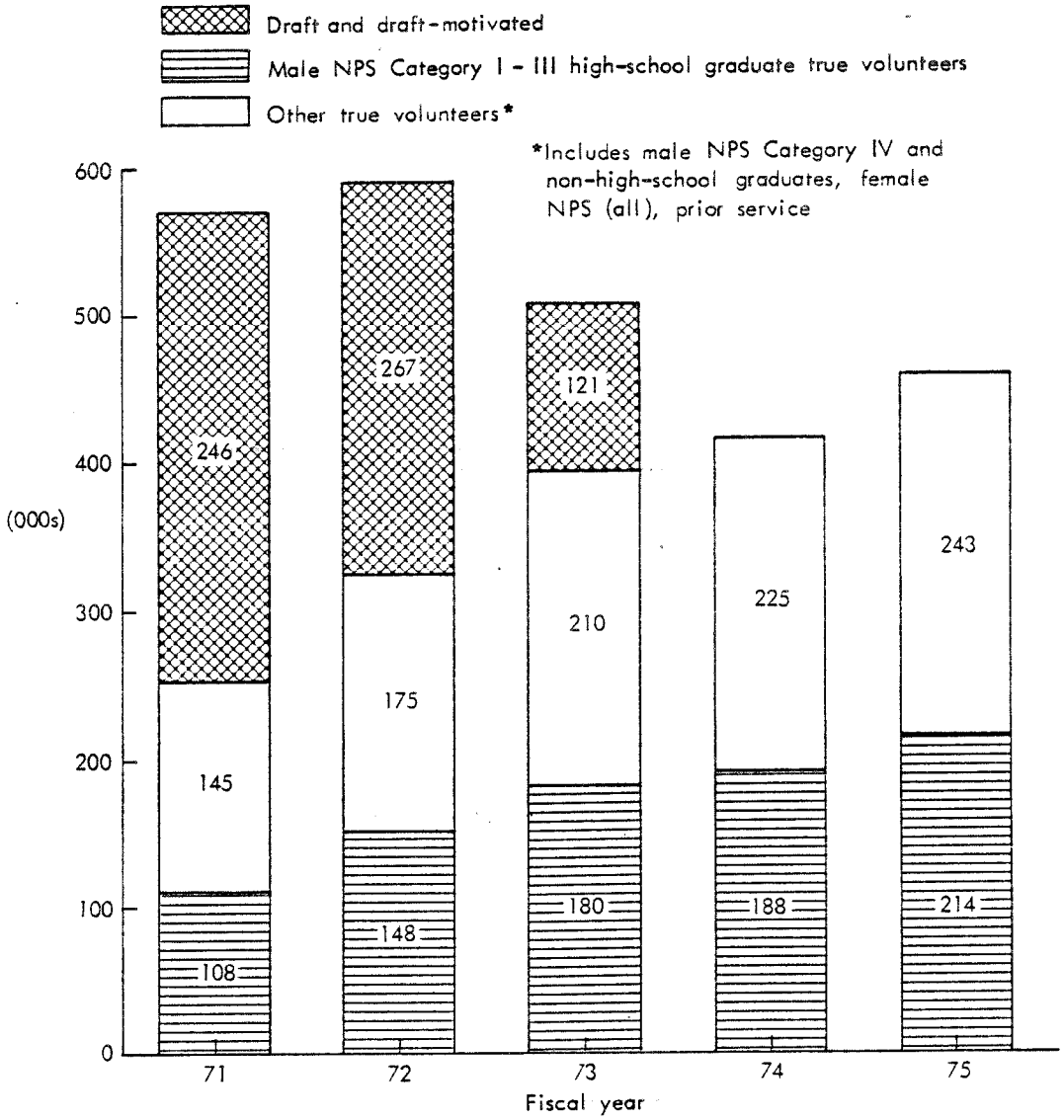


Fig.8-3—Enlisted accessions: all and true volunteers

SOURCE: Data furnished by OASD (M&RA).

Force Strengths

Since military capability is a function of force strengths, not the number of enlistments, the volunteer force must ultimately be judged in terms of its ability to sustain desired force strength objectives. The two different perspectives—flows versus stocks— should not differ substantially in the long run. In the short run, however, there may be significant differences, since quantitative recruiting objectives are only estimates of the numbers of new personnel required to meet force strength objectives. As such, these estimates are based on projections of losses from the force, as well as changes in desired force strengths. Given the uncertainties about predicting future losses, we would not expect an exact match between recruiting deficits (or surpluses) and strength deficits (or surpluses) in the short run.

According to Table 8-13, there is not a one-to-one correspondence between observed recruiting performance and actual end strengths. The most dramatic example of this is provided by the Army. During the second half of fiscal 1973, the Army reported recruiting shortfalls of some 11,000 but actually ended the year 21,000 short of its programmed end strength.[36] It is clear, then, that the Army's fiscal 1973 strength deficit was not solely, or even mostly, a result of that year's recruiting shortfall. Conversely, the Army recorded recruiting shortfalls amounting to more than 12,000 during fiscal 1974, but actually wound up the year 2,700 over strength!

Although the data from the other Services are less dramatic, they illustrate the same basic point—namely, recruiting performance is only an approximation of the subsequent effects on end strengths. By the end of fiscal 1974, the Marine Corps was the only Service to differ much from its programmed end strength, and by the end of fiscal 1975, all of the Services were within 1 percent of their programmed levels.

Table 8-13 also demonstrates the effects of pre-AVF strength shortfalls on strength shortfalls during the volunteer period. Again, the Army provides the most vivid example, having ended fiscal 1972—*a draft year*—more than 48,000 men below its targeted end strength.[37] Thus, whereas targeted end strengths called for a more gradual reduction to achieve the post-Vietnam Army force size of about 680,000, this substantial fiscal 1972 strength deficit left the Army in the rather peculiar position of having to increase its force size during the first six months of the AVF and then to reduce it during the following year in order to meet Congressionally mandated force sizes. In other words, the Army's fiscal 1973 strength deficit appears to be more a result of the strength deficit inherited from the draft than of the recruiting shortfalls suffered during the initial phase of the volunteer force.

[36] Actually, if the 9,000-recruit surplus for the first half of fiscal 1973 (the last six months of the draft) is included, the contrast is even more stark—that is, the 2,000 *net* recruiting shortfall for all of fiscal 1973 versus the 21,000 strength shortfall at the end of the year.

[37] Apparently, the Army did not recognize the magnitude of the fiscal 1972 enlisted end strength shortfall until either late in the year or after fiscal 1972 had ended, for in his prepared testimony before the House Hearings on the fiscal 1975 appropriations for military personnel on April 24, 1972, Lieutenant General Walter T. Kerwin, Jr., Deputy Chief of Staff for Personnel (Army), stated, "The expanded early release program in FY1972 results in a dramatic dip in the Army strength profile below the planned guidepath between FY1972 and FY1973. FY1972 end strength is *now* [emphasis added] projected to be 861,000 [122,000 officers, 734,700 enlisted, and 3,900 cadets] as compared to the 942,000 forecast in the last year's budget submission . . . ." (House Hearings, cited below, p. 67.)

However, actual fiscal 1972 enlisted strengths turned out to be 810,649—120,982 officers, 686,962 enlisted, and 2,975 cadets. The divergence of the actual from the programmed strength during the second half of the fiscal year can be seen from an examination of the monthly total end strengths (actual data for officer and enlisted components separately were not available):

	Strength (thousands)											
	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Programmed[a]	1098	1074	1050	1030	1007	980	920	904	888	880	863	861
Actual[b]	1099	1074	1050	1031	1008	966	915	886	851	816	801	811

[a] Programmed monthly end strengths from the House Hearings, cited below, p. 144. Excludes reimbursables.

[b] Actual monthly end strengths from *Selected Manpower Statistics*, April 15, 1973, p. 22, include reimbursables. Although the two series are not perfectly comparable because of the treatment of reimbursables, the number of such individuals is sufficiently small that it does not substantively affect the comparison.

SOURCE: *Department of Defense Appropriations for 1973*, Hearings Before the Subcommittee of the Committee on Appropriations, House of Representatives, Ninety-Second Congress, Second Session, Part 6: Military Personnel.

Table 8-13

Enlistments, Objectives, and Force Strengths
(thousands)

	End Strength				Recruiting[a]		
	FY72	FY73	FY74	FY75	FY73/2	FY74	FY75
Army							
Actual	686.7	682.0	674.5	678.3	71.2	199.5	189.0
Objective	734.8	703.0	671.8	679.6	82.6	211.6	187.0
Difference	-48.1	-21.0	2.7	-1.3	-11.4	-12.1	2.0
Navy							
Actual	511.8	490.7[b]	475.5	466.6	37.5	88.2	103.0
Objective	524.5	498.7	479.2	466.0	44.4	85.5	104.0
Difference	-12.7	-8.0	-3.7	0.6	-6.9	2.8	-1.0
Marine Corps							
Actual	178.4	176.8	170.1	177.4	25.3	50.0	56.0
Objective	178.2	178.1	177.1	177.8	25.0	59.0	55.0
Difference	0.2	-1.3	-7.0	-0.4	0.3	-9.0	-1.0
Air Force							
Actual	599.8	571.8	529.1	503.2	44.8	75.3	78.0
Objective	604.5	572.8	530.0	502.6	44.8	74.6	75.0
Difference	-4.7	-1.0	-0.9	0.6	0.0	0.7	3.0

Source: *Budget of the U.S. Government;* "actual" strengths for year t obtained from the year t+2 budget; "objective" strength for year t obtained from the year t+1.

[a]Source: See Table 8-10.

[b]Does not reflect the downward adjustment to the objective Navy force structure made toward the end of the fiscal year.

Similar results occurred in the other Services. For example, the Navy finished fiscal 1972 nearly 13,000 short of its targeted end strength, while the Air Force was almost 5,000 short. Thus, the Marine Corps was the only Service that did not begin the volunteer experiment from a deficit position. Moreover, as shown in Table 8-13, the Army, Navy, and Air Force each moved progressively closer to their end strength targets as the volunteer force became better established. The Marine Corps is the only Service that has worsened its position since the beginning of the volunteer force, having finished fiscal 1974 about 7,000 short of its objective; but even in this case, the deficit was nearly erased by the end of 1975.

The preceding discussion highlights the transitional nature of the early 1970s. The magnitude of the transition is illustrated by the fact that the Army finished fiscal 1968 with about 1,402,000 enlisted members. Four years later, the Army was programmed for a strength of 735,000—almost a 50 percent reduction. It is thus not altogether surprising that the Army missed its fiscal 1972 end strength target.

The problems experienced during the early 1970s are not, however, uncommon during periods of substantial force reduction. To meet reduced strength targets, the Services must force some of their personnel to leave before their scheduled depar-

ture, either through voluntary "early-out" programs or involuntary discharges. Because of difficulties in predicting the number of early releases needed and in monitoring the early release program, actual force strengths may differ substantially from the programmed levels during a transition.[38] As force sizes begin to stabilize, though, the differences between targeted and actual strengths generally become smaller as, indeed, the results from the early part of the volunteer period attest.

The general message that emerges from this review of the transition is the importance of analyzing the volunteer progress in the broader context of total force management. During the initial phase of the AVF, the Services had some modest difficulties in meeting strength objectives. In most cases, though, these were actually a result of strength deficits inherited from the draft, which in turn were a result of the force reductions that were undertaken following the disengagement from Southeast Asia.

THE RESERVE FORCES

Perhaps the most significant problem to emerge from the volunteer experience concerns not the active forces, but rather the reserves. The problem is that of attracting a sufficient quantity and quality of enlisted personnel to man the reserve forces. Although the emphasis of this report is upon the active forces, since maintaining an effective standing force that can be rapidly mobilized and deployed constitutes the single most important management problem for the DoD, a discussion of the progress of and prospects for the AVF would not be complete without at least some reference to the reserves and the problems that they face.

Accordingly, the following discussion briefly reviews the nature of the reserve forces, their recruiting progress since the end of the draft, and some of the implications of these findings for the AVF. A comprehensive treatment of the reserves is beyond the scope of this report, but in view of the problems that would seem to confront the reserves, it is clear that such a study is both warranted and needed.

Structure of the Reserves

The reserve forces of the United States are structured into seven main compo-

[38] To illustrate, the Army's fiscal 1972 strength shortfall of 48,000 was attributable to three factors: (1) fiscal 1972 accessions were less than planned; (2) fiscal 1972 non-early-release losses were larger than planned; and (3) fiscal 1972 early-release losses were larger than planned. The data for the Army for fiscal 1972 are given below:

Gains	Planned	Actual	Losses	Planned	Actual
NPS male	189	153	Early release	305	318
Other	138	141	Other	259	261
Total	327	294	Total	564	579

Thus, whereas end strength requirements for fiscal 1972 would suggest that the early-release program should have been reduced to compensate for the fewer than anticipated accessions and the more than anticipated non-early-release losses, the opposite actually occurred, as a result of the lag in processing the early releases and the lag in monitoring other losses and gain data. SOURCES: *FY73 House Hearings on Military Personnel*, 1972, p. 26; *FY74 House Hearings on Military Personnel*, 1973, p. 28.

nents: the Army National Guard (ARNG), the Army Reserve (USAR), the Naval Reserve (USNR), the Marine Corps Reserve (USMCR), the Air National Guard (ANG), the Air Force Reserve (USAFR), and the Coast Guard Reserve (USCGR).[39] The reserves and the National Guard differ in that the reserves operate under exclusive Federal control for national defense purposes, while the National Guard components are organized by state under the control of the Governor (unless preempted by the President) and have the additional mission of providing "a force for the protection of life and property and the preservation of peace, order and public safety [within the state] under competent orders of Federal *or State* authorities."[40]

Each of the reserve components is further organized into the Ready Reserve, the Standby Reserve, and the Retired Reserve. The Ready Reserve makes up the major manpower resource that would be used to augment the active forces. It includes the Selected Reserve and the Individual Ready Reserve (IRR). As noted by the Defense Manpower Commission, the Standby Reserve and the Retired Reserve "represent a low potential for partial or rapid mobilization and do not figure prominently in defense planning."[41]

The Selected Reserves and the IRR differ in a number of important ways, with respect to both their missions and roles and the types of personnel they use. The key distinction is that the Selected Reserves consist largely of *units* that can be mobilized and deployed as such, whereas the IRR consists of *individuals* who are intended mainly to serve as "fillers" to augment deployed active and reserve units. Members of the Selected Reserve train periodically (generally, two weeks in the summer and one or more weekends per month during the remainder of the year) and are paid for their drill hours; for the most part, members of the IRR do not train regularly, nor do they receive pay.

The Selected Reserves are similar to the active forces in that they procure and retain their personnel directly. They enlist both NPS recruits and PS recruits (usually individuals who have separated from the active duty forces and subsequently decide to join the Selected Reserves). Personnel are retained in much the same fashion as in the active forces; i.e., the individual must apply and be accepted for reenlistment.

The IRR, on the other hand, relies basically on personnel who have left the active forces but whose six-year obligation has not yet expired. That is, no matter how long the active duty enlistment or induction tour is, each new enlistee (and draftee), upon joining the service, obligates himself or herself to the military for a period of at least six years. If the active duty tour is less than six years, the remainder of the six-year obligation is spent in the IRR or the Standby Reserve. This period of obligation to the IRR entails neither training nor pay but subjects the individual to recall in the event of war or a national emergency. The rationale for this system, which may work better on paper than in reality, is that these personnel have already been trained and would thus be a more valuable resource to the military than raw recruits in the event of a full-scale mobilization. Although the IRR does represent a potentially valuable resource to the DoD and is viewed, at least by some, as a key part of mobilization planning, the Selected Reserves are

[39] The analysis in this section, however, addresses only the six reserve components that fall directly under the DoD—i.e., it excludes the Coast Guard Reserve (see the discussion in Chap. 2).

[40] Defense Manpower Commission, op. cit., p. 109 (emphasis added).

[41] Ibid., p. 104.

clearly the mainstay of the U.S. reserve forces. They are reasonably self-contained units, and they can be deployed rapidly. Accordingly, the analysis below focuses principally on the Selected Reserves.[42]

First, however, a note of caution is in order: Because the reserves tend to be less well understood than the active forces—in terms of overall force structures and missions, underlying problems, and data availability—analysis of the reserve experience under the AVF must necessarily be more imprecise and subjective than the preceding analysis of the active forces.

Selected Reserves

Ideally, an analysis of the Selected Reserves should proceed in a fashion similar to the foregoing analysis of the active forces. For example, recruiting progress should be compared with recruiting objectives—both quantitatively and qualitatively—and the results, in turn, should be used to examine the effects on reserve force strengths. The problem, however, is that data on the reserves, especially data on recruiting and strength objectives, are at best incomplete and at worst meaningless. Therefore, the discussion must take a somewhat different tack: Selected Reserve strengths are reviewed first; then reserve enlistment quantity and quality are reviewed; and finally, the impact of these results on the AVF is considered.

Beginning with force strengths, the comparisons of actual and authorized force strengths presented in Table 8-14 suggest that the Selected Reserves have experienced some recruiting and/or retention problems since the end of the draft. By the summer of 1976, for example, the Selected Reserves were, in the aggregate, about 35,000 enlisted personnel short of their authorized levels. The strength deficits were worst in the Army Reserve, at about 10 percent.

For the Army Reserve and the Marine Corps Reserve, simple comparisons of actual and authorized reserve force strengths probably understate the magnitude of the manpower shortage, since their declining "authorized" strengths may be less a measure of reserve force requirements than they are an indicator of what the Services have felt could be sustained in the absence of a draft.[43] Thus, whereas it is probably reasonable to view authorized strengths for the active duty forces as being more-or-less demand driven, the authorized strengths for the USAR and USMCR may have been much more supply-driven since the early 1970s.[44]

[42] It should be noted that the decline in IRR strengths from about 525,000 in fiscal 1975 to the 300,000 projected for 1982 has also been viewed by some as cause for concern. However, the supposed shortage in IRR strengths may be more imagined than real. For example, the numbers of casualties that the Services currently project would be incurred in the most demanding European war may be considerably overestimated, and thus the numbers of individual replacements needed may be similarly overestimated. The value of the IRR as a source of individual replacements may also be overestimated, since many of these individuals have been out of the Service for several years and may be little better than raw recruits. This discussion is certainly not meant to dismiss the issue of the IRR, but it does suggest that more careful study is clearly warranted, given the many uncertainties involved.

[43] That is, the DoD requested authorization for the number of reservists that it felt could realistically be attained. Thus, whereas force "requirements" might call for larger reserve force sizes in the USAR and USMCR, the lack of available manpower may have led to authorized strengths lower than these requirements.

[44] Although authorized Naval Reserve strengths have also decreased significantly since the early 1970s, this is probably a demand phenomenon, not a result of short supply. In fact, the DoD requested the authority to reduce the total (i.e., officer plus enlisted) Selected Reserve strength in the Naval Reserve from 102,000 in fiscal 1976 to 52,000 in fiscal 1977. The DoD's rationale was that 40,000 of this proposed 50,000 cut could be transferred to the IRR, and the other 10,000 were simply not needed. The Congress balked at this proposal, however, and only reduced the authorized strength to 96,000. See *Hearings Before the Committee on Armed Services: United States Senate*, Ninety-Fourth Congress, Second Session, Part 3, U.S. Government Printing Office, Washington, D.C., 1976.

Table 8-14

Average Enlisted Strengths of the Selected Reserves:
Authorized versus Actual
(thousands)

Fiscal Year		ARNG	USAR	USNR	USMCR	ANG	USAFR	DoD
1970	Actual	362	225	108	45	75	35	850
	Authorized	362[a]	225	109	46[a]	76	40	859
1972	Actual	355	212	104	38	76	37	822
	Authorized	372	225	110	43[a]	77	39	865
1974	Actual	360	192	100	32	81	34	796
	Authorized	346	195	98	37[a]	80	39	796
1976	Actual	346	177	80	29	81	38	751
	Authorized	354	175	81	30	83	40	762
197T[b]	Actual	329	158	78	27	80	36	708
	Authorized	333	175	82	30	83	41	744

Source: Data furnished by the Reserve Compensation System Study, OASD (M&RA).

[a]Estimates derived from total officer plus enlisted authorizations (original enlisted-only data were not available and thus had to be estimated).

[b]197T refers to the so-called transition quarter (i.e., July to September 1976).

This suggests that an alternative way of viewing the strength deficits in the USAR and the USMCR (and, to a lesser extent, in the Army National Guard) would be to compare actual enlisted strengths in the mid-1970s with the authorized levels of the early 1970s. The rationale for this approach, of course, is that these reserve components had a more than adequate supply of manpower during the early 1970s, so the authorized strengths of that period may better reflect "real" requirements.[45]

Viewed from this perspective, the strength deficits in the reserve forces would seem to be considerably larger than those implied by the data in Table 8-14. By the summer of 1976, for example, actual enlisted strengths in the USAR were almost 65,000—or 30 percent—short of the fiscal 1970 level. Similarly, actual USMCR enlisted strengths fell by more than 40 percent during this same period.

To summarize, the reserve forces do not appear to have fared as well as the active forces since the end of the draft, since each of the reserve components has experienced at least some manpower shortages. In the case of the USAR and the USMCR, these shortages may have been sizable. At the same time, it should be emphasized that it is not clear just how much of a problem these shortages are, especially given the softness of reserve manpower authorizations. Moreover, to the

[45] This is obviously an oversimplification. Theoretically, "real" requirements can be viewed in economic terms as the intersection of the supply curve for reserves (i.e., the cost) and the demand curve. Lacking information on these supply and demand curves, the simple approach described in the text can be viewed as providing an upper bound for "real" requirements (while the actual authorizations would provide a lower bound).

extent that there is a problem, it would appear to be limited primarily to the USAR and the USMCR, as the other four components (particularly the Air National Guard) have stayed reasonably close to both their authorized strengths and the actual levels of the early 1970s.

To be sure, these manpower shortages in the Selected Reserves do present cause for concern, and they have come about for two reasons. First, initial enlistments in the Selected Reserves have declined since the end of the draft, as shown in Fig. 8-4. Second, losses from the reserves have been heavy, both because large numbers of personnel have been eligible to separate (a direct result of the very large numbers of personnel who joined the reserves between 1968 and 1972) and because relatively few of these personnel have reenlisted.

Both of these conditions stem from the major reason for enlisting in the reserves during the draft era: Enlisting in the reserves was in most cases a gentlemanly way of dodging the draft. For those who did not want to serve in the military, service in the reserves was less desirable than not serving at all, but it was clearly superior to being drafted and having to spend two full years in the active forces (and possibly in combat). Service in the reserves meant that the individual could simultaneously satisfy his military obligation and pursue his civilian career (going to school, getting a job, or whatever).[46]

The result of this was that there were large queues of draft-eligible young men waiting to join the reserves, most of whom were draft-motivated. In fact, Rostker estimates that about 80 percent of the NPS enlistments in the Air National Guard and the Air Force Reserve were draft-motivated—i.e., they would not have enlisted in the absence of a draft.[47] Given the six-year obligation that enlistment in the Selected Reserves entailed, the large numbers of draft-motivated NPS enlistees who joined in the late 1960s therefore meant that there would be large numbers of personnel separating from the Selected Reserves starting in about 1974.

Without a significant increase in the number joining the reserves, reserve strengths would thus decline. As shown in Fig. 8-4, this is exactly what happened. Not only did the number of enlistments not increase, it actually decreased—from about 250,000 in fiscal 1970 to about 200,000 per year between fiscal 1973 and 1976.

Perhaps more interesting than the aggregate reserve enlistment figures is the composition of those enlistments—specifically, the mix of NPS and PS recruits. The number of NPS enlistments has declined substantially more than the number of total enlistments. To illustrate, between fiscal 1970 and 1974, NPS enlistments in the reserve forces decreased from about 180,000 to less than 50,000. Taking quality (which will be discussed shortly) into account, the decrease is even more impressive: from about 170,000 Category I-III NPS enlistments in fiscal 1970 to about 33,000 in 1974—down by more than 80 percent.[48]

Although fiscal 1975 and 1976 NPS enlistments increased relative to the 1974

[46] It was stated in Chap. 5 that a major disadvantage of the draft was that it severely inhibited labor mobility for those eligible for induction. Employers, for example, were frequently reluctant to hire young men who had not yet fulfilled their military obligation. The reserves thus provided a way out of this dilemma, since an individual could satisfy his military obligation while simultaneously maintaining his civilian status (and opportunities).

[47] See Bernard Rostker, *Air Reserve Personnel Study: Volume III. Total Force Planning, Personnel Costs, and the Supply of New Reservists*, The Rand Corporation, R-1430-PR, October 1974.

[48] This corresponds with Rostker's estimate that 80 percent of the NPS recruits under the draft were draft-motivated.

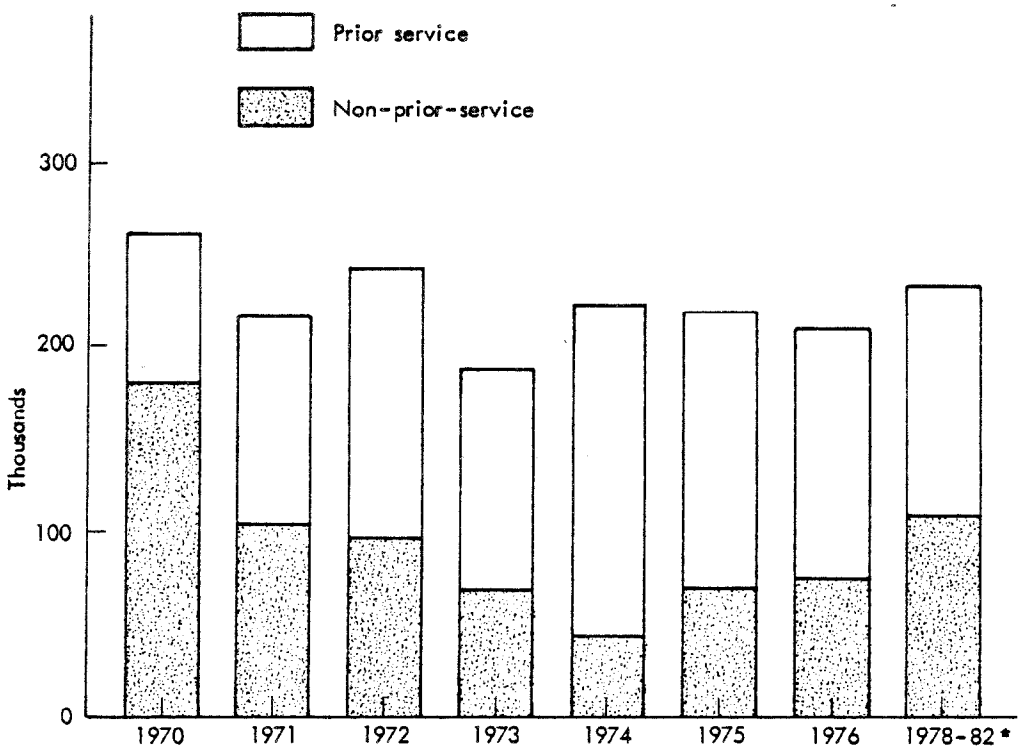


Fig. 8-4—Selected reserve enlisted accessions

*Projected requirements (annualaaverage)
SOURCE: Reserve Compensation System Study

low, they still remained substantially below what they had been during the draft years. This, however, is not at all surprising, since the effect of the draft was to encourage NPS enlistments, not PS enlistments.

The other side of the coin, though, is that the Services have been forced to increase their PS intake into the reserves significantly since the end of the draft. Whereas the reserves had historically relied on about a 70/30 mix of NPS and PS recruits during the draft era, the immediate post-draft period saw them switch to about a 35/65 mix. This new mix of NPS and PS recruits has not been achieved without some reservations on the part of the Services, as illustrated by the fact that their projected (and, presumably, desired) requirements for the late 1970s and early 1980s call for a modest reversal from the early AVF NPS/PS mix. Specifically, accession objectives for the 1978 to 1982 period are based on an NPS/PS mix of about 45/55, as opposed to the early AVF 35/65 mix.

Note, however, that without significant increases in either reserve pay or recruiting, the experience of 1973 to 1976 implies that it may be difficult to realize 108,000 NPS reserve accessions per year. This, in turn, means that the reserves will either have to increase their PS intake significantly above their projected objectives or suffer further strength shortages.

Perhaps the most significant effect of this dramatic change in the NPS/PS mix is that the reserves, which must now place greater reliance on PS personnel, may

ultimately be far more capable than their draft-dependent predecessors. It is argued at some length in Chap. 13 that PS personnel, because of their considerable military training and actual job experience, are probably far more productive than NPS recruits in a wide array of military occupational specialties; NPS recruits must receive a substantial amount of training (which frequently appears to be inadequate for actual job tasks) and are generally very inexperienced.

This means, then, that a smaller force relying more heavily upon PS personnel may be as capable as a larger force composed mainly of NPS personnel, and may be even more capable.[49] *Thus, despite the apparent shortages in the numbers of personnel enlisting and remaining in the Selected Reserves since the end of the draft, today's Selected Reserves may actually provide a more effective mobilization force than the larger forces maintained under the draft.*[50]

The quality of reserve accessions has been another area of major concern. Specifically, there has been growing concern about declining quality in the selected reserves. As shown in Table 8-14, the proportion of non-high-school graduates increased from 6 percent of NPS male enlisted accessions in fiscal 1970 to 55 percent in fiscal 1974. The percentage decreased following 1974, but the non-high-school percentages since the AVF have in general been much higher than they were under the draft. This clearly suggests that, other things being equal, quality has fallen, particularly in light of the problems with non-high-school graduates discussed earlier in this chapter.

The decline in the educational attainment of enlistees in the Selected Reserves is further reflected by the fall in the proportions of new reserve recruits who have had college training. Specifically, reservists with at least some college declined from 56 percent of all NPS male accessions in fiscal 1970 to 6 percent in 1974. These figures show just how much of an avenue for draft-avoidance the reserves provided. Now that the draft no longer exists, it is not at all surprising that the number of college-trained youth joining the reserves has declined sharply.

However, given the nature of the enlisted forces, the decrease in the proportion of new recruits who are college-trained does not necessarily mean a decline in quality. In fact, considering the political and motivational problems that might arise from mobilizing a force whose members had joined primarily to avoid military service,[51] the loss of draft-motivated college graduates from the reserves could actually mean that "true" quality has increased.[52]

Finally, these simple comparisons of educational attainment of NPS accessions —which have, in fact, caused much of the concern about the declining quality of the reserve forces—overlook one very important factor: They do not consider the

[49] There are, of course, limitations to such substitutions. For example, in certain combat functions, PS recruits may offer little advantage over NPS recruits. The optimal mix is therefore a function of the mix of skills (and jobs) required.

[50] Obviously, the lack of good data precludes a precise conclusion. Rather, what is meant is that since PS personnel are generally more productive than NPS personnel, the shift toward greater reliance on PS recruits in the post-draft period *may* have increased the mobilization capability of the reserves sufficiently to offset the decline in the number of reservists.

[51] In fact, President Lyndon Johnson ran into considerable political resistance when he mobilized a few reserve units during the early stages of the Vietnam War.

[52] It can be argued that the reserves ought to have a somewhat richer mix of quality (i.e., better-educated and higher-mental-aptitude personnel) than the active forces, under the rationale that the reserves do not train at frequent intervals, so, to counteract the rate at which job skills atrophy, reservists should be better educated and have higher mental aptitude. The validity of this hypothesis (if it has any), however, remains untested.

fact that NPS male accessions made up only about 30 percent of all reserve accessions during the mid-1970s. As shown in Table 8-15, PS male enlistees (the single largest source of reserve manpower since the removal of the draft) have a much higher level of educational attainment than did those in the draft era. Thus, simple analyses of NPS recruits alone clearly overstate the degree to which quality has fallen under the AVF.

Table 8-15

Selected Reserve Enlisted Accessions:
Distribution by Education
(percent)

Educational Attainment	NPS Male				PS Male
	FY70	FY72	FY74	FY76	FY76
Some College	56	36	6	7	27
HSG	39	47	40	48	59
NHSG	6	17	55	45	15

Source: Reserve Compensation System Study.

Similar findings emerge with respect to mental aptitude, as shown in Table 8-16. For example, the percentage of NPS male recruits in Categories I and II has decreased since the end of the draft—from 62 percent in fiscal 1970 to 26 percent in fiscal 1974. And the Category IV percentage has increased—from 5 percent to 28 percent over this same time period. Once again, though, simple comparisons using NPS male recruits alone considerably overstate the magnitude of the presumed fall in quality. In fact, 49 percent of the PS male recruits in fiscal 1976 were in Category I and II, and only 6 percent were in Category IV.

Perhaps most interesting, Table 8-17 shows that the so-called quality of *all* reserve enlisted accessions—i.e., NPS plus PS—has actually been as high as or

Table 8-16

Selected Reserve Enlisted Accessions:
Distribution by Mental Category
(percent)

Mental Category	NPS Male				PS Male[a]
	FY70	FY72	FY74	FY76	FY76
I	17	13	5	3	9
II	45	38	21	23	40
III	33	40	47	55	45
IV	5	15	28	20	6

Source: Reserve Compensation System Study.

[a]Data exclude USNR and USMCR, as these were not available.

higher than that of active force accessions under either the draft or the AVF. Thus, although there may be some problem with the relatively large number of non-high-school graduate NPS enlisted accessions, the quality of reserve manpower since the removal of the draft would not seem to be a serious problem.

Table 8-17

Quality: Comparison of Active and Reserve Force Accessions
(percent)

Educational Attainment				Mental Aptitude			
	Active		Reserves[a]		Active		Reserves[a]
Education	Draft	AVF	FY76	Mental Category	Draft	AVF	FY76
College	16	6	20	I & II	37	35	41
HSG	54	58	55	III	43	57	48
NHSG	30	36	25	IV	19	8	11

Source: See Tables 8-3, 8-15, and 8-16.

[a]Includes nonprior service and prior service male accessions.

Implications for the Volunteer Force

On the face of it, the Selected Reserves appear to have experienced considerable recruiting problems in the post-draft period. They have not been able to attract the desired numbers of NPS male recruits, and as a result, reserve enlisted strengths have declined (in some cases substantially) relative to those of the early 1970s. Moreover, the quality of NPS male recruits, as measured by educational attainment and mental aptitude, likewise seems to have declined. Fewer high-mental-aptitude and college-trained recruits have joined the reserves since the termination of the draft, and there have been more Category IV and non-high-school graduate recruits.

Despite these apparent problems, the Selected Reserves as a whole may have lost little or no capability or effectiveness under the AVF, relative to the draft era. That is, the substitution of PS recruits for untrained and inexperienced NPS recruits may well have offset much or most of the decline in the number of enlisted personnel. And the current mix may be far more cost-effective.[53]

In a similar vein, although the measured quality of NPS recruits has declined since the early 1970s, much of this decline has been offset by the rising number of PS recruits, who tend to be better educated and score higher on mental aptitude tests than their NPS counterparts.

[53] That is, because PS recruits do not require the extensive amounts of initial training given to NPS recruits, heavier reliance on PS personnel can substantially reduce training costs—and hence improve cost-effectiveness.

To be sure, the lack of precise data on the comparative advantages of PS versus NPS recruits or the implications of the absence of draft-motivated college graduates joining the reserves precludes definitive conclusions. *Nevertheless, the Selected Reserves under the AVF appear to be about as good as their draft-dependent predecessors.*

This is not to say that the reserves are without problems, for there appear to be many. Rather, these problems probably transcend the questions of the draft versus the AVF; they result instead from the more than 25 years of neglect under which the reserves have struggled. For most of the postwar period, the reserves were an afterthought, frequently provided with only outdated or obsolete equipment. This situation has begun to change significantly, however, and deliberate attempts are being made to upgrade the materiel readiness of the reserves, including some significant improvements in their weaponry and support systems.

Improvement in personnel management has perhaps been even slower. For example, the reserves as they exist today were essentially shaped by the legislation of the Korean War period (and the last change prior to that time had occurred in the National Defense Act of 1920). The Act of 1951 established the principle that personnel joining or inducted into the Armed Forces also incurred an obligation to the reserves, which the 1952 Act divided into the Ready Reserve, the Standby Reserve, and the Retired Reserve. Although efforts were made in 1955 to improve the efficiency of the reserves, there has been virtually no change since then—a period of more than 20 years.

Secretary of Defense Robert McNamara, unhappy with the mobilization for the 1961 Berlin crisis, proposed a number of structural and organizational changes to the reserves in 1964. Among these was a proposal to virtually eliminate the Army Reserve and assign its functions to the National Guard in order to eliminate unnecessary duplication.[54] The President concurred, but the Congress refused to go along with the proposal, so the reserves remained basically unchanged.

Thus, a major review of the reserves seems to be clearly in order; the reserves that McNamara saw as inappropriate for the needs of 1964 are probably even more out of date today. Such a review should include careful consideration of probable threats, especially given the many inconsistencies in projected casualty rates (and hence the numbers of personnel needed), logistics structures, and so forth that still characterize Allied mobilization planning. In addition, consideration must be given to the organization of the reserves (e.g., the makeup of individual reserve components) and their structure (e.g., the mix of personnel; the mix of Selected Reserves, IRR, and other components; and so forth).

In conclusion, the reserves have had problems since the removal of the draft, but overall, the Selected Reserves appear to be no less capable today than they were under the draft. Moreover, the AVF has served to heighten interest in the reserves, and though this interest has at times been misplaced, it may ultimately lead to the systematic and thorough review of the reserves that is probably required to make them an effective standby force in the 1980s and 1990s. This, of course, will not be

[54] It is interesting to note that supply conditions—or, more accurately, the lack of supply to the USAR—may achieve what McNamara was not able to: specifically, they may reduce the size of the USAR.

easy, given the unique political pressures that are often brought to bear on the reserves,[55] but it is too important an issue to be overlooked.

SUMMARY

In this chapter, we have discussed what has happened to enlistment quantity and quality since the removal of the draft in December 1972. This discussion has served to make two important points, the first dealing with the questions that have been answered and the second with the questions that have been raised. Whether a result of the soundness of the volunteer idea or a fortuitous by-product of events such as the economic recession of 1974 and 1975, the Services have been able to attract the quantity and quality of personnel required to man the enlisted forces without the pressure of the draft. Important policy questions remain, however, such as the appropriateness of selection policies regarding Category IV versus non-high-school graduate personnel and the potential problems facing the reserves. But the overall message is still the same: The Services have, for the most part, attracted the quantity and quality of personnel *they* deemed appropriate. With respect to quality, the basic problem would appear to be that the military services have followed a "quality-maximizing" policy, particularly as measured by mental category. A "quality-matching" policy—i.e., matching individual aptitudes with job requirements—would be more appropriate. The policy followed has, in turn, had an important effect on quantitative recruiting needs, since to the extent that the Services have favored non-high-school graduates over Category IVs, their quantitative recruiting objectives have been increased, since non-high-school graduates have much higher attrition rates than Category IV personnel.

Equally important are the questions that have been raised. To what extent are the recruiting shortfalls experienced during the first year without the draft indicative of future recruiting problems? How much of the early AVF success was a result of the 1974-1975 economic recession? Because the answers to these and other questions are important to understanding the long-run prospects for the volunteer force, these issues are addressed specifically in the next chapter.

[55] In contrast to the active forces, which have remained remarkably free of politics, the reserves are often immersed in political controversy. This political pressure comes from several sources: (1) the Governors and various state groups (because of the unique dual Federal-State control of the Guard components); (2) reserve lobbying organizations (which enjoy considerable clout on Capitol Hill); and (3) Senators and Congressmen, many of whom hold reserve commissions and thus have a personal stake in matters related to the reserves. This political pressure was largely responsible for the DoD's unsuccessful bid to reduce the Naval Reserve in 1976.

Chapter 9

ENLISTMENT SUPPLY AND DEMAND

The ability of the AVF to provide the enlisted manpower required to sustain U.S. defense objectives for the remainder of this century depends upon essentially three factors: the demand for enlisted manpower, the supply of applicants to the military, and the quality standards used to screen applicants. This chapter focuses explicitly on the component parts of enlistment supply and demand and their determinants.

THE SUPPLY OF ENLISTMENTS

Consideration of the supply issue is warranted if for no other reason than that there have been few attempts to measure enlistment supply during the actual volunteer experience.[1] In addition, with the exception of the Defense Manpower Commission Report, past supply research has not generally focused on projecting enlistment supply into the future. Yet, such projections clearly provide the key for assessing the future of the volunteer force. Moreover, it is shown in App. B to this chapter that the Defense Manpower Commission methodology for projecting manpower supply is at best questionable, so that their forecasts of enlistment supply are not very reliable for policy planning purposes.

The Theory of Enlistment Supply

From traditional labor supply theory, it is convenient to categorize those factors that are expected to influence individuals' propensities to seek employment in the military into several major groups: (1) the tangible aspects of military employment, (2) the dissemination of information to potential recruits, (3) the employment and earnings conditions in the civilian economy, (4) the population base from which the military must draw its recruits, and (5) individuals' "tastes" for military service.

Of the various tangible aspects of military employment, the most obvious factor is military pay. Higher levels of military pay, other things being equal, should induce more individuals to apply for enlistment. But there are other important factors as well, such as the length of the initial enlistment tour, the opportunity to obtain training, and the enlistment "options" used to lure potential recruits into the military. Such enlistment options can and do include the freedom to specify one or more items (e.g., occupational assignment, type of training, assignment location, etc.) as a condition for entering the military. As the military offers more options

[1] Three notable exceptions are Dorothy Amey et al., *Supply Estimation of Enlistees to the Military*, General Research Corporation, McLean, Virginia, June 1976; David W. Grissmer et al., *An Econometric Analysis of Volunteer Enlistments by Source and Cost Effectiveness Comparisons of Service Incentive Programs*, General Research Corporation, McLean, Virginia, October 1974; and Alan Fechter, "The Supply of Enlisted Volunteers: Comparisons of Pre-AVF Studies with Volunteer Enlistments," in Richard V. L. Cooper (ed.), *Defense Manpower Policy*, forthcoming.

to potential recruits, more individuals will enlist, simply because more will find a match between their own preferences and what the military has to offer.

The second factor concerns Service recruiting activity, which includes recruiters in the field, mailings, advertising, and logistical support (e.g., telephone lists) for the recruiting establishment. Recruiting activity may serve merely to inform potential recruits of the employment opportunities in the military or may also serve to persuade some to join. In any case, a larger recruiting effort would be expected to yield more enlistments.

In general, the tangible attributes of military employment and the Services' recruiting efforts can be manipulated through policy directives, either by the Services, the DoD, or the Congress. There is, however, a third set of factors—those pertaining to the employment and earnings conditions in the civilian labor force—that are truly exogenous to military policy control. For example, as the earnings opportunities from civilian employment improve, other things being equal, fewer individuals will seek military employment. Alternatively, as the chances for obtaining civilian employment decrease (as reflected by an increasing unemployment rate), more individuals will try to enlist.

The fourth factor is the population base from which the military draws new recruits; a larger population base would be expected to yield more enlistments. The importance of the population base derives from the well-known decline in the numbers of young men that will begin to take place in the post-1980 time frame. The last factor is individuals' "tastes" for military employment, which include job content, job working conditions, and the like. Some individuals prefer the content and structure of military employment, while others do not.

The above provides a general frame of reference for examining enlistment supply in the post-draft era. It implies that an enlistment supply function can be structured in terms of the factors specified above:

$$E = f(W, M, R, C, U, P, T), \tag{9.1}$$

where E = enlistments (Category I-III high-school graduates),
W = military wages,
M = other "tangible" aspects of military employment,
R = recruiting effort,
C = wages that can be earned from civilian employment,
U = unemployment in the civilian labor force,
P = the relevant population base (e.g., 17 to 21 year old high-school graduate males), and
T = taste for military service.

Equation (9.1) can be simplified if we can assume that enlistments are proportional to the population base and that individuals react to military pay *relative* to their alternative civilian wage offer:

$$E/P = f[(W/C), M, R, U, T]. \tag{9.2}$$

This general formulation of Eq. (9.2) will serve as the basis for the enlistment supply models developed later in this section.

The importance of considering these factors simultaneously is illustrated by Fig. 9-1, which shows that the period leading up to and immediately following the

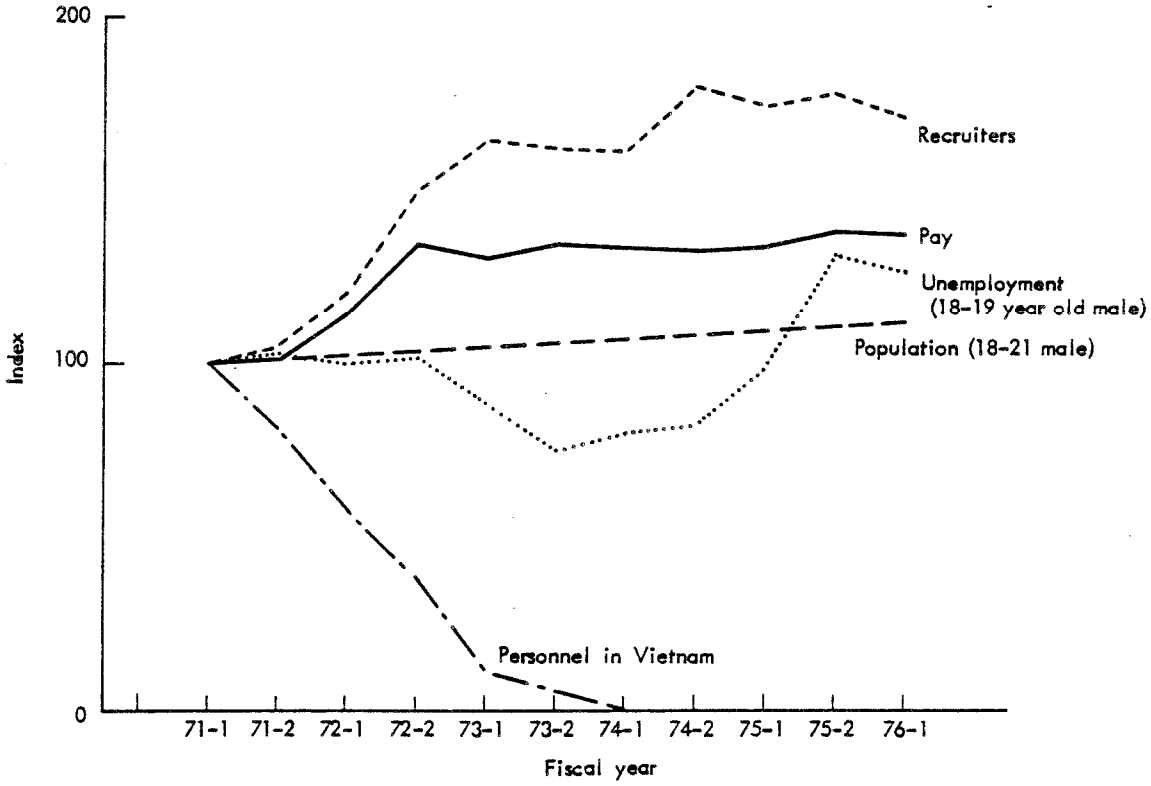


Fig.9-1—Factors affecting enlistment supply
(indexes, fiscal 1971/1 = 100)

removal of the draft was clearly one of substantial change. For example, as a result of the pay raise in 1971, the pay for first-term personnel rose by about 30 percent relative to the pay for comparable civilian employment (i.e., the pay ratio W/C in Eq. (9.2)). The number of production recruiters (recruiters assigned actual recruiting quotas) in the field increased by some 80 percent during the 1971 to 1975 time period, and the number of 18 to 21 year old males increased by about 12 percent.

On the other hand, the United States was winding down its involvement in Southeast Asia during this period; the number of personnel stationed in South Vietnam dropped from more than 400,000 in fiscal 1971 to zero in fiscal 1974. The return to peacetime conditions would be expected to yield more enlistments, because of a lessening in the dangers of military employment.[2,3]

Finally, the unemployment rate for 18 to 19 year old males reached a five-year low of about 11 percent during the first six months of the volunteer force (i.e., the

[2] Such a variable might also serve as a proxy for the improvement in the general attitude toward the military that resulted from withdrawal from the unpopular war in Southeast Asia.

[3] In some cases, particularly in the Marine Corps, the rate of volunteerism declined with the withdrawal from Vietnam. This is not altogether unexpected, since surveys consistently show Marine Corps volunteers have a stronger desire to see action. Indeed, a variety of studies over the years have shown that the presence of war draws some to volunteer for service who would never do so under peacetime conditions. Thus, though the net effect of war on volunteer rates is probably negative in general, there are individuals for whom the chance to see action acts as an inducement.

second half of fiscal 1973) and then rose rapidly to a post-World War II high of nearly 20 percent during the second half of fiscal 1975.

Surveys of Enlistment Intent

There are two primary techniques for examining the roles that the various factors have historically played in the enlistment decision process: survey instruments and econometric models of enlistment supply.[4] Each has its own set of advantages and disadvantages, and thus, they can be viewed as complementary techniques. Surveys of enlistment intent permit the analyst and policymaker to explore many aspects of the decision process for which other, more "objective" techniques cannot be used because of a lack of data. For example, surveys provide the opportunity to assess some of the reasons affecting the "taste" for military service, an aspect of the enlistment decision that is difficult to include in formal econometric models. At the same time, surveys have a number of well-known problems, not the least of which is the difficulty in matching individuals' stated intents with their actual enlistment behavior.[5]

Beginning in 1971, the DoD supported an ongoing series of surveys, known as the Gilbert Youth Survey, of the attitudes of American youth toward military service.[6] Although there were problems with the way the surveys were structured and administered, they represent one of the few sources of survey information that is roughly comparable over time. As such, they provide some insights into the enlistment decision process, particularly with respect to individuals' propensities to enlist and their preferred branch of service, as shown in Table 9-1.

The first finding is the general stability, with a modest upward trend, in the proportion of those surveyed who said they would enlist (definitely or probably).[7] This suggests, at least for the four-year period over which these surveys were taken, that the attitudes of youth toward serving in the military have not shifted radically. Second, the surveys show an almost remarkable stability with respect to individuals' branch of service preferences. The Air Force and Navy are the consistent favorites, followed by the Army, and then the Marine Corps.

Third, survey respondents do differ in their branch of service preferences, depending on their enlistment plans. Individuals who do not plan to enlist and who would therefore be draft-motivated enlistees if they in fact joined during a period of conscription, consistently favor the Air Force and Navy by even higher propor-

[4] A third technique, controlled experimentation, can also be used for assessing the individual effects of the many factors impinging on enlistment supply. By its very nature, though, experimentation must be carefully planned beforehand and hence cannot be used retrospectively. For a discussion of controlled experimentation, see Gus Haggstrom, *The Role of Experimentation in Manpower Planning*, The Rand Corporation, R-1348-ARPA, December 1973.

[5] Part of the difficulty derives from the way most surveys of enlistment intentions have been structured and the failure to link responses with subsequent behavior. Surveys of this sort have historically been conducted by psychologists with very specific objectives; though useful for some of these specific objectives, the surveys have often been of little use for other types of policy questions. Only recently have surveys begun to be structured on a truly interdisciplinary basis, as exemplified by the 1976 DoD personnel survey.

[6] Known formally as the Youth in Transition survey, conducted by the Gilbert Youth Research, Inc., the surveys were ongoing in the sense that they were broadly similar over time. However, changes in structure and administration from survey to survey make strict comparisons impossible.

[7] It will be shown later in this section that the proportion of respondents who replied that they would definitely or probably enlist corresponds closely with the results from more formal econometric procedures.

Table 9-1

Individuals' Branch of Service Preferences by Enlistment Intention

Enlistment Intention[a]	Survey Date[b]	(N)	Percent Who Would Enlist	Percent Preferring to Enlist in[c] Army	Navy	USMC	USAF
Yes	May 71	(313)	11[d]	28	24	11	37
	Nov 71	(235)	12[d]	25	32	15	28
	Jun 72	(299)	15[d]	22	37	12	29
	May 73	(264)	14	22	33	11	33
	Nov 73	(208)	11	23	31	12	34
	May 74	(646)	13	23	28	15	29
	Nov 74	(655)	14	25	32	17	30
	Average			*24*	*31*	*14*	*31*
Uncertain	May 73	(87)		18	32	18	31
	Nov 74	(631)		21	28	16	35
No	May 73	(1129)		14	35	10	41
	Nov 74	(3267)		16	36	12	40

[a]YES includes "yes" and "probably yes" responses; NO includes "no" and "probably no" responses.

[b]It was not possible to determine preferences for "uncertain" and "no" responses for the May 71, November 71, June 72, November 73, and May 74 surveys.

[c]Rows may not add to 100 due to rounding.

[d]Responses for those who would volunteer in the absence of a draft.

Sources: May 71, November 71, and June 72 surveys, "Attitudes of Youth Toward Military Service: Results of National Surveys Conducted in May 1971, November 1971, and June 1972," *Manpower Research Report*, Office of the Assistant Secretary of Defense (Manpower and Reserve Affairs), Report No. MA 72-2, August 1972; May 73, November 73, May 74, and November 74 surveys, unpublished tabulations compiled from computer tapes provided by OASD(M&RA).

tions than do those who would be viewed as "true volunteers." This helps to explain the particularly high percentages of Category I and II enlistments enjoyed by the Air Force and Navy during the draft. Because of an excess supply of volunteers (counting both true volunteers and draft-motivated volunteers), the Air Force and Navy were able to select the cream from the pool of applicants.

The overriding general conclusion to emerge from the comparison of these surveys is that attitudes toward military service have been very stable, at least for the period leading up to and immediately following the removal of the draft. Although the evidence is far from conclusive, it does suggest that we can structure an enlistment supply function in terms of the types of policy variables and exogenous factors (such as unemployment) discussed earlier in this section. In other words, the "taste" factor does not seem to have changed markedly during this period.

An Econometric Model of Enlistment Supply

A specific model of enlistment supply enables us, first, to sort out the individual effects of the various factors that contribute to the supply of enlistees. Since the

transition to the AVF came during a period of substantial change, the effect of any given factor on enlistment supply is far from obvious. An enlistment supply model allows us to evaluate statistically the effects of these specific factors on the numbers of enlistments. Second, the development and estimation of such a model allows us to project the future course of enlistment supply under a variety of possible circumstances.

Estimation of an enlistment supply model from the general formulation given earlier in Eq. (9.2) requires both the specification of the particular variables to be included in the model and the specific functional form of the relationship. The discussion below outlines the basic thrust of the model, which is described in more detail in App. A to this chapter.

Time period. The estimation is based on semiannual data over the period fiscal 1971 through fiscal 1976 (i.e., the model covers the period July 1970 through June 1976). This choice was dictated by the availability of data on the draft lottery, which began in 1970. These lottery data enable us to estimate the number of "true volunteer" enlistments before the removal of the draft without having to resort to indirect measures of draft motivation.

Variables. Because of the limited time period over which the model can be estimated and because of the substantial interdependencies among many of the specific enlistment/supply variables, it is necessary to reduce the number actually included in the estimation to a manageable few.[8] A number of specific variables were examined, and the results are given in App. A to this chapter.

The choice of the dependent variable is dictated largely by the issues raised in Chap. 8. Given the constraints that have historically been imposed on certain types of applicants—most notably Category IVs, but also sometimes those without a high-school diploma—we define enlistment supply in terms of "true volunteer" Category I-III high-school graduate enlistments.[9] The enlistment rate—i.e., the dependent variable—is thus defined as the ratio of the number of Category I-III male NPS high-school graduate enlistments to the relevant population base, where the relevant population base is defined as a weighted average of the number of 17 to 21 year old male high-school graduates.[10]

The first—and from the Gates Commission viewpoint, the key—explanatory variable included in the regression model is first-term military pay relative to the average wage from civilian employment. Although pay is not the only characteristic of the military employment offer, it was one of the main policy instruments used to achieve a volunteer military. Recruiting effort was measured as the number of production recruiters in the field relative to the population base, where "production recruiters" are those military personnel engaged in direct recruiting activity.[11]

[8] Actual variable definitions, as well as the data, are given in App. A to this chapter.

[9] "True volunteer" enlistments estimated for the draft period as described in App. A to this chapter; for the AVF, true volunteers equal total enlistments. In any given month, a recruiter may have already met his quota and thus might not be able to accept additional recruits, even Category I-III high-school graduates. With the possible exception of the Air Force (which has been demand constrained throughout the AVF period), however, these temporary constraints are not likely to pose any analytical problems, since recruiters will tend to make every attempt to put these high-priority applicants into the delayed entry pool.

[10] That is, the "relevant population base" was defined as a weighted average of the individual year cohorts in the 17 to 21 year old male population base, where the weights sum to 1. The weights reflect the fact that different year groups (e.g., 18 year olds versus 20 year olds) have different probabilities of enlisting. See App. A to this chapter.

[11] There are other possible measures of recruiting effort, such as advertising and the total numbers of personnel involved in recruiting activity (including the logistical support base). But given that the limited number of observations precluded including too many variables, we felt that production recruiters were the best available measure of recruiting activity.

Given the potential importance of civilian employment conditions for military recruiting, the model includes the unemployment rate for 18 to 19 year old males as an explanatory variable. These three explanatory variables—the ratio of military to civilian pay, the number of production recruiters in the field relative to the population base, and the unemployment rate for 18 to 19 year old males—together with a seasonal dummy variable to represent the second half of the fiscal year thus constitute the factors in the enlistment supply model.

Functional form. In the absence of prior information regarding the preferred functional form for the relationship between enlistment supply and the factors affecting the number of volunteers, three specific alternatives were examined, all of which have appeared in standard labor supply models: a simple linear model, a logistic model, and a constant elasticity formulation (the functional relationship ultimately adopted by the Gates Commission).[12]

The statistical results from each of the three formulations were broadly similar, leaving the desirable outcome that the qualitative and quantitative conclusions that can be drawn from the estimated relationships are not terribly sensitive to the particular functional form adopted (at least over the ranges of values for the specific variables included in the estimation). Although the results from the constant elasticity formulation are easier to interpret, since the coefficient estimates are simply the supply elasticities,[13] the results reported here are based on the logistic formulation. The logistic model was chosen for theoretical reasons—this model bounds the dependent variable between 0 and 1 (i.e., 100 percent), and the logistic curve has the theoretically desirable S-shape, as shown in Fig. 9-2.

The Model and Method of Estimation. The model of enlistment supply to be estimated can therefore be written as

$$s = \frac{1}{1 + e^{-(b_0 + b_1 w + b_2 r + b_3 u + b_4 D + v)}} \tag{9.3}$$

or, rewriting the logarithms,

$$\ln\left(\frac{s}{1-s}\right) = b_0 + b_1 w + b_2 r + b_3 u + b_4 D + v \tag{9.4}$$

where s = Category I-III high-school graduate male NPS enlistments (E) divided by the relevant population base (P),

w = ratio of military to civilian wages (W/C from Eq. (9.2)),

r = number of production recruiters in the field (R) divided by the population base (i.e., R/P),

[12] A linear model, with y as the dependent variable and x_i ($i = 1, \ldots, k$) as the explanatory variables, is just given as

$$y = b_0 + b_1 x_1 + \ldots + b_k x_k.$$

The constant elasticity model is given as

$$\ln(y) = b_0 + b_1 \ln x + \ldots + b_k \ln x_k,$$

and the logistic model can be written as

$$\ln[y/(1-y)] = b_0 + b_1 x_1 + \ldots + b_k x_k.$$

[13] "Elasticity" measures the response in the dependent variable to a change in the explanatory variable. For example, if a 1 percent increase in pay results in a 2 percent increase in enlistments, the "pay elasticity" of enlistment supply is approximately equal to 2 ("approximately" because elasticity is measured at the margin).

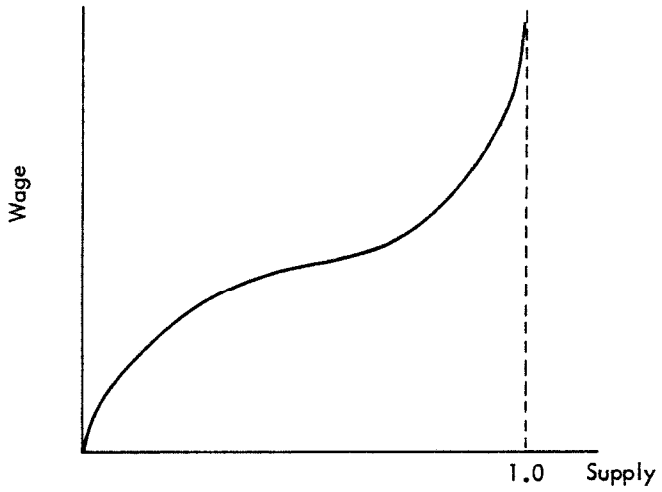


Fig.9-2—Logistic supply curve

u = unemployment rate for 18 to 19 year old males,
D = seasonal dummy (equals 0 for the first half of the fiscal year; equals one for the second half), and
v = stochastic disturbance term.

Equation (9.3) represents the structural formulation of the model, while Eq. (9.4) serves as the basis for estimation.

In the original estimation, separate regressions were run for each of the military services and for the DoD as a whole. However, the small number of observations (i.e., 12 observations for each regression) made it difficult to estimate the parameters of the model with much precision. The model was therefore reestimated by pooling the observations and constraining the parameter estimates to be the same for each Service.[14] In general, the constrained coefficient estimates were not statistically significantly different from the unconstrained estimates; therefore, because of the greater precision of the constrained estimates, the results reported here are based on the pooled data.

The Results. To review, the model to be estimated is based on the logistic formulation with the variable specification as shown in Eq. (9.4); the model was estimated by pooling the data from all Services and constraining the coefficients to be the same for each Service; and the results are based on semiannual data for the period running from the first half of fiscal 1971 through fiscal 1976.

The results from the estimation are given in Eq. (9.5):[15]

[14] The observations across Services were pooled into one regression, and the coefficients for pay, recruiters, unemployment, and the seasonal dummy were estimated (i.e., constrained) to be the same. Separate intercept terms were estimated, however, for each Service. Thus, whereas the single Service regression has 12 observations to estimate 5 parameters (4 plus the intercept), the pooled regression uses 60 observations (12 each for the four Services plus another 12 for the DoD as a whole) to estimate 9 parameters (4 variable coefficients plus 5 intercept terms), thus providing considerable gain in efficiency.

[15] Standard errors are given in parentheses. With the exception of the recruiter variable r, all the coefficients are statistically significant at the 5 percent level (that is, there is less than a 5 percent chance that the results shown are due solely to chance).

$$\ln\left(\frac{s}{1-s}\right) = \underset{0}{b} + \underset{(0.324)}{1.649w} + \underset{(1.289)}{1.715r} + \underset{(0.578)}{1.648u} - \underset{(0.029)}{0.162D} \quad .[16] \qquad (9.5)$$

As shown in App. A to this chapter, Eq. (9.5) does quite well in explaining enlistment behavior during the first half of the 1970s, with the possible exception of the Marine Corps and Air Force. To illustrate, the R^2s (i.e., the proportion of the variation in the dependent variable "explained" by the explanatory variables) for the DoD, the Army, and the Navy fall in the range of 0.7 to 0.9, while those for the Air Force and Marines fall in the range of 0.3 to 0.5.[17] These results are particularly impressive when we take into account the model's simplicity and the fact that the coefficients for all the Services were constrained to be the same.

Because the coefficients in the logistic model have no real interpretation themselves, we resort to the familiar tool of supply elasticities to measure the effects of a given variable on enlistment supply, where the elasticity of supply with respect to a given explanatory variable is simply the percentage change in enlistment supply relative to the percentage change in the explanatory variable. As is evident from Fig. 9-2, the supply elasticities in the logistic model vary with the absolute value of the explanatory variables.[18] The supply elasticities implied by the results shown in Eq. (9.5) are therefore calculated as shown in Table 9-2.

These results show, for example, that the pay elasticity of enlistment supply varies between about 0.95 (at the draft military wage) and about 1.25 (at the present AVF military wage).[19] It is difficult to pin down the pay elasticity precisely because of the collinearity between pay and recruiters.[20] Nevertheless, the variety of

[16] b_0 refers to the separate intercept term for each Service.

[17] As also discussed in App. A to this chapter, the fact that Air Force and Marine Corps R^2s are somewhat less than those for the DoD as a whole and for the Army and Navy is not cause for much concern. Even when other variables are introduced to help explain the Marine Corps and Air Force enlistment rates (thereby raising the R^2s to 0.75 or better), the substantive conclusions implied by Eq. (9.5) remain the same. The remainder of this chapter is thus based on the estimated relationships shown in Eq. (9.5).

[18] The supply elasticities (ϵ_i) for the logistic function

$$s = \frac{1}{1 + e^{-XB}}$$

where $XB = b_0 + b_1x_1 + \ldots + b_kx_k$, can be calculated as

$$\epsilon_i = b_i x_i \frac{e^{-XB}}{1 + e^{-XB}}$$

Thus, for very small values of x_i, b_ix_i also is small. As x_i increases, so does ϵ_i, up to a point, for when x_i is very large, e^{-XB} approaches zero. Therefore, the supply elasticity with respect to x_i increases over a range and then decreases.

[19] The intuitive explanation for these results is that when military pay was far below that in comparable civilian employment, a small increase in military pay would be expected to have only a modest effect on the number of enlistments—hence, the relatively lower pay elasticity for the draft wage. However, once military pay achieved rough parity with civilian employment, the pay elasticity increased.

[20] As can be seen from Fig. 9-1, the large increase in the number of recruiters occurred at about the same time that military pay was increased, hence the considerable collinearity between the two variables. Indeed, the correlation between pay and recruiters is nearly 0.9, which means that neither coefficient can be estimated with much precision. As a result, if recruiters are excluded from the regression run (see footnote 21 below), the standard error associated with the pay coefficient falls from the 0.3 shown in Eq. (9.5) to 0.15. This does not negate the general findings from Eq. (9.5), however, since the combined effect of pay and recruiters can be estimated with considerably more precision.

Table 9-2

Supply Elasticities Implied by Equation (9.5)

Supply Elasticities			Evaluated at[a]		
Pay	Rec.	Unemp.	Pay	Rec.	Unemp.
0.95	0.31	0.20	Draft	AVF	mean
1.08	0.31	0.19	mean	AVF	mean
1.21	0.30	0.19	AVF	AVF	mean
0.97	0.18	0.20	Draft	Draft	mean
1.23	0.18	0.19	AVF	Draft	mean
1.22	0.30	0.11	AVF	AVF	low
1.19	0.30	0.27	AVF	AVF	high

[a]Pay: military pay under the draft (draft); the mean of military pay over the sample (mean); and military pay under the volunteer force (AVF). Recruiters: draft (6,935 recruiters for the DoD); AVF (12,089 recruiters for the DoD). Unemployment: (18 to 19 year-old males; low (7.5 percent), mean (13.5 percent), and high (19.5 percent).

regression results estimated for a number of different model specifications and variable definitions all show the elasticity of enlistment supply with respect to pay to be between 0.75 and 1.5[21] Therefore, the basic message from these results is that the 30 percent increase in the pay for first-termers that was enacted during 1971 has clearly had a substantial impact on the number of Category I-III high-school graduate enlistments.[22]

The near doubling of recruiting effort, at least as measured by the number of production recruiters in the field, likewise appears to have had a considerable impact on recruiting success, subject to the above-mentioned caveats regarding the difficulty in separating recruiter effects from pay effects. Specifically, the elasticities of 0.25 to 0.3 shown in Table 9-2 suggest that the doubling of recruiting effort increased the number of enlistments by 15 to 25 percent, other things being equal.

The third major variable is unemployment. Some have attributed the second- and third-year recruiting successes under the volunteer force to the high unemployment rates that came with the economic recession of 1974 through 1975. As can be seen from Eq. (9.5), unemployment does have a positive effect on the number of enlistments, but the unemployment elasticities of 0.1 to 0.3 shown in Table 9-2 imply

[21] In its studies, the Gates Commission found pay elasticities ranging from 1.0 to somewhat in excess of 2.0 and ultimately settled on a point estimate of 1.25 as the basis for its pay recommendations. Although the Gates Commission estimates are therefore somewhat higher than those reported here, it should be noted that the Commission did not include recruiters as an explanatory variable. To illustrate the effect of excluding the recruiter variable, Eq. (9.5) was reestimated excluding r, with the result that the pay elasticity can be calculated as 1.5 for the draft wage and 1.75 for the AVF military wage.

[22] It should be noted that the pay elasticity shown here is roughly consistent with the results from a number of recent studies. See, for example, Grissmer et al., op. cit.

that the success of the volunteer force is not mainly a result of unemployment in the civilian economy.

Perhaps more important than the effects of any given variable, the simple enlistment supply model given by Eq. (9.5) affords the opportunity to project the future course of enlistment supply under a variety of possible circumstances, the results of which are shown in the last section of this chapter, where supply and demand are examined jointly.

RECRUITING OBJECTIVES AND THE DEMAND FOR ENLISTMENTS

In the absence of a guaranteed and almost limitless supply of manpower, such as is provided by the draft, the demand for enlistments— i.e., recruiting objectives —is one of the most crucial aspects of defense manpower planning and management. And yet, with the exception of the Gates Commission effort, the questions of enlistment demand have gone virtually unnoticed by the research community and, more important, by the policymakers.

The importance of enlistment demand to any assessment of the volunteer force was illustrated in Fig. 8-1. That figure shows that the "feasibility" of the volunteer forces involves both the supply of manpower to the military and annual accession requirements. The Gates Commission estimate of the required pay increase was therefore based on projections of both enlistment supply and demand.

Initially, the question was one of what pay rate would be required to equate supply and demand. Once the general pay level is set, however, as it was with the first-term pay raise in 1971, the feasibility issue becomes one of determining supply and demand in the future. In other words, whether the AVF presents a viable alternative for sustaining the U.S. defense commitments depends in no small part on whether enlistment demand is adjusted to the desired levels, as well as on whether "sufficient supply" is forthcoming.

Sources of Enlistment Demand

It is common to view the demand for enlisted accessions as an objective in its own right, and this is correct in the case of the middle manager charged with recruiting a specified number of new volunteers.[23] Yet, from the broader viewpoint of overall force management, the demand for enlisted accessions is but a means for attaining the more fundamental objective of force strength goals. In other words, because the flow demand is the vehicle for realizing the desired stock demand, we must examine the demand for enlisted accessions in this larger context of force strength objectives.

The policy question thus centers on determining the appropriate level of enlistment demand to achieve force capability objectives. The optimal accession policy will depend upon a variety of factors, including changes in force strengths, the particular mission objectives, the value of experience on the job, and the cost of training new recruits. Ultimately, then, a cost-benefit analysis must be used to judge the desirability of accessing new recruits as opposed to using alternative sources in order to achieve force capability objectives.

[23] Enlisted accessions include draftees (during periods of conscription) and enlistees.

We begin with the simple identity which shows that the end strength (ES) in year t is equal to the previous year's end strength, plus whatever enlisted accessions (A) occur during the year, minus the year's losses (L) from the force, plus any reserve call-ups (RA), and minus any reserve deactivations (RD), as illustrated by the following identity:

$$ES_t = ES_{t-1} + A_t - L_t + RA_t - RD_t. \tag{9.6}$$

Expression (9.6) provides a tool for focusing on the demand for enlisted accessions. We can rewrite the identity (9.6) in terms of enlisted accessions as follows:

$$A_t = (ES_t - ES_{t-1}) + L_t - (RA_t - RD_t). \tag{9.7}$$

That is, enlisted accessions are equal to the change in end strengths, plus whatever losses occur during the year (including the attrition from that year's accessions), plus the net reserve activation (i.e., reserve activations less deactivations).

The usefulness of Eq. (9.7) does not derive from its ex post validity, for Eq. (9.7) is "true" in this regard by definition. Rather, its usefulness derives from the insights it provides with respect to the ex ante determinants of enlistment demand. For example, force size changes or reserve mobilization have an obvious impact on the demand for enlisted accessions, but these are policy decisions that are generally outside the manpower planner's purview. Therefore, the development of a sensible manpower policy toward accession demand depends on "managing" losses from the force, even though statistical analysis of past accession demand must clearly control for the past policy decisions made with respect to force sizes and reserve mobilization. In other words, the manpower policy question is essentially one of developing the appropriate policy with respect to the number of losses from the force.

Initially, it should be recognized that losses from the force will, other things being equal, vary with force size—that is, larger forces will in general yield larger losses. Equation (9.7) can thus be rewritten in terms of force size as follows:

$$\frac{A_t}{ES_{t-1}} = \frac{ES_t - ES_{t-1}}{ES_{t-1}} - \frac{RA_t - RD_t}{ES_{t-1}} + \frac{L_t}{ES_{t-1}}, \tag{9.8}$$

or, equivalently,

$$a_t = es_t - nr_t + l_t, \tag{9.9}$$

where a_t = accession rate (i.e., accession requirements expressed as a percentage of the previous year's end strength),
es_t = percentage change in end strength,
l_t = loss rate (i.e., losses expressed as a percentage of the previous year's end strength), and
nr_t = net reserve activation rate (i.e., net reserve activation expressed as a percentage of the previous year's end strength).

In structuring the analysis in terms of loss rates, the formulation given by Eq. (9.9) establishes the conceptually important result that *accession rates* provide a

useful way of viewing the problem of enlistment demand.[24] By using accession rate requirements as the measure of the demand for enlisted accessions, rather than total accession requirements, we are in a sense normalizing for the larger (smaller) losses that would be expected to result from larger (smaller) forces. Moreover, normalizing accession requirements in this fashion provides a common framework for comparing the demand for enlisted accessions over time and across Services.

Beginning with the Army, we see in Fig. 9-3 that its accession rates have generally varied between 20 and 35 percent during the 20 plus years following the Korean War but on occasion have approached nearly 60 percent.[25,26] It is clear from Fig. 9-3 that much of the considerable variation in the Army's historical accession rates can be attributed to the likewise considerable variations in force size. For example, Army enlisted personnel strengths fell from a Korean War high of more than 1.5 million to about 750,000 at the beginning of the 1960s, rose again to a Vietnam peak of some 1.4 million, and have declined to about 680,000 in the post-Vietnam era.

The Navy results, which are shown in Fig. 9-4, provide a somewhat different picture. Due in no small part to its much more stable force sizes over the post-Korean War period, Navy accession rates have likewise been much more stable over the past 25 years. For the most part, Navy accession rates have varied between 20 and 30 percent, averaging about 23 percent during the period 1955 to 1974.[27]

The Marine Corps data shown in Fig. 9-5 offer one of the most interesting and perplexing patterns. Like the Army, the Marine Corps accession rates exhibit substantial variation during the post-Korean period, having fallen below 15 percent and risen to more than 50 percent. From 1953 through 1976, Marine Corps accession rates averaged about 26 percent. However, as reflected in Fig. 9-5, the Marines started relying on a more junior force in the late 1960s, which led to increased accession demands. In particular, we see that while Marine accession rates averaged about 20 percent between 1955 and 1965, these rates have averaged more than 30 percent since the Vietnam drawdown.

Finally, the results from the Air Force are shown in Fig. 9-6. The Air Force, like the Navy, has had only modest variation in its accession requirements, which have remained between 10 and 25 percent throughout the post-Korean War period. In addition, the Navy is the only Service that comes close to the Air Force average accession rate of 15 percent (and only if the 2x6 and 3x6 reservists are excluded).

[24] Personnel "turnover" rates (tr), a concept more familiar to many, can be estimated as the average of accession rates (a) and loss rates (l):

$$tr_t = (a_t + l_t)/2.$$

In the steady state, where accessions equal losses, accession rates are therefore equal to turnover rates.

[25] At the outset of the Korean War, the Army accession rate was about 170 percent, because of the considerable force buildup.

[26] Accessions here (and for the Navy, Marine Corps, and Air Force, as well) include "inductions," "first enlistments," and "other reenlistments," as reported in the *Selected Manpower Statistics* volume published by the DoD. The last category, "other reenlistments," is included because it measures mostly PS enlistees (see the discussion of enlistment sources in the previous chapter).

[27] Because the Navy's 2x6 and 3x6 enlistees (i.e., those that serve their first two or three years on active duty and serve the remainder of their six-year obligation in the selected reserves) are officially recorded as reservists called to active duty, Navy accessions here include "Reserve to Active Duty," as reported in *Selected Manpower Statistics*.

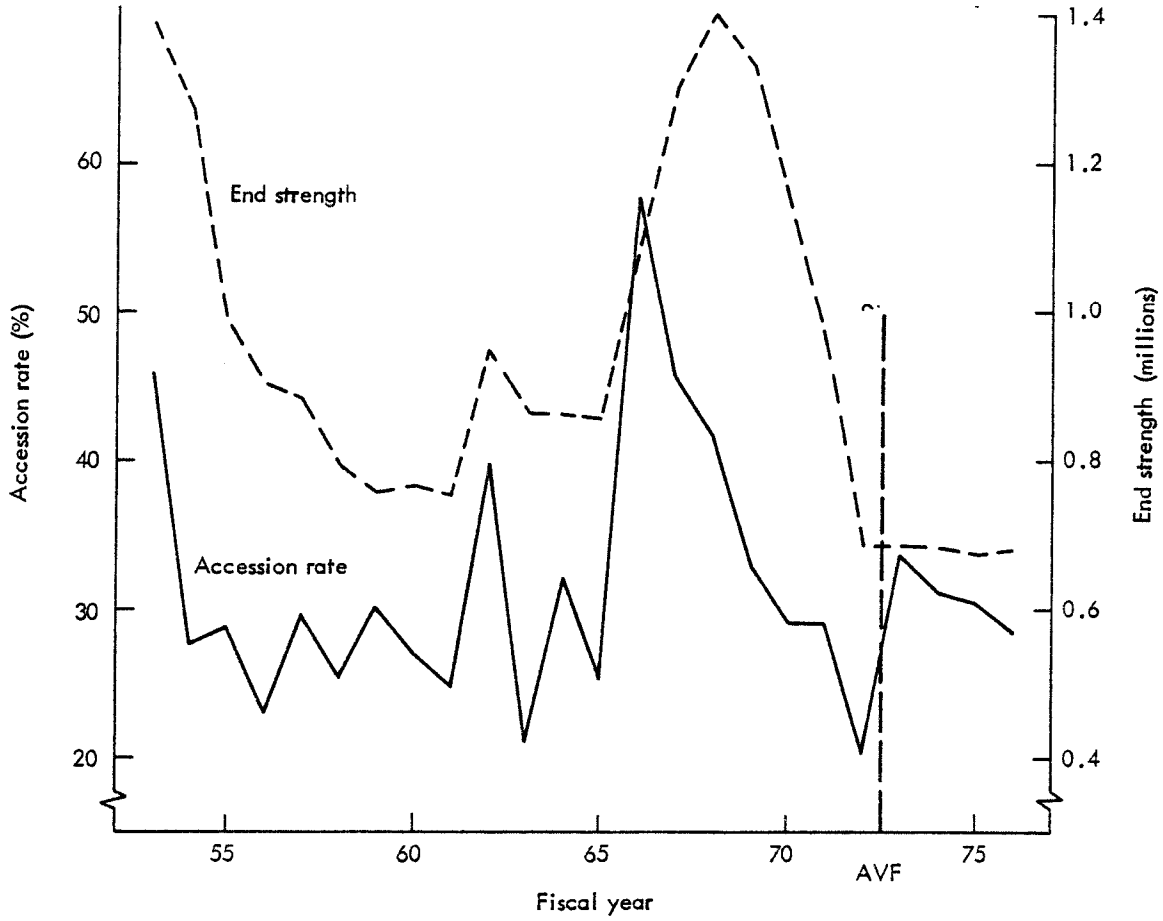


Fig.9-3—Army accession rates and end strengths

SOURCE: *Selected Manpower Statistics*, various years.

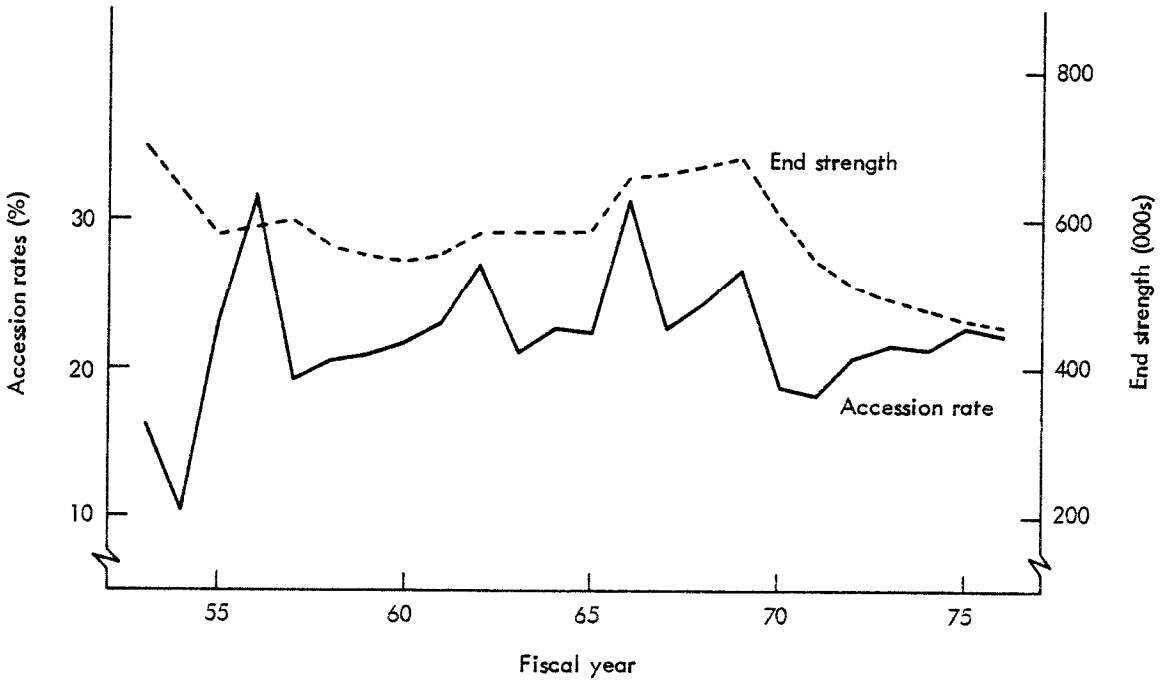


Fig.9-4—Navy accession rates and end strengths

SOURCE: See Fig. 9-3.

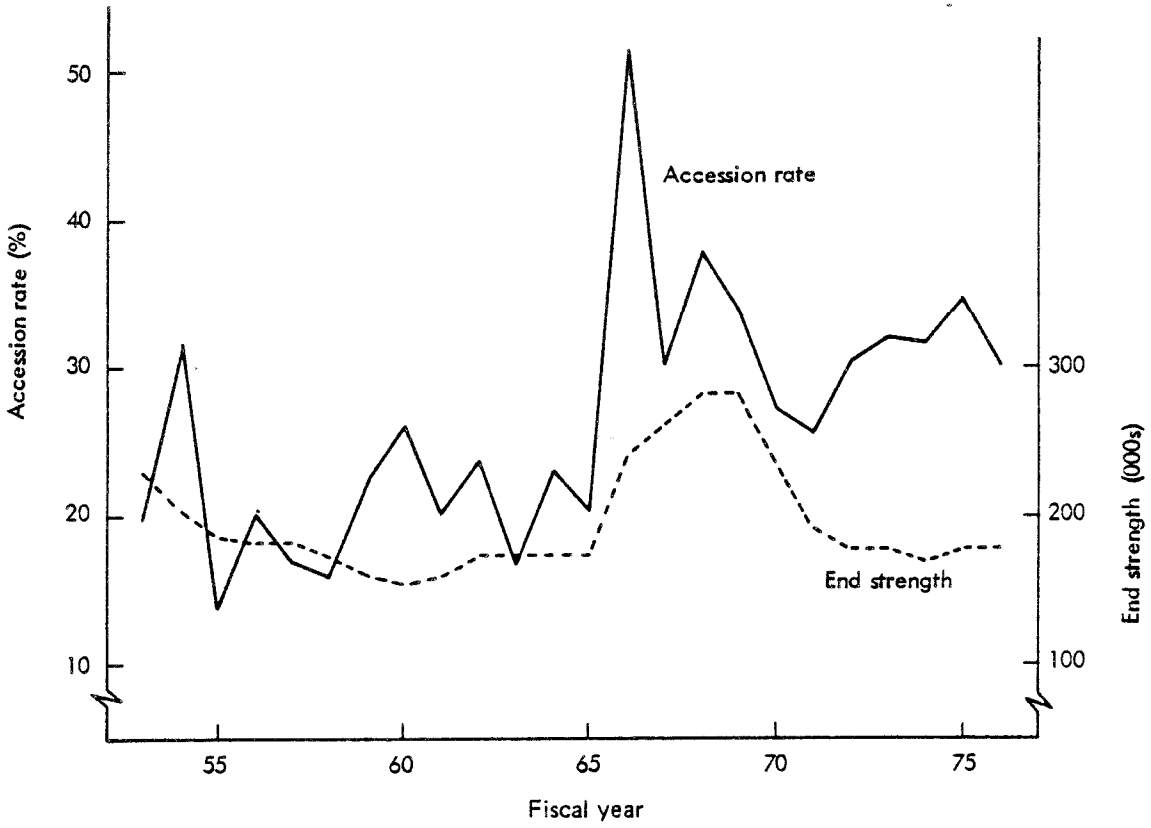


Fig.9-5—Marine Corps accession rates and end strengths

SOURCE: See Fig. 9-3.

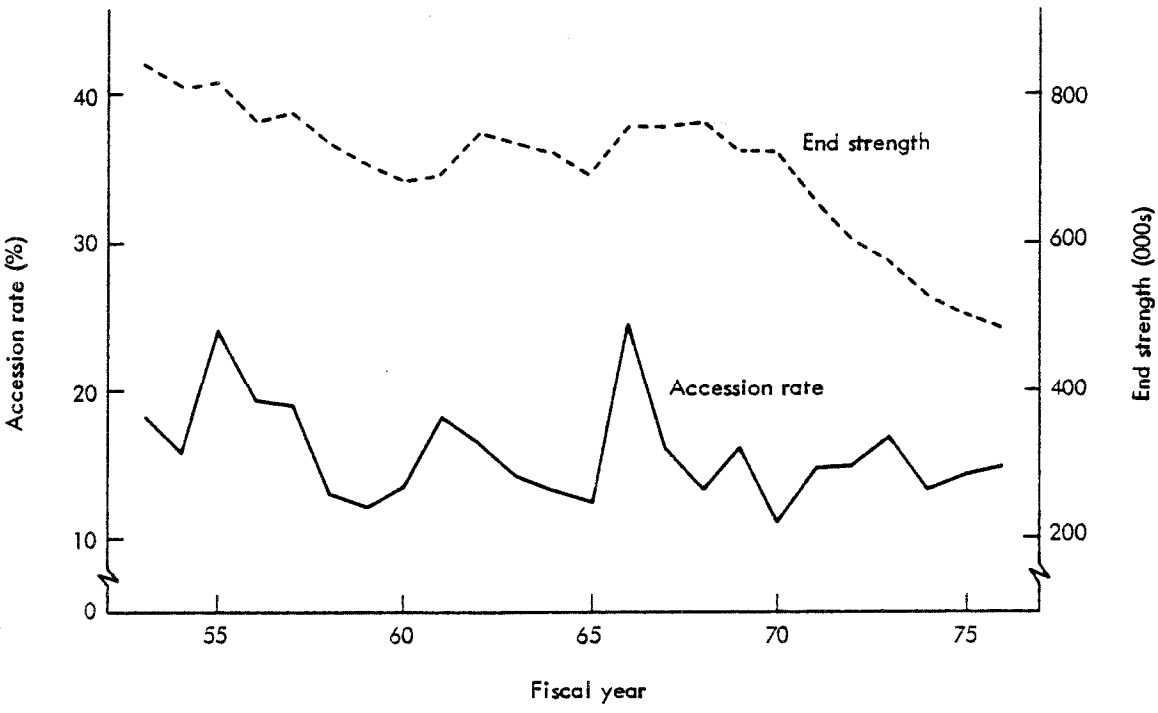


Fig.9-6—Air Force accession rates and end strengths

SOURCE: See Fig. 9-3.

A Model of Enlistment Demand

The preceding discussion—Eq. (9.9) in particular—has provided an important analytical tool for evaluating the demand for enlisted accessions, past as well as future. The analysis thus far has indicated only the general nature of enlistment demand; the discussion below is directed to a more specific formulation of the demand for enlisted accessions.

As discussed earlier, one method of evaluating Service accession policy is to conduct a cost-benefit analysis of the desired distribution of personnel by length of service which, in turn, implies the accession rates required to support the desired force structure. An alternative approach is to structure a statistical model of the demand for enlisted accessions based on past Service accession policies. That is, the historical data shown in Figs. 9-3 through 9-6 can be used to measure statistically the determinants of past Service accession rates, thereby providing a basis for projecting what accession demand ought to be in the absence of the draft.

Equation (9.9) suggests that accession rates vary directly with changes in end strengths, though the patterns shown in Figs. 9-3 through 9-6 suggest that there is an asymmetry with respect to strength increases and strength decreases. During periods of force build-up, accessions will generally be increased on a more or less one-for-one basis with end strength increases.[28]

That is, there are only so many reserves that can be mobilized, just as losses can be held off for only so long (except during a major, all-out war). Thus, although the relationship between strength increases and accession increases need not be exact in the short run, the relationship will be much more closely matched in the long run.

Conversely, reductions in force strengths are likely to be accompanied by a less-than-equivalent reduction in the number of accessions. Since major variations in the distribution of personnel by length of service (known as "humps" and "valleys" in military personnel management) can cause severe management problems,[29] it simply does not make sense to reduce accession requirements on a one-for-one basis with strength reductions during periods in which force sizes are cut substantially, such as those following the Korean and Vietnam wars. As a result, the Services generally follow a policy of early-out programs and reduced numbers of reenlistments during periods of force reduction.

Since accession rates vary on a one-for-one basis with loss rates, the key to developing a model of accession demand is in projecting the determinants of losses from the enlisted ranks. Given the structure of the military career, it is useful to separate enlisted losses into two groups, those from the first term and those from the career force. Losses from the first-term force can generally be thought of as those related to attrition during the first term and those who do not (or are not permitted to) reenlist.[30] Career losses, on the other hand, consist primarily of nonreenlistees and retirees.

[28] There are, of course, other avenues for increasing force strengths. These include the activation of reservists and extension of the duty tour for those already in the force (thereby reducing losses).

[29] Such problems include, for example, promotion queues and the reverse, shortages of personnel qualified for promotion. Each of the Services has experienced these problems to some extent in the past, particularly following World War II and the Korean War.

[30] A third source of first-term enlisted losses, as mentioned earlier, are the "early-outs" that may accompany sizable force reductions.

Because of its magnitude relative to other losses, the key variable for planning purposes is the number of nonreenlistees from the first term. This, in turn, is dependent on the size of the cohort eligible to separate from the military and the percentage of those that reenlist (i.e., the reenlistment rate). During periods of relative force size stability, the latter is likely to be the primary determinant of loss rates, since fluctuations in cohort sizes would be expected to be relatively modest. Alternatively, during periods of changing force sizes, such as those characterizing much of the post-Korean era, the former is likely to be the primary determinant of loss rates, since changes in the sizes of the cohorts eligible to separate are likely to swamp variations in reenlistment behavior. In general, though, variations in cohort sizes, rather than reenlistment rates, are likely to be the dominant factor with respect to predicting loss rates.[31]

The above suggests that, as a practical matter, we can focus on the variations in the sizes of the cohorts eligible to separate as the primary determinant of enlisted losses. During the draft, variations in these cohort sizes depended largely on the numbers of inductees and draft-motivated enlistees becoming eligible to separate.[32] The standard draft tour was two years and the standard enlistment tour was three or four years (three in the Army and Marine Corps and four in the Navy and Air Force). Thus, a Service's enlisted loss rate in a given year is primarily a function of (1) the number of individuals inducted into that Service two years previously and (2) the number of draft-motivated enlistees inducted three or four years previously, depending on the length of the enlistment obligation in that Service.

Adding the net reserve activation rate gives the following model of the demand for enlisted accessions:

$$a_t = b_0 + b_1 es_t^{*} + b_2 es_t^{**} + b_3 i_{t-2} + b_4 d_{t-j} + b_5 nr_t. \qquad (9.10)$$

where a_t = accession rate in year t (i.e., A_t/ES_{t-1}),
es_t^{*} = percentage increase in end strength in year t (equals zero for decrease),
es_t^{**} = percentage decrease in end strength in year t (equals zero for increase),
i_{t-2} = inductions in year t − 2 (I_{t-2}) divided by ES_{t-1},
d_{t-j} = draft-motivated enlistments in year t − j (d_{t-j}) divided by ES_{t-1},[33] and
nr_t = net reserve activation in year t (NR_t) divided by ES_{t-1}.[34]

[31] For example, Army first-term reenlistment rates have varied between 10 and 30 percent between fiscal 1955 and fiscal 1972, implying that first-term losses from nonreenlistment have varied between 70 and 90 percent—that is, by a factor of 1.3 (i.e., 90/70). In contrast, the number of individuals eligible to separate in year t (equal to inductions in year t − 2 plus enlistments in year t − 3, since inductees serve two years and most Army enlistment contracts are for three years) have varied between 162,000 (in fiscal 1963) and 524,000 (in fiscal 1970)—that is, by a factor of more than 3.2. Thus the variations in the sizes of cohorts eligible to separate have been considerably larger than the variations in the percentage of those who do not reenlist.

[32] In general, we would expect the number of non-draft-motivated enlistees to be far more stable over time, since their numbers were supply, not demand, driven.

[33] We can think of

$$d_{t-j} = dm_{t-j} \cdot e_{t-j},$$

where e_{t-j} = number of enlistments in year t − j divided by ES_{t-1} and dm_{t-j} = percentage of enlistees in year t − j that were draft-motivated (estimated as total inductions in year t − j divided by the number of 18 year old males in year t − j).

[34] In the absence of data on reserve deactivations, NR_t was estimated as $NR_t = RA_t - RA_{t-1}$ (where RA_t equals the number of reserve activations in year t).

Using the historical data illustrated earlier in Figs. 9-3 through 9-6, we can estimate the determinants of accession demand in the individual Services, based on their past behavior with respect to the demand for enlisted manpower.

This particular formulation has the interesting and important feature that the steady-state accession rate in the absence of the draft is equal to the constant term b_0 in Eq. (9-10).[35] Since enlistment demand is equal to the accession rate times force size, this simple model provides a method for estimating Services' enlistment demand in a zero-draft environment, *based on their past accession patterns.*[36]

Using historical data for the years 1955 through 1972, Eq. (9.10) was estimated by running separate regressions for each Service. For the most part, this simple model does quite well in explaining past Service accession behavior, except for the Marine Corps. This is because, as shown in Fig. 9-4, the Marine Corps reliance on a more junior enlisted force beginning in the late 1960s led to a corresponding increase in accession demand. A dummy variable m_t was therefore included in the Marine Corps regression to reflect this policy change.[37]

As evident from Table 9-3, the regression results for this simple model are quite impressive, with the R^2s ranging between 0.7 and 0.9. The coefficients are also generally as expected. For example, end strength increases show coefficients in the neighborhood of 1.0, while end strength decreases show coefficients that are always less than those for increases. The effect of the apparent shift in Marine Corps accession policy is also evident from these results, insofar as the dummy variable shows a regression coefficient of 0.1. This implies that the shift in Marine Corps accession policy toward the late 1960s has resulted in an accession rate in the 1970s about 10 percentage points higher than that of the 1950s and 1960s.

Perhaps most important from the viewpoint of the volunteer force, these regression results imply (from the estimated constant terms b_0) that the long-run AVF accession rates (or, equivalently, labor turnover rates) should be about 18.5 percent for the Army, 21.6 percent for the Navy,[38] 20.6 percent for the Marine Corps if the Marines return to their pre-1970s accession policies, and 12.1 percent for the Air Force.

Developing a "Cost-Effective" Accession Policy

In viewing the Services' historical accession patterns as the basis for analysis, the discussion thus far has not defined or identified an "optimal" accession policy. Rather, we have projected what long-run AVF accession rates will be, given past Service accession policies.

Determination of what Service enlisted accession requirements *ought to be* in

[35] That is, under steady-state conditions, with no force size variations or reserve mobilization, es^*, es^{**}, and nr in Eq. (9.10) are all zero. Similarly, in the absence of the draft, there will be no inductees or draft-motivated enlistees, so i_{t-2} and d_{t-j} also equal zero. Thus, Eq. (9.10) reduces to $a_t = b_0$.

[36] The heuristic interpretation of Eq. (9.12) in this regard is that "true volunteers" will have the same loss rate, irrespective of whether they enlisted during the draft or the AVF. Their loss rates are thus subsumed in the constant term b_0, as are losses from the career force.

[37] The dummy variable m_t was set equal to zero for 1955 through 1968, and equal to 1 thereafter.

[38] The 21.6 percent for the Navy is based on the inclusion of the 2x6 and 3x6 reservists. The exclusion of these enlisted accessions results in an implied steady-state accession rate of 16.9 percent, as shown in Table 9-3.

Table 9-3

A Model of Enlistment Demand-Regression Results
for Equation (9.12):

$$a_t = \beta_0 + \beta_1 es_t^* + \beta_2 es_t^{**} + \beta_3 i_{t-2} + \beta_4 d_{t-j} + \beta_5 nr_t + \beta_6 m_t$$

	β_0	β_1	β_2	β_3	β_4	β_5	β_6	R^2 (SSR)
Army	0.185	1.060	0.497	0.470	0.954	-0.676	n.i.	0.894
	(0.033)	(0.136)	(0.168)	(0.127)	(0.839)	(0.267)		(0.016)
Navy[b]	0.216	0.796	0.489	0.215	0.326	n.i.	n.i.	0.713
	(0.009)	(0.201)	(0.179)	(0.551)	(0.155)			(0.007)
USMC	0.206	0.780	0.447	1.134	n.i.	n.i.	0.103	0.868
	(0.013)	(0.103)	(0.206)	(0.466)			(0.029)	(0.019)
USAF	0.121	1.171	0.029	n.i.	0.533	-1.226	n.i.	0.726
	(0.012)	(0.262)	(0.201)		(0.134)	(0.570)		(0.007)

n.i.: not included.

[a]Regression results for FY55 to FY72 (standard errors) given in parentheses. The subscript j equals three for the Army and Marine Corps (corresponding to their standard three-year enlistment) and equals four for the Air Force and Navy (corresponding to their standard four-year enlistment). Ordinary least squares was the method of estimation.

[b]If the Navy's 2x6 and 3x6 reservists are excluded, $\beta_0 = 0.169$. See Table 9.4.

Data Source: *Selected Manpower Statistics* (1975).

a zero-draft environment requires consideration of costs and productivities. Specifically, since the military maintains a "closed" personnel system, the years-of-service distribution determines how many new recruits are required. The "optimal" accession policy is therefore a direct result of the "optimal" years-of-service distribution, which in turn is a function of the costs and productivities of individuals in particular year groups. For example, if junior personnel are more expensive relative to senior personnel, using more senior personnel would reduce the demand for new enlisted accessions.

An analysis of the cost-effective experience mix of the force will be given in Part III of this report, which details resource allocation issues. The desired experience mix for annual enlisted accession requirements is considered in detail in Chap. 13; the following discussion is based on the results developed there.

In examining enlisted accession requirements, it is useful to begin by noting that the first-term/career mix affects the numbers of new recruits needed in two important ways.[39] The first is the obvious implication that, other things being equal, a larger first-term force requires more recruits each year. Second, and more subtle, is the effect of the experience mix on the within-first-term years-of-service distribution. Specifically, when fewer new recruits are needed each year, as would be the case with a more experienced personnel structure, the Services (1) have to accept fewer short enlistments (i.e., two or three years) and (2) can screen applicants for

[39] Ideally, we would examine the cost-effectiveness of the entire years-of-service distributions. However, the first-term/career mix is a useful summary measure for beginning the analysis.

enlistment more carefully, thus reducing first-term attrition.[40] Reducing the proportion of the force in the first term therefore markedly reduces the numbers of enlisted accessions required each year.

Turning to the desired first-term/career mix, we recall that the move to end the draft was accompanied by a sharp rise in the (budget) cost of first-termers, which in itself argues for a substitution of careerists for first-termers. As shown in Table 9-4, however, such substitutions have not in fact taken place, since the Services' AVF first-term percentages (both the actual 1974 percentages and their long-run projected goals) are not very different from those in the pre-Vietnam benchmark year of 1964. Indeed, the Marine Corps and the Air Force have actually substituted in the opposite direction; the Army and Navy substitutions, though in the right direction, have been and are projected to be very modest. The net result is that the Services as a whole project a greater reliance on first-term personnel under the AVF than they did under the draft, when cost-effectiveness concerns argued for just the reverse.

Although it is difficult to pinpoint exactly what the desired mixes would be, since they depend on the specific costs and productivities in each Service's specific occupational mix, Table 9-4 presents some not too hypothetical estimates of what "the" cost-effective mixes might look like. In any case, it is clear that a more career-intensive mix than is currently projected ought to be considered.

Table 9-4 also shows the substantial impact that the experience mix of the force has upon the accession rates required to support the force structure. Although the exact accession rates required to support a given first-term/career mix will depend on such factors as first-term enlisted attrition rates and the numbers of recruits under different enlistment obligation lengths,[41] it is nonetheless clear that the unusually large AVF accession requirements are partially a result of the failure to adopt more cost-effective mixes of first-termers and careerists.

First-Term Enlisted Attrition

Since larger attrition rates during the first term obviously lead to larger accession requirements, other things being equal, successfully managing enlisted accession requirements depends in part on gaining a successful hold on first-term enlisted attrition.

Attrition during the first two years of military service is both very large and has been increasing through the 1970s. Although it is not entirely appropriate to compare AVF attrition rates with those experienced during the draft, as some such as King have done,[42] the magnitude of enlisted attrition and the recent trends do

[40] Stricter screening criteria do not necessarily mean reducing the numbers of Category IV accessions or increasing the stringency of medical standards. Rather, the Services could focus more on motivation (e.g., by requiring prospective recruits to wait a week or a month before joining to see if they still wanted to enlist or by establishing "spend-a-week-in-the-Army" programs such as the British have implemented).

[41] The estimates shown in Table 9-4 were based on the Services' historical attrition patterns and mixes of two-year, three-year, and four-year enlistees. The resulting within-first-term years-of-service distributions were then judgmentally adjusted for different experience mixes.

[42] William King, for example, argues that the high attrition rates under the AVF are one measure of the "failure" of the volunteer force (see King, "Achieving America's Goals . . . ," op. cit.). For several reasons, though, such comparisons are not really valid. For example, the Services could not afford to allow individuals such easy exit under the draft, even for substandard performance and disciplinary problems, lest many draftees and draft-motivated enlistees deliberately disqualify themselves. Instead,

Table 9-4

First-Term/Career Mix Implications for Annual Enlisted Accession Requirements

	Percentage of Force in First Term[a]				
	Army	Navy[c]	M. Corps	Air Force	DoD
1964	66	61	66	46	59
1974	64	57	73	51	59
Stated AVF Objective	63	57	73	57	61
"Cost-Effective"	56	54	59	45	53

	Accession Rates (percent) Required to Support the[b]				
	Army	Navy	M. Corps	Air Force	DoD
Objective FT/C Mix	27.0	30.0	29.0	17.6	23.0
"Cost-Effective" Mix	20.5	18.5	20.7	13.3	18.1

[a]See Text and Table 13-4.

[b]See text and Table 13-6.

[c]Includes 2x6 and 3x6 reservists.

provide some cause for concern. Specifically, because high attrition rates drive up the demand for new recruits, the Services lose much of the sizable investment that they make in new personnel (e.g., accession costs, training costs, etc.). At the same time, the optimal attrition rate is not zero, since reducing first-term enlisted attrition is itself not costless.[43]

Although a full accounting of the causes of and remedies for high attrition rates has yet to be made, there is good reason to believe that some, if not much, of the first-term enlisted attrition is policy driven. For example, non-high-school graduate enlisted accessions have much higher attrition rates than high-school graduates. Thus, Service quality standards, which have reduced Category IV enlistments at the expense of increased non-high-school graduate enlistments, have resulted in higher first-term enlisted attrition.

the Services were forced to use other disciplinary procedures, such as incarceration, and to simply put up with substandard performance. (Although there are few formal data, conversations with a number of base and post commanders and other Army officials have verified the fact that there are far fewer servicemen in Service jails and brigs and under other forms of punishment with the AVF than there were with the draft. This illustrates, once again, how many of the real costs of the draft were disguised by conventional analytic measures).

Finally, the AVF has provided the Services the opportunity to rid themselves of substandard performers and disciplinary problems, an opportunity they frequently did not have under the draft. In other words, although the high attrition rates shown in Table 9-5 indeed have their costs, there are also certain advantages, since to the extent that these individuals are not satisfactory members of the military, the AVF with its freer discharge procedures provides the opportunity to maintain a more qualified force with (hopefully) higher morale.

[43] The costs of reducing attrition include those associated with implementing stricter screening standards, those resulting from restricting the size of the manpower pool (because of stricter screening standards), those of managing an attrition-reduction program, and the opportunity costs resulting from the exclusion of potentially satisfactory service members by stricter screening standards.

Also, the Services' heavy reliance on junior personnel and the correspondingly larger accession requirements have meant acceptance of more individuals who are only marginally qualified for or marginally interested in the military. Reducing accession requirements to more cost-effective levels by relying more heavily on careerists would enable the Services to "pick and choose" from applicants, which would subsequently reduce first-term attrition.

Finally, there is some question whether individuals forced out of the military services under such policies as the "marginal performers program"[44] or who have sought their release should have been released, at least without further remedial instruction and/or counseling.[45] For example, a sizable proportion of first-term attrition—about 25 to 50 percent—occurs during recruit and specialty training. This raises the natural question of the extent to which this attrition could be stopped through practices such as remedial instruction. Moreover, the fact that the Services differ on what constitutes grounds for an individual to be declared unfit for service suggests a revision in the standards for first-term separation.

To summarize, it is clear that first-term enlisted attrition has contributed to the large AVF enlisted accession requirements. Furthermore, it is equally clear that Service policies such as continued emphasis on a junior enlisted force and quality standards that focus on reducing Category IV accessions at the expense of increased numbers of non-high-school graduates have themselves been responsible for at least some of the high first-term attrition rates.

Implications for the Volunteer Force

Table 9-5 shows the results from three different approaches for determining what enlisted accession requirements ought to be in the absence of a draft. The Gates Commission estimated that an enlisted accession rate, or equivalently an enlisted turnover rate, of about 15.5 percent would be required to support a volunteer military. Similarly, the simple model represented by Eq. (9.10)—based on historical accession patterns—suggests an aggregate DoD enlisted accession rate of about 18 percent, as do the results from a consideration of what Services' first-term/career proportions ought to be.[46]

All three approaches imply a reduced accession demand for given force sizes once the volunteer force has become fully established. Because volunteers have a higher propensity to remain past their initial obligation than draftees and draft-motivated volunteers, the AVF should be used as a vehicle for reducing enlisted loss rates and correspondingly reducing enlisted accession demands.

The policy issue, then, is how the Services' own stated accession policies compare with our estimates of the accession rates required to support a volunteer

[44] For a description of Service separation policies and programs, see Nicki J. King, "The Gatekeepers: First-Term Enlisted Attrition Policies and Practices," unpublished paper presented to the DoD Conference on First-Term Enlisted Attrition, The Rand Corporation, March 1977.

[45] It should be emphasized that the Services have made substantial progress in developing personnel programs of these sorts, programs that were often nonexistent during the draft. Indeed, it is through the development and implementation of such programs that the military has made some of the most important progress, and they may be among the most significant factors for the long-run success of the volunteer force. Yet, such programs frequently receive little or no public attention.

[46] It is not clear from the Gates Commission estimates whether the Navy's 2x6 and 3x6 reservists were included in the estimated AVF accession requirements. If they were not, then the results from Eq. (9.10) and examination of the desired AVF first-term/career mixes are even closer to the Gates Commission results, as these two approaches yield aggregate DoD accession rates of about 17 percent each.

Table 9-5

Accession Rates and Accession Rate Requirements
(percent)

Service	Draft-era Accession Rates[a] FY55-65 Avg.	Services' Stated AVF Accession Rate Requirements FY73-76[a]	FY78-82[b] (Proj.)	"Desired" AVF Accession Rate Requirements Gates Comm.[c]	Eq. (9.10)[d]	"Cost-Effective" FT/C Mix[e]
Army	27.9	30.9	26.9	17.1	18.5	20.5
Navy[f]	23.0 (18.3)	21.9	23.5	n.a.	21.6 (16.9)	18.5 (15.1)
USMC	19.9	32.1	28.2	n.a.	20.6	20.7
USAF	15.9	14.7	18.6	n.a.	12.1	13.3
Non-Army[f]	19.1 (17.3)	20.2	22.2	14.4	17.4 (15.3)	16.7 (15.1)
DoD[f]	22.3 (19.5)	24.1	24.0	15.4[g]	17.8 (16.5)	18.1 (17.1)

n.a. = not available

[a]See Figures 9-3 to 9-6.

[b]Source: OASD (M&RA) memorandum dated 17 June 1976.

[c]*The Report of the President's Commission on an All-Volunteer Armed Force*, op. cit., pp. 41-43. Based on 2.0 million man force.

[d]see Table 9-3.

[e]See Table 9-4.

[f]Numbers in parentheses exclude the Navy's 2x6 and 3x6 reservists. Where not shown, figures were unavailable.

[g]For a 2.5 million man force, the estimated accession rate was 15.8 percent.

military. It is clear from Table 9-5 that the Services' stated accession goals, both during the transition (fiscal 1973 to fiscal 1976) and for the longer run, are generally higher than the accession rates suggested by either the Gates Commission or the two approaches developed here. In some cases—particularly the Marine Corps—these differences are substantial.

As would be expected, the Services' stated accession requirements have been higher during the AVF transition, since many who have become eligible to separate were draftees or draft-motivated enlistees. At the same time, the amount by which these transitional requirements exceed the estimates presented here, especially in the Army and the Marine Corps, demonstrates that the Services have failed to take full advantage of the reduced labor turnover rates that should be present with a volunteer force.

In fact, the Marine Corps accession rates under the AVF have actually been substantially higher than those during the draft. Similarly, the Army's transition

rates, though nominally below the average experienced during the last 18 years of the draft, are nonetheless above those experienced during the period 1955 to 1965, a time when force strengths were similar in size and stability to those forecast for the volunteer era.

The reason that accession requirements—both during the AVF transition and as projected for the longer run—have failed to adjust downward is in fact largely a result of the Services' insistence on maintaining a very junior enlisted force. Although the issue of enlisted accession demand has been recognized elsewhere,[47] "demand-reduction" programs have been most commonly viewed in terms of such policies as accessing larger numbers of women and civilianizing military billets, thereby reducing the demand for *male* NPS enlisted accessions. Expanding the role of women in the Armed Forces may be (and, in fact, probably is) cost-effective.[48] But the point of the preceding discussion is to raise a more fundamental issue: reliance on a more experienced force. That is, the Services ought to revise downward their demand for *total* enlisted accessions, not just male accession requirements. Excessively large enlisted accession requirements are a direct result of the failure to implement cost-effective personnel substitutions and, as such, are policy driven.

The practical implications of these findings are substantial. For example, the Gates Commission estimated that a 2.5 million man force (2.089 million enlisted) could be sustained with an annual enlisted labor turnover rate of 15.8 percent. If, alternatively, the accession demand of 24.1 percent experienced during the AVF transition were to prevail, then the maximum enlisted force that could be sustained without the draft would be on the order of 1.4 million or less. *In other words, the viability of the AVF may be much more a function of how well the Services adjust their demand for enlisted accessions than of enlistment supply.*

RECRUITING SHORTFALLS

As we noted earlier, the Army and, to a lesser extent, the Marine Corps experienced some modest recruiting shortfalls during the transition to the AVF.[49] If these shortfalls are indicative of fundamental problems with the volunteer concept, they raise serious questions about the viability of the volunteer approach for supplying our nation's defense manpower requirements. Alternatively, to the extent that these recruiting shortfalls are indicative of the way the transition was managed, then corrective steps should be taken to prevent a recurrence of recruiting deficits in the future.

[47] See, for example, Department of Defense, *The All-Volunteer Force: Current Status and Prospects*, December 17, 1976; and Congressional Budget Office, *The Costs of Defense Manpower . . .*, op. cit.

[48] See, for example, Martin Binkin and Shirley J. Bach, *Women and the Military*, The Brookings Institution, Washington, D.C., forthcoming.

[49] The Navy also experienced a modest recruiting shortfall for the first six months of the AVF. However, as the following excerpt from *Congressional Quarterly* (Sept. 22, 1973) suggests, this appears to have been a statistical artifact:

> Cmdr. Jerry Cleveland told *Congressional Quarterly* that the large quota was issued because the Navy reached the end of the fiscal year with a surplus recruiting budget. This, Cleveland said, was because the Navy had not spent all the funds appropriated for recruiting during the first months of the volunteer program, so it was trying to alleviate a manpower shortage by recruiting more men in June, the last month of the fiscal year.
>
> Cleveland said that the June deficit was not the result of the higher quota itself, but rather the lack of time to notify field recruiters of the large increase from May to June. In any event, the Navy lowered its quota for July to 8,100 men—6,100 fewer than the June goal.

Army Shortfalls

The Army had some difficulty in meeting its recruiting objectives during the first 18 months of the volunteer force, but in two different respects, these shortfalls were not very serious at the time. First, they were of a relatively small magnitude: 12,000 (14 percent of recruiting objectives) during the first six months; 11,000 (11 percent) during the second six months; and 1,000 (less than 1 percent) during the third six months. Second, these recruiting deficits had almost no effect on strength deficits. Indeed, the Army actually finished fiscal 1974 about 2,700 overstrength.

The Army's recruiting shortfalls during the transition quarter and the first half of fiscal 1977 were likewise relatively small: 2,300 during the transition quarter and less than 2,000 in the first half of fiscal 1977. Moreover, these recruiting difficulties lasted only into the first three months of fiscal 1977, and, in fact, the Army exceeded its stated recruiting objectives for the second three months.

More important, the Army's initial shortfalls were basically a result of the way the AVF transition was managed and can be traced to three sources: a tightening of quality standards, a shortage of production recruiters in the field, and unusually large recruiting quotas.[50]

To begin with, we shall consider the effects of the Army's quality controls on measured recruiting performance during the first six months without the draft. In doing this, it is useful to keep two things in mind. First, the Gates Commission assumed that the Services might have to accept up to 20 percent Category IV enlistees in order to meet their transition quantitative recruiting quotas. Second, the Army had averaged nearly 35 percent non-high-school graduates and about 25 percent Category IV accessions during the preceding 13 years with the draft.

During the first six months without the draft, however, the Army attempted to accept no more than 30 percent non-high-school graduates while simultaneously cutting its Category IV accession intake by half. In other words, the Army made the implicit policy choice that it would be willing to fall short of its recruiting objectives, if necessary, in order to realize these improvements in measured enlistment quality. Thus, the Army's attempts to increase its quality above that experienced at any time during the draft caused at least part of the recruiting shortfall for the first year of the AVF and all of the shortfall during the summer of 1976 and the first part of fiscal 1977.

A second major factor responsible for a good share of the Army's first-year recruiting problem was a shortage of recruiters in the field. Recognizing the importance of recruiting efforts, the Project Volunteer account[51] provided the Army with the funds necessary to increase the number of production recruiters from the 2,000 or so on station in early 1970 to some 4,725 by 1972. In fact, the Army had more than 4,800 production recruiters in the field at one point during 1972, the last year of the draft.

[50] Although the data shown in Chap. 8 do not go beyond the first half of fiscal 1976, it should be noted that the Army also fell about 10 percent short of its recruiting quotas during the summer of 1976. The reasons for this recruiting shortfall, however, are largely the same as those for the 1973 and 1974 deficits. Moreover, the "real" recruiting shortfall for the summer of 1976 is not as large as the official 10 percent figure, inasmuch as the Army managed to significantly increase its "delayed entry" pool of enlistments.

[51] As an administrative and legislative convenience, the DoD established the so-called Project Volunteer budget account for monitoring such programs as the AVF pay raise, recruiting and advertising expenditures, and so forth. See Chap. 11.

Toward the end of 1972 and well into 1973, however, the number of Army production recruiters started to decline, as shown in Fig. 9-7.[52] Indeed, the Army averaged only about 4,275 recruiters in the field during the first 10 months without the draft—450 below their programmed level and nearly 500 fewer than they maintained during the last year of the draft. In July, normally one of the best recruiting months, the Army was nearly 1,000 recruiters short and simultaneously experienced its largest recruiting deficit of the year.

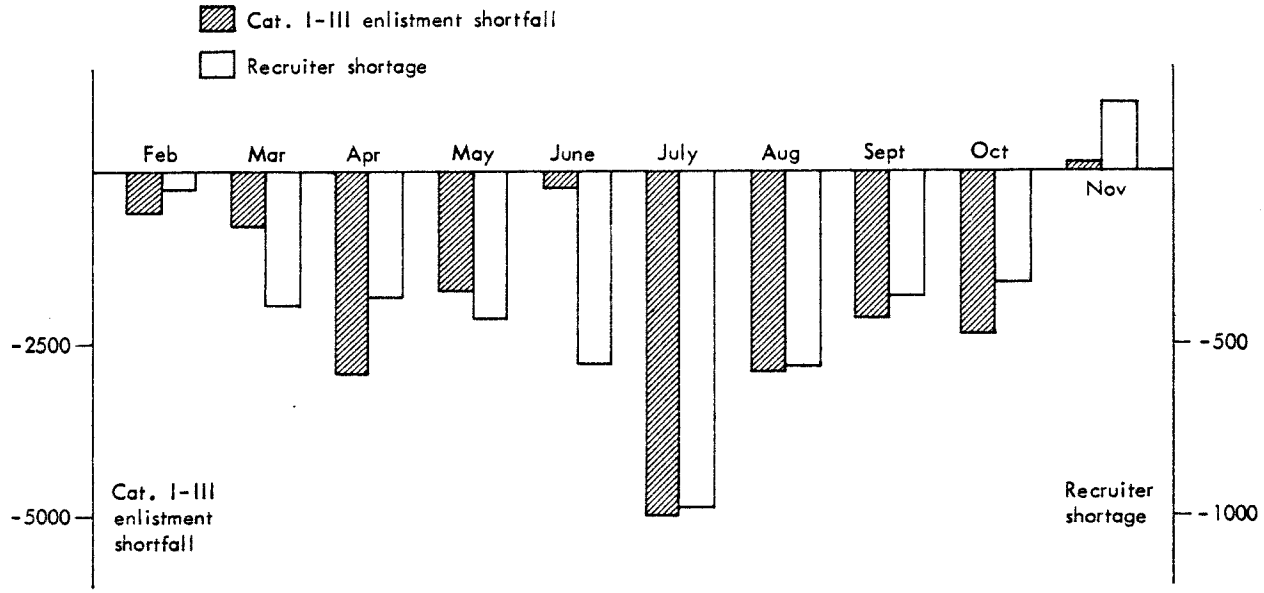


Fig.9-7—Recruiter shortages and enlistment shortfalls

SOURCE: See text.

Casual observation of the evidence in Fig. 9-7 thus suggests that the shortage of recruiters in the field may have been responsible for much of the Army's initial enlistment shortfall. In fact, a more formal analysis of these data shows that about half of the Army's first-year recruiting shortfall was a direct result of this shortage of recruiters and, furthermore, that the shortfall could have been almost entirely eliminated if the number of recruiters had been increased by 300 above the Project Volunteer authorized levels.[53]

[52] Figure 9-7 focuses on Category I-III enlistments in order to abstract from variations in the Army's quality policies. Implicit Category I-III shortfalls were estimated as the difference between the estimated Category I-III goals (defined as 82 percent of total enlistment goals, from the Army's stated overall Category IV enlistment objective of 18 percent) and the actual rate of Category I-III enlistments.

[53] To test the hypothesis more formally, we regress the Army's implicit Category I-III monthly enlistment shortfall (see footnote 52) on the shortage of production recruiters in the field, using monthly data for February to December 1973:

$$SR_t = \underset{(328.9)}{900.5} + \underset{(0.63)}{3.11}\, SR_t,\ R^2 = 0.775,$$

where SE_t = Category I-III enlistment shortfalls in month t, and SE_t = the shortage of production recruiters in the field in month t; numbers in parentheses are standard errors.

Thus, whereas the Army's implicit Category I-III enlistment shortfall averaged about 1,750 per month from February to December 1973, the above equation implies that the Army would have ave-

In addition, there is some evidence that the Army Recruiting Command was beset with morale problems during this period, so the recruiting effort may not have been operating at full efficiency.[54] Recognizing the nature of the problem, the Army sought both to increase the numbers of personnel engaged in recruiting and to improve the operating efficiency of the recruiting effort. The number of production recruiters on station was increased above the initially authorized level, and "unit of choice" canvassers were also added to the recruiting teams.

The third major factor that has had and will continue to have an important role in the Army's overall recruiting success is the demand for enlistments. The last section showed that the Army's fiscal 1973 and 1974 accession requirements were larger than its own estimates of its future accession needs and much larger than the accession requirements projected by either the Gates Commission or the two approaches developed in the last section. To illustrate, whereas the Army experienced accession rates in the neighborhood of 27 percent during the period 1955 to 1965, its fiscal 1973 and 1974 accession demands translate into accession rates of 34 percent and 31 percent, respectively. These stand in marked contrast to the long-run "cost-effective" accession rates of 17 to 20 percent shown in Table 9-5.

Part of these unusually high accession demands can be attributed to the large numbers of draftees and draft-motivated enlistees who became eligible to separate from the Army during these two years. Thus, although these accession demands were a temporary phenomenon, the Army's own projections with respect to future accession demands are a direct result of its continued insistence on maintaining a very junior enlisted force, which suggests that the Army is not taking full advantage of the decreased turnover affordable by the volunteer system.

Marine Corps Shortfalls

The Marine Corps did not experience any enlistment deficits until fiscal 1974, but enlistments then fell about 2,000 short during the second six months without the draft and 6,000 short for the fiscal year. This led to an overall strength shortfall of some 7,000 for fiscal 1974. The Marines did not experience any further recruiting difficulties until fiscal 1977. During the first half of fiscal 1977, however, the Marine Corps fell about 2,750 recruits—a bit less than 12 percent—short of its recruiting objective.

As with the Army, though, these Marine Corps shortfalls can be attributed primarily to the way quality standards were administered and to unusually large accession demands during the initial stages of the AVF. Beginning with the administration of Marine quality standards, what is especially noteworthy is the magnitude of the reduction of the Category IV intake. Whereas the Marines ave-

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raged about 900 per month if it had simply maintained its authorized recruiter strength. Furthermore, dividing the constant term in this equation (i.e., what the shortfall would have been with the authorized number of recruiters) by the recruiter coefficient, we see that the shortfall could probably have been eliminated altogether if the number of recruiters had been increased to about 300 above the authorized levels (i.e., 900.5/3.11).

[54] One illustration of this was the low promotion rates for those in the recruiting forces. For example, Friedman notes that of the 18 Lieutenant Colonels eligible for promotion to Colonel, and the 103 officers eligible for assignment to a Senior Service school, not a single one was promoted or sent to a Service school. This suggests either that the Army placed some of its less qualified personnel in the Recruiting Command or that those stationed in the Recruiting Command are, other things being equal, less likely to be promoted. Neither hypothesis is conducive to high morale. See Friedman, "The Volunteer Armed Force: Failure or Victim?" op. cit.

raged some 22 percent Category IV accessions during the three years preceding the removal of the draft, only 8 percent were Category IVs during fiscal 1974, a reduction of nearly two-thirds.[55]

This substantial reduction in the Category IV intake during the first half of fiscal 1974 was achieved at the expense of an increased percentage of non-high-school graduates—56 percent, as compared with the 47 percent during the last three years of the draft. The situation became more complicated when the Congress imposed ceilings on the Services' Category IV and non-high-school graduate percentages of 18 and 45 percent, respectively, midway through fiscal 1974.[56]

This meant that the Marine Corps could not accept more than 34 percent non-high-school graduates (a much lower percentage than they had ever accepted before) during the second half of the fiscal year in order to lower the total for the year to the 45 percent maximum allowed by Congress. In addition, high-school graduate enlistments are traditionally much scarcer in the second half of the fiscal year, because most June graduates have already made their employment decisions by then.

The Marines further complicated their situation by insisting on the 8 percent Category IV intake experienced during the first six months of fiscal 1974. In other words, they made the implicit (or explicit) choice to accept shortfalls, if necessary, in order to significantly reduce Category IV enlistees. If the Marine Corps had instead accepted the legal maximum of Category IV enlistees— still less than it had accepted during the last 10 years of the draft—the recruiting shortfall would have been less than 1,000.

The modest recruiting difficulties experienced during the first half of fiscal 1977 can likewise be traced at least in part to the Marine Corps' quality standards during this period. Buoyed by its success in holding down its Category IV intake during the economic recession, the Marine Corps continued its policy of limiting the Category IV rate to about 3 percent into fiscal 1977, which stands in even more dramatic contrast to the Marines' experience under the draft. And this happened at a time when the Marine Corps was simultaneously trying to reduce its non-high-school graduate intake. That is, having recognized the effect that the large numbers of non-high-school graduates accepted earlier were having on attrition rates, the Marine Corps sought to reduce its non-high-school graduate intake to about 35 percent of all accessions, as opposed to nearly 50 percent during fiscal 1975.

The second major factor contributing to the Marine Corps recruiting shortfalls, the unusually large accession requirements, is a potentially far more important problem in the long run. To illustrate what is meant by "unusually large accession requirements," consider the fact that the two approaches for estimating enlistment demand in the AVF suggest a long-run Marine Corps accession rate of about 20 percent, and the Marines averaged an accession rate of about 19 percent during the draft years 1955 to 1965 (see Table 9-5). These stand in marked contrast to the Marine Corps' actual fiscal 1973 to 1976 accession rates, which varied between 30 and 35 percent.

Unlike the Army, where the early AVF high accession rates can be attributed to drastically reduced force sizes, the Marines have had virtually stable force sizes

[55] By fiscal 1976, the Marines had reduced their Category IV intake to 2 percent.

[56] It is indeed ironic that this concern never surfaced during the draft years.

since the end of fiscal 1972. The Marines' high accession rates are probably heavily influenced by the high attrition rates of non-high-school graduates. In addition, the Marine Corps was very slow to begin active recruiting. In contrast to the Army, the Marines maintained a relatively low profile until 1973 or 1974. Since they compete for many of the same applicants, the Marines may have been outrecruited by the Army during this transition period.[57]

Finally, the Marine Corps policy change calling for a higher proportion of the force to be in its first term resulted in the accession rates of the 1970s being much higher than those of the 1950s and 1960s.[58]

UNEMPLOYMENT AND ENLISTMENT

It is not surprising that unemployment has been viewed as a prime contributor to the AVF success to date, since the early recruiting shortfalls were experienced when unemployment rates were far below those witnessed during fiscal 1975 and 1976. Moreover, as the unemployment rate began to increase (see Fig. 9-8), recruiting deficits began to disappear. However, we saw that these recruiting shortfalls were due primarily to other factors—specifically, a shortage of recruiters in the field, the way quality standards were administered, and unusually high accession requirements.

This is certainly not to imply that the high unemployment rates experienced during fiscal years 1975 and 1976 have not had their effects on the number of enlistments. In fact, a number of past studies have found a consistent relationship between unemployment and enlistment rates.[59]

As seen in Fig. 9-8, the major effect of the high unemployment rates that began during fiscal 1975 was to afford the military services the opportunity to increase the measured quality of enlisted accessions. For example, it can be seen that the Category IV percentage decreased from 11 percent during the first half of fiscal 1974 to 4 percent during the first half of fiscal 1976.

Using the enlistment supply model given by Eq. (9.5), about 20,000 Category I-III high-school graduates are estimated to have joined the military during fiscal 1975 who would not have joined had the unemployment rate for the year been 13.5 percent, the average for the period 1960 to 1975. If this 13.5 percent unemployment rate had prevailed during fiscal 1975, the Services could still have met their recruit-

[57] Indeed, it is shown in App. A to this chapter that simply including a variable measuring the ratio of the number of Marine recruiters in the field to the number of Army recruiters in the field increases the explanatory power of Eq. (9.5) by about one-third. Moreover, the coefficient, as expected, is positive and statistically significant, thus lending a certain amount of support to the above hypothesis.

[58] Like the Army, the Marines also evidenced some recruiting deficits during the summer of 1976. Again, though, these shortfalls can be attributed largely to the factors described above: quality standards that are probably too restrictive and continued large accession requirements.

[59] For example, the Gates Commission findings imply an unemployment elasticity of about 0.15. More recently, Grissmer finds an unemployment elasticity of about 0.25 for Category III high-school graduates and about 0.45 for Category I and II high-school graduates. (See David Grissmer, "Supply of Enlisted Volunteers in the Post-Draft Environment," in Richard V. L. Cooper (ed.), *Defense Manpower Policy*, op. cit.) Grissmer's elasticities are probably a bit on the high side, as his enlistment rates are based on the total 18 to 21 year old male population, not on the 18 to 21 year old *high-school graduate* population. Because there has been a secular increase over time in the proportion of the population that are high-school graduates and because there has been a general upward trend over time in the unemployment rate, the failure to limit the population base to high-school graduates leads to an overestimate of the unemployment elasticity.

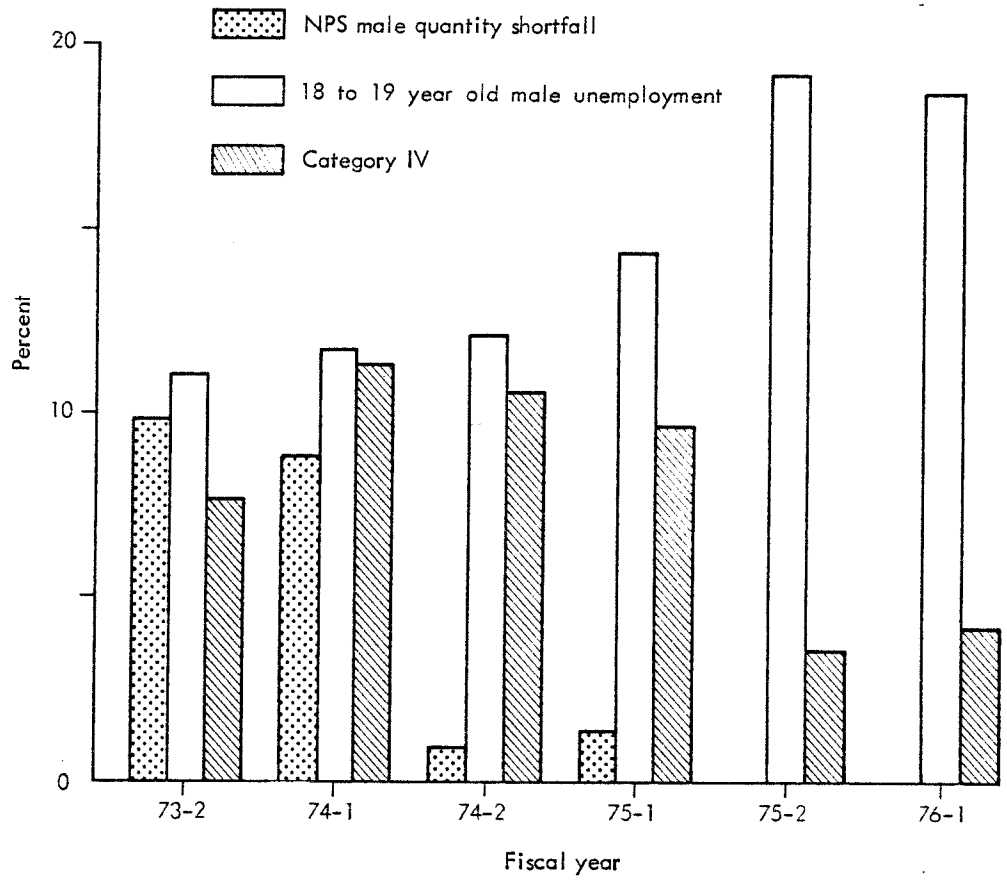

Fig.9-8—Quantity, quality, and unemployment

ing quotas by accessing Category IV enlistees instead. The overall Category IV percentage then would have increased from the actual 8 percent to only 14 percent, still far below the historic average.

To summarize, the Services benefited from the high unemployment rates that characterized the second and third years with the volunteer force, primarily in that these unemployment rates provided the opportunity to increase quality. However, this experience with high unemployment presents a serious danger, since the Services may set unrealistically and unnecessarily high quality standards for the longer run, based on their quality experience during this period, rather than on what actual job requirements dictate.

THE FUTURE OF THE VOLUNTEER FORCE

Without a doubt, the single most important issue pertaining to the future of the AVF is the ability of the armed services to attract the numbers of new recruits that will be required to effectively fill the enlisted ranks. The preceding discussion has provided the capability, in the form of enlistment supply and demand models, to address this key issue. In this section, these models of enlistment supply and demand are integrated, thereby establishing the basis for evaluating the future of the volunteer force.

Supply Projections

From the analysis presented in Chap. 8, the "viability" of the AVF is really a question of how supply and demand relate to one another in the long run. From a practical standpoint, the substantive question concerns the relationship between the supply and demand for NPS male enlistees, insofar as the supply of PS and female NPS enlistees appears to be demand constrained.

To estimate the supply of NPS male enlistees, we must estimate the supply of Category I-III high-school graduate enlistees and then make some assumptions regarding the quality standards that will be imposed by the Services, since for the most part, Category IV and non-high-school graduate applicants are in excess supply. Therefore, for a given set of quality standards, we can project enlistment supply as a function of Category I-III high-school graduate enlistment supply.

As shown in Eq. (9.5), the number of Category I-III high-school graduate enlistments expressed as a proportion (of a weighted average) of the 17 to 21 year old high-school graduate population base is a function of (1) military pay, relative to civilian wages, (2) the number of production recruiters, relative to the target population base, and (3) the unemployment rate for 18 to 19 year old males. For given assumptions about these variables, enlistment supply can be projected into the future, based on the proportion of the relevant population base that are high-school graduates.

Beginning with the projected percentage of high-school graduates, the high-school graduation rate for 18 to 21 year old males has increased considerably over the past eight years, from about 64 percent in 1967 to 72 percent in 1975. Moreover, the Bureau of the Census projects this trend to continue for at least another 15 years. For our supply projections, we adopt the more conservative assumption that the high-school graduate percentage will increase by 0.25 per year, as compared with the 0.4 percent projected by the Bureau of Labor Statistics (between 1975 and 1990).

As shown in Fig. 9-9,[60] the (weighted average of the) 17 to 21 year old population base is projected to peak in about 1980, increasing to nearly twice the size of the 1960 cohort. Between 1980 and 1993, the well publicized decline in military-age males will occur, resulting in a 1990 population base the same size as the 1970 base. After 1993, the target population is estimated to increase again—a "second generation" result of the post-World War II baby boom.

For the military, the population decline of the 1980s should be mitigated somewhat by a corresponding increase in the numbers of high-school graduates. Thus, for example, while the 17 to 21 year old male population is projected to be 11 percent smaller in 1990 than in 1975, the high-school graduate male population is projected to be only 4 percent smaller. Indeed, the high-school graduate portion is projected to bottom out in 1993 at a level comparable to that of 1973.

It should be noted that these supply projections are based on the assumptions that military pay will keep pace with civilian earnings and that the numbers of production recruiters will remain at the numbers initially authorized as part of the Project Volunteer budget.[61,62]

[60] Sources: Current Population Survey Reports, Series P-25, Nos. 601 and 614.

[61] The Congressional Budget Office forecasts, by way of contrast, assume that military pay will increase more slowly than civilian pay between 1977 and 1985. See Congressional Budget Office, *The Costs of Defense Manpower . . .*, op. cit.

[62] This assumes 4,725 Army production recruiters, 3,600 for the Navy, 1,833 for the Marines, and 1,931 for the Air Force.

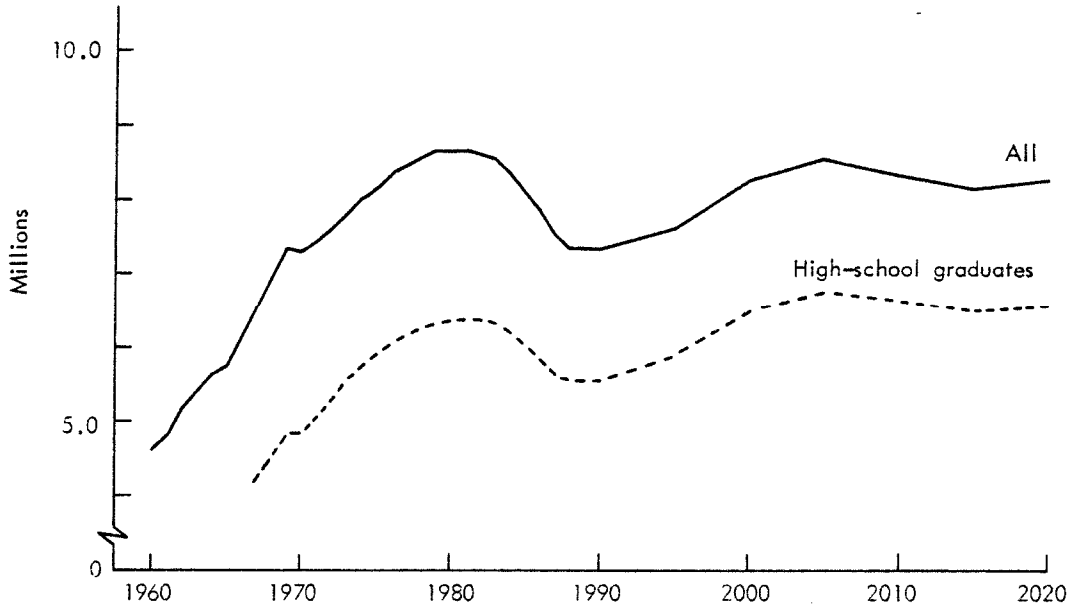

Fig.9-9—Male 18 to 21 year old population

SOURCES: See text.

To test the sensitivity of the conclusions regarding the viability of the volunteer force, supply projections were calculated for several different unemployment scenarios. The base-case projections are based on the assumption of a 13.5 percent unemployment rate for 18 to 19 year old males, the average rate over the period 1960 to 1975. A high unemployment scenario is also presented, assuming a 19.5 percent unemployment rate, the maximum postwar rate for 18 to 19 year old males. The low unemployment rate scenario is based on a 7.5 percent unemployment rate for these individuals, which is about the minimum observed since the end of World War II (roughly corresponding to a 3 percent unemployment rate for the labor force as a whole).

Together, the above assumptions regarding the population base and the different explanatory variables provide the necessary input to project the future supply of Category I-III high-school graduate enlistments. The results of this procedure are shown later in this section.

As mentioned above, estimates of the future supply of all NPS male enlistments require the specification of Service quality standards. One method for making this specification is to rely on the actual quality that the Services have realized in the past. Clearly the more restrictive the quality standards, the smaller the observed "supply" will be. The supply projections presented later in this section are based on the assumption that 58.7 percent of the Services' NPS male accessions will be Category I-III high-school graduates—the same percentage actually experienced during the first three years without the draft.[63]

[63] See Table 8-6.

Demand Projections

Certainly one of the most neglected aspects of the AVF, the demand for enlisted accessions is nonetheless one of the singularly important issues to surface from the evaluation of the prospects for the force. One alternative for projecting NPS accession requirements, and the one used by the Defense Manpower Commission, is to rely on the Services' own projections of their accession needs. These projections are shown in Table 9-6.

Table 9-6

Service Accession Plans

	Fiscal Year						
	77	78	79	80	81	82	85
Total							
Army	197	176	182	190	185	182	n.a.
Navy	116	101	107	116	118	108	n.a.
Marine Corps	51	48	50	51	50	50	n.a.
Air Force	79	84	90	94	82	87	n.a.
DoD	442	409	429	452	436	426	n.a.
NPS Male							
Army	169	156	159	169	164	160	141
Navy	104	89	96	104	106	96	99
Marine Corps	48	45	47	48	47	47	47
Air Force	67	68	71	73	67	67	63
DoD	388	358	373	394	385	370	350

n.a. not available

Sources: FY77 to FY82: OASD (M&RA), memorandum dated 17 June 1976; FY85, OASD (M&RA), memorandum dated 29 November 1974.

At the same time, the Services have not fully adjusted their accession requirements downward to the levels that would seem to be consistent with cost-effective management of the volunteer effort. This suggests that an alternative set of accession requirements should be examined as well. Accordingly, projections of enlistment supply are also compared with an alternative set of requirements based on the accession demand models developed earlier in this chapter. This alternative set of accession requirements is presented as a phased reduction in accession requirements from the Services' actual fiscal 1976 requirements to a steady-state requirement of about 295,000 per year, which corresponds to an accession rate of 19.1 percent for an enlisted force size of 1.795 million.[64,65]

[64] Based on the assumption that non-prior-service male accession requirements will continue to make up about 86 percent of total accession requirements, the 295,000 NPS male accessions translate into 343,000 total enlisted accessions, or an accession rate of 19.1 percent. To the extent that the number of women accessed is increased, the NPS male demand could be reduced even further—probably to between 250,000 and 275,000 (see Binkin and Bach, op. cit.).

[65] The supply projections shown are based on the assumption that the Services do not relax their physical (i.e., medical) standards for enlistment. If such a relaxation were to take place, the discussion in Chap. 8 indicates that supply would increase by 5 to 10 percent.

Supply and Demand Projections

As shown in Fig. 9-10, enlistment supply will probably not be sufficient to meet the Services' *stated accession requirements* unless unemployment remains at high levels or unless the Services reduce their quality standards. Even at the moderate unemployment level of 13.5 percent (moderate as compared with the previous unemployment history for 18 to 19 year old males), enlistment supply is insufficient to meet the Services' stated accession demands during the late 1980s and early 1990s. Though this would seem to square with the Defense Manpower Commission's findings,[66] the projections underlying the results shown in Fig. 9-10 actually imply something quite different.

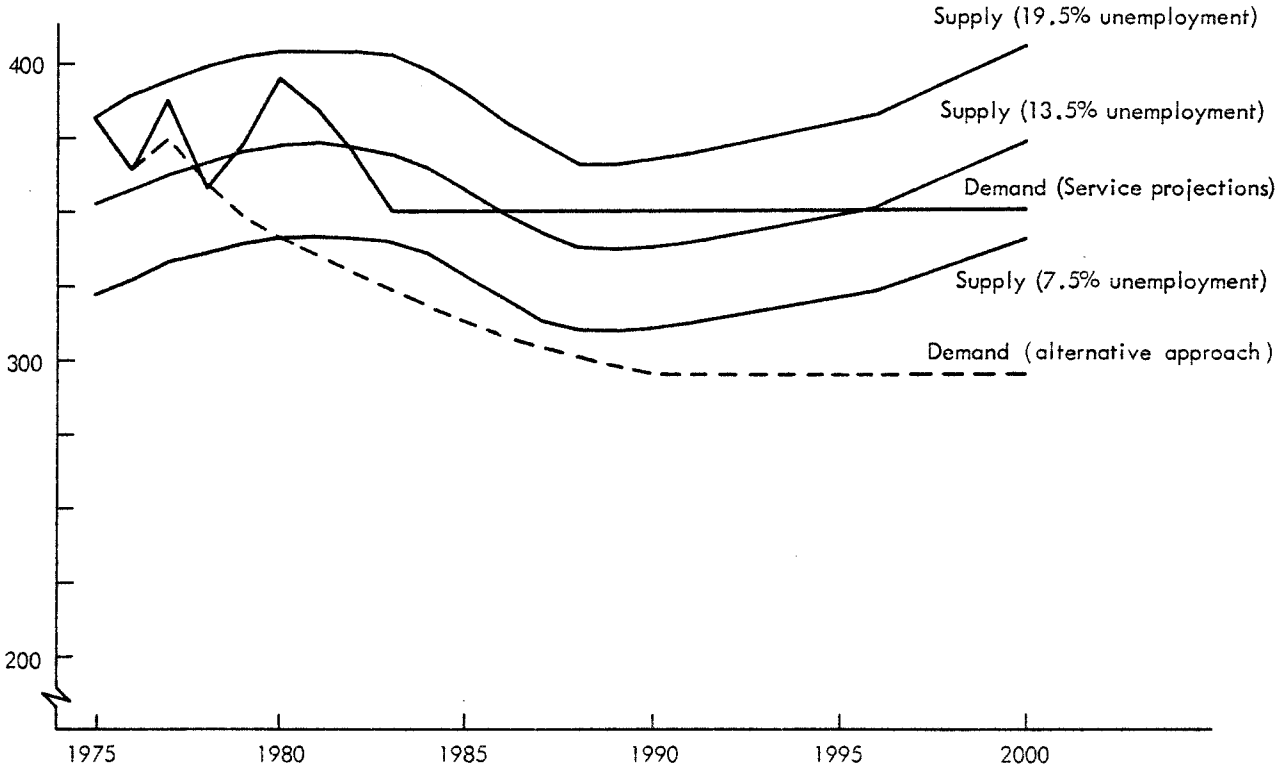

Fig.9-10. Non-prior-service male enlistment supply and demand projections

Specifically, whereas the DMC failed to question the Services's stated accession requirements, Fig. 9-10 demonstrates the importance of revising enlisted accession requirements down to the more cost-effective levels. In fact, enlistment supply is more than sufficient to meet the "alternative" enlistment requirements estimated from any of the three approaches shown in Table 9-5, even if the economy expands to the point where the 18 to 19 year old male unemployment rate declines to its historic postwar low and without having to reduce quality standards. Under these

[66] Recall from Chap. 7 that the DMC forecast that the AVF could provide sufficient manpower under slow and moderate growth economic scenarios, but not under a rapid-growth scenario. As shown in App. B to this chapter, the DMC makes a number of errors in both their supply and demand projections.

alternative accession requirements, the volunteer force provides enough enlistments to weather the worst of the population decline during the late 1980s. Moreover, there would be an even greater sufficiency of supply if the Services would relax the physical standards for enlistment (especially for Category I-III high-school graduates) and if they would modestly increase the numbers of NPS women accessed.

Though not explicitly shown here, the same general findings emerge from an examination of the Service-specific results. With the exception of the Air Force, the Services all show recruiting deficits based on their own estimates of accession demand. Perhaps surprisingly, though, the deficits are worst for the Navy, because of a sudden increase in the Navy's projections of its NPS accession demands, as shown in Table 9-5.

In conclusion, the enlistment supply and demand projections serve to highlight some of the most important AVF policy questions that confront the DoD. The analysis shows that enlistment supply is indeed sufficient to provide the military services with enough enlisted manpower *if* the Services adjust their NPS male accession requirements to the level that would seem to be appropriate for the volunteer environment. Moreover, although a relaxation of physical standards for enlistment and an increased utilization of women are probably warranted on grounds of cost-effectiveness, the long-run success of the AVF does not depend on such measures.

Finally, the analysis presented here also indicates the long-run nature of the enlistment supply problem. That is, it is difficult for the Services to make radical adjustments in their accession requirements in the short run. Thus, the continued growth in the population base for the remainder of the 1970s and the only modest decline projected in the early 1980s provide the cushion needed to adjust gradually to the desired accession requirements. At the same time, the future of the volunteer force is likely to depend on whether the Services make this adjustment, and on how soon they do so.

Appendix 9-A

ENLISTMENT SUPPLY ESTIMATION

This appendix briefly presents the data used in the enlistment supply model, along with the details of the supply estimation.

Data

Enlistment supply data are presented in Table 9-A-1. They show the numbers of Category I-III high-school graduate enlistments from the first half of fiscal 1971 through fiscal year 1976. These true volunteer enlistments were defined according to the "100 percent rule"—that is, 100 percent of those too young to have a lottery number plus 365/125 times those enlistees with lottery numbers greater than 240, since those with lottery numbers over 240 are presumed to be true volunteers in that they stood little chance of being inducted.[67]

Military pay estimates are shown in Table 9-A-2. Military pay was calculated as the discounted sum of regular military compensation (RMC) over the first term, where the length of the first term was defined as three years for the Army and Marine Corps and four years for the Navy and Air Force. (For the DoD as a whole, the enlistment term was defined as 3.5 years.) It was assumed that enlistees spend the first four months as E-1s, the next eight months as E-2s, the next year as E-3s, and thereafter as E-4s. It was also assumed that the enlistee is unmarried for the first two years of service but is thereafter married. (This enters into both the determination of buarters allowances and the calculations of the tax advantage.)

The discounted sum of military pay over the first term T can then be calculated as

$$PV\ (RMC)_T = \sum_{t=1}^{T} RMC_t/(1 + r)^{t-1}$$

where r is the individual's discount rate. A discount rate of 20 percent was used. This discounted sum was then converted to average weekly pay over the first term, by dividing by the sum of $1/(1 + r)^t$ and then dividing by 52, as shown below:[68]

$$PV\ (RMC)_T = \frac{1}{52} \sum_{t=1}^{T} \frac{1}{(1 + r)^{t-1}} .$$

Also shown in Table 9-A-2 are the numbers of production recruiters on station. "Production recruiters" in this sense refers to those recruiters who are assigned actual recruiting quotas. The six-month figures were estimated as the average of the month-end number of recruiters on station for each six-month period.

[67] This procedure probably overestimates the numbers of true volunteers somewhat, since the mere presence of the draft and the merest chance of being selected, no matter how remote, may encourage some individuals to enlist who would not do so under an all-volunteer force. Again, though, the degree of overestimation is probably not severe.

[68] This normalization does not affect the substantive results.

Table 9-A-1

Non-Prior-Service Male True Volunteer Enlistments[a]

Fiscal Year	Category I-III/High School Graduate (123 HS)				
	DoD	Army	Navy	USMC	USAF
71-1	64,183	21,765	16,394	9,962	16,062
71-2	62,937	20,787	15,268	6,951	19,933
72-1	86,790	25,840	25,532	9,250	26,169
72-2	76,015	26,783	20,125	8,075	20,707
73-1	102,772	32,916	28,571	9,100	32,185
73-2	91,222	32,594	21,308	7,536	29,534
74-1	94,955	29,945	27,612	9,254	28,144
74-2	93,197	33,281	25,048	9,020	25,842
75-1	106,375	36,635	31,271	11,631	26,838
75-2	107,912	39,934	29,000	12,061	26,917
76-1	124,289	44,158	34,636	16,035	29,460
76-2	92,200	33,492	21,573	11,245	25,890

SOURCE: OASD(M&RA).

[a]True volunteer defined as 100 percent of those without lottery numbers plus 365/125 times those with lottery numbers greater than 240.

Table 9-A-2

Pay and Recruiters

Fiscal Year	Military Pay[a]			Production Recruiters[b]				
	DoD	Army & USMC	Navy & USAF	DoD	Army	Navy	USMC	USAF
71-1	$ 78.96	$ 75.62	$ 82.29	6,935	2,079	2,053	1,293	1,510
71-2	86.53	82.84	90.22	7,269	2,448	2,086	1,275	1,460
72-1	98.46	95.61	101.32	8,406	3,305	2,120	1,373	1,608
72-2	115.29	113.21	117.37	10,556	4,444	2,507	1,634	1,971
73-1	117.91	115.80	120.02	11,464	4,606	3,198	1,664	1,996
73-2	120.53	118.38	122.68	11,331	4,375	3,396	1,660	1,990
74-1	123.94	121.74	126.14	11,252	4,271	3,257	1,851	1,873
74-2	127.34	125.09	129.59	12,449	5,067	3,617	1,914	1,851
75-1	133.74	131.44	136.05	12,142	4,764	3,692	1,865	1,821
75-2	140.15	137.79	142.51	12,392	4,992	3,666	1,865	1,869
76-1	143.69	141.28	146.10	11,859	4,725	3,400	1,865	1,869
76-2	147.23	144.77	149.69	10,800	4,448	3,017	1,773	1,562

[a]See text.

[b]Production recruiters on station. Source: FY71-1 to FY74-1, from Grissmer, et. al. FY74-2 to FY76-1 from personal correspondence with David Grissmer of the General Research Corporation, 1976.

Table 9-A-3 provides other data that were used in the supply equations. Of particular interest is the population base variable. Specifically, it is important to recognize that the military draws its enlisted manpower from more than one specific age cohort (e.g., 18 year olds). At the same time, individuals in different age cohorts have different probabilities of enlisting, so it would be incorrect to view the population base as, say, the entire 17 to 21 year old population.

A preferred procedure would be to construct a measure of the population base that reflects the different probabilities that different individuals have of enlisting. One way of approximating these probabilities is to rely on the distributions of enlistments according to age of entry since the end of the draft. That is, since 14 percent of all AVF high-school graduate Category I-III enlistments were 17 years old at the time of entry, 35 percent were 18 years old, and so forth, an estimate of the relevant population base (P*) can be constructed as a weighted average of the

Table 9-A-3

Miscellaneous Supply Data

Fiscal Year	Civilian Pay[a]	18-19 Year-Old Male Unemployment Rate[b]	Population Base (000s)[c]	18-21 HSG Percentage[d]
71-1	121.65	14.73	1886	68.2
71-2	124.21	15.23	1886	68.2
72-1	129.15	14.73	1929	69.4
72-2	133.50	15.08	1929	69.4
73-1	137.70	13.00	1978	71.0
73-2	141.79	11.02	1978	71.0
74-1	146.97	11.83	2020	71.1
74-2	151.26	12.08	2020	71.1
75-1	157.35	14.52	2061	71.4
75-2	160.62	19.28	2061	71.4
76-1	167.09	18.72	2106	72.0
76-2	173.39	18.75	2106	72.0

[a]Average weekly wages for production and non-supervisory personnel in non-agricultural employment. Source: *Economic Report of the President, 1976.*

[b]Source: Bureau of Labor Statistics.

[c]Source: Bureau of the Census, Current Population Reports, Series P-25, No. 614. Population base P defined as $P = 0.14P_{17} + 0.35P_{18} + 0.23P_{19} + 0.14P_{20} + 0.14P_{21}$.

[d]Source: Bureau of the Census, Current Population Reports, Series P-20, Nos. 169, 182, 194, 207, 229, 274, 243.

individual year cohorts in the target population base (17 to 21 year old males), using the above percentages as the weights:

$$P^* = 0.14P^{17} + 0.35P_{18} + 0.23P_{19} + 0.14P_{20} + 0.14P_{21},^{69}$$

where P_i = the number of individuals i years old. Recognizing that supply has been structured in terms of high-school graduates, the relevant population base (H^*) becomes the percentage of high-school graduates (g) times P^*:[70]

$$H^* = gP^*,$$

where g = the percentage of 18 to 21 year old males that are high-school graduates.[71] Thus, the enlistment rate (s) is given as $s = E123HS/(H^*/2)$.[72]

Supply Estimation

As noted in the text, Eq. (9.5) was only one of many specific supply models actually estimated. For the most part, the alternative supply models yielded much the same results. Equation (9.5) was therefore used as the basis for evaluating the effects of specific explanatory variables for projecting future enlistment supply, both because of its simplicity and because of the desirable theoretical properties of the logistic function. As can be seen from Table 9-A-4, the implied elasticities are not very different for the different models.[73]

As noted earlier in the text, and as can be seen from Table 9-A-4, the results for the Air Force and Marine Corps do not show R^2s as high for the DoD, Army, and Navy. For the Air Force, this is probably due to the fact that the dependent variable is not as much a measure of actual supply as it is for the other Services, but rather represents some demand variations. To be more explicit, we saw earlier that those who would not enter the military in the absence of the draft (and, hence, would be draft-motivated enlistees if they enlisted under the draft) had a strong preference for the Air Force, relative to the other Services. We would therefore

[69] Note that this procedure yields a single-year-equivalent population base measure. Thus, in the steady state, $P^* = P_{18}$ (or P_{19}, etc.).

[70] Ideally, we would use the percentage of the population base who are medically qualified and are Category I-III, as well. Because of the difficulties in estimating these and in projecting estimates into the future, the more easily estimated and projected high-school graduates percentage (g) was used.

[71] Estimates for the 17 to 21 year old population were not available.

[72] Because semiannual data were used, the population base was divided by two.

[73] Although the elasticities are not given in Table 9-A-4, they can be inferred from the coefficients presented, since the formulas for calculating the elasticities with respect to the i^{th} explanatory variable (x_i) evaluated at X are given below:

$$\text{Logistic:} \quad \epsilon_i = b_i x_i \left[e^{-XE}/(1 + e^{-XB})\right]$$

$$\text{Constant Elasticity:} \quad \epsilon_i = b_i,$$

Evaluated at the AVF pay and recruiter values and at the mean unemployment value (13.5 percent), $[e^{-BX}/(1+e^{-BX})]$ in the logistic formulation equals about 0.85. Therefore, we can approximate the elasticities as

$$\text{Logistic:} \quad \epsilon_i = 0.85\, b_i X_i$$

$$\text{Constant Elasticity:} \quad \epsilon_i = b_i.$$

Table 9-A-4

Supply Equations

Model	Dep. Var.[a]	Intercept	Dummy Variables: Army	Navy	USMC	USAF	Seasonal	Pay	Unemp.	r*	
Logistic	E123HS	-3.727	-0.948	-1.214	-2.058	-1.140	-0.162	1.649	1.715	1.648	
		(0.190)	(0.152)	(0.184)	(0.210)	(0.212)	(0.029)	(0.324)	(1.289)	(0.578)	
Logistic	E123HS	-3.683	-0.956	-1.225	-2.670	-1.152	-0.162	1.664	1.640	1.354	1.594
		(0.186)	(0.148)	(0.179)	(0.383)	(0.206)	(0.028)	(0.316)	(1.255)	(0.583)	(0.608)
Constant Elasticity	E123HS	1.712	-0.775	-0.963	-1.671	-0.780	-0.150	0.971	0.294	0.235	
		(0.310)	(0.161)	(0.221)	(0.309)	(0.305)	(0.028)	(0.300)	(0.168)	(0.083)	

Model	Dep. Var.[a]	R^2: DoD	USA	USN	USMC	USAF
Logistic	E123HS	0.85	0.73	0.83	0.52	0.25
Logistic	E123HS	0.85	0.97	0.81	0.68	0.32
Constant Elasticity	E123HS	0.92	0.82	0.94	0.58	0.54

expect the Air Force to have relatively fewer Category I-III high-school graduate true volunteer enlistments during the height of the draft, simply because these true volunteers had to compete with Category I-III high-school graduate draft-motivated volunteers for a limited number of spaces.

Since the removal of the draft, the Air Force has been more or less demand constrained and, in fact, has frequently stopped recruiting in mid-month because it had already fulfilled its monthly recruiting quotas. It is thus not too surprising to find that the simple regression model does not do as well for the Air Force as for the other Services.

For the Marine Corps, the simple model, Eq. (9.5), shows an unexpected decline in volunteers beginning in calendar 1972 and running through calendar 1973. As noted in the text, this may have been a result of the fact that the Marines were much slower to increase their recruiting effort than the Army (presumably the Service offering the most direct competition to the Marine Corps). This motivation is given by the following model:

$$\ln \frac{s}{1-s} = a_0 + a_1 A + a_2 N + a_3 M + a_4 F + b_0 S + b_1 w + b_2 r + b_3 u + b_4 r^*,$$

where r^* = ratio of Marine Corps recruiters to Army recruiters (for the Marine Corps observations only; 0 otherwise).

The results thus lend some empirical support to the hypothesis that the Marines were outrecruited by the Army during the last year or so of the draft and the first year or so of the AVF. That is, since the positive (and statistically significant) coefficient for r^* means that as the number of Army recruiters was increased substantially in 1972 to 1973 (with little corresponding change in the number of Marine Corps recruiters), Marine Corps enlistments dropped relative to what they would have been had the Marines pursued a more active recruiting policy.

Appendix 9-B

DEFENSE MANPOWER COMMISSION ESTIMATES

The conclusions from the analysis presented in this chapter differ considerably from those of the Defense Manpower Commission, the only other major effort known to have examined in detail the future of the AVF. The DMC concluded that the volunteer force will provide adequate enlisted manpower only if the economy does not revert to a rapid-growth scenario. The DMC forecasted sizable recruiting shortfalls in the mid-1980s (20 percent in 1985, for example) in the event of rapid economic growth.

This raises the natural question as to why the two approaches—the one developed in this chapter and the one used by the DMC—come to such different conclusions. Two factors can be cited: First, the DMC relied on a supply projection methodology that is, at best, questionable. And second, the DMC failed to examine the appropriateness of the Services' stated accession requirements.

The DMC supply projection methodology apparently evolved out of an approach originally developed by Binkin and Johnston, but it differs substantially in actual implementation.[74] Specifically, the DMC supply forecasting approach consists of the following: First, those "available" for enlistment were defined as the total population of 18 year old males, less those already in the service, less those who are institutionalized, less those who are continuing students (full-time or part-time), and, finally, less those who have full-time or part-time civilian jobs. The DMC then calculated the percentage of this "available pool" who actually applied for enlistment during fiscal 1974 and assumed that it will continue in the future. To determine the actual supply of enlistees, the DMC then multiplied the number of projected 18 year old applicants by the percentage of the total that were actually accepted for enlistment in fiscal 1974. This "supply" of 18 year old enlistees was finally compared with the Services' estimates of the demand for 18 year old NPS enlistees.

To determine the effects of economic activity upon enlistment supply, the DMC proceeded to estimate how the number holding full-time and part-time jobs would vary under alternative economic scenarios. These variations in employment in turn affect the size of the "available manpower pool." The DMC projected that under moderate economic growth, the number of employed 18 year olds not enrolled in school would decline by 20.1 percent between 1975 and 1985, as compared with a 15.1 percent decline in the total numbers of unenrolled 18 year olds. Under a rapid-growth scenario, the number of employed 18 year olds was projected to decrease by only 11 percent,[75] while a slow-growth scenario resulted in a 30 percent decline in these employment opportunities. These alternative employment scenarios appear to result in male 18 to 19 year old unemployment rates of 9.3, 18.6,

[74] The Binkin and Johnston approach was apparently intended to put the manpower procurement problem in some perspective, not as a definitive model of enlistment supply. See Binkin and Johnston, op. cit.

[75] Note that this implies an increase (as we would expect) in the number of jobs relative to the population base, because of the 15 percent decline in the number of 18 year olds.

and 28.7 percent, respectively, for the rapid-, moderate-, and slow-growth outcomes.[76]

This supply projection methodology is subject to a number of problems. The first is the outright exclusion from the so-called available pool of unenrolled full-time and part-time 18 year olds. A recent survey by Gay, for example, shows that about 20 percent of the 18 year old enlistees in fiscal 1974 were unemployed prior to enlisting, about 35 percent were employed part-time before enlisting, and 45 percent were employed full-time.[77] Thus, the DMC approach results in the exclusion of the portion of the manpower pool that accounted for about 80 percent of the Services' enlistments in fiscal 1974.

Even if we accept this rather crude methodological approach for estimating enlistment supply, there remain a number of other problems. For example, the DMC focused entirely on the number of 18 year olds, an assumption that has considerable consequences for the supply projections. A more appropriate definition of the target population base consists of those aged 17 to 20, 17 to 21, or 18 to 21, [78] where the individual year cohorts are appropriately weighted to reflect the different enlistment rates that each reveals.[79] The result of this is that whereas the number of 18 year old males declines by about 13 percent between the beginning of fiscal 1976 and the beginning of fiscal 1985, the appropriately weighted number of 17 to 21 year old males declines by less than 7 percent, and the appropriately weighted number of high-school graduate 17 to 21 year old males declines by only 2 percent. Part of the DMC's estimated decline in the number of enlistees is therefore attributable to an inappropriate population base.[80]

[76] It is difficult to convert the DMC employment outlooks to unemployment rates because it is not clear what their current employment base was. To obtain the above-cited comparisons, it was assumed that the DMC 1975 base reflected an unemployment rate of 13.5 percent for 18 to 19 year olds (the average rate between 1970 and 1975). It is then a simple matter to convert their employment outlooks into unemployment rates, since the population base declines by 15.1 percent and since they assume that school-going behavior remains unchanged (which implies then that the 18 year old work force also declines by 15.1 percent). Since

$$W = E + U,$$

where W = work force, E = employed, and U = unemployed; and since we have assumed that $U_{75}/W_{75} = 0.135$,

$$E_{75} = 0.864\ W_{75}.$$

Given the 15.1 percent decline by 1985 in W, we then have a 1985 18 year old work force (W_{85}) of $0.849\ W_{75}$.

Under the moderate economic-growth scenario, E_{85} is assumed to be 20.1 percent less than E_{75}: $E_{85} = 0.799\ E_{75}$. Therefore, the employment rate (i.e., 1 minus the unemployment rate) for 1985, e_{85}, is given as

$$\begin{aligned} e_{85} &= E_{85}/W_{85} = 0.799\ E_{75}/0.849\ W_{75}, \\ &= (0.799/0.849) \times (E_{75}/W_{75}), \\ &= (0.799/0.849) \times 0.865, \\ &= 0.814. \end{aligned}$$

Therefore, the 1985 unemployment rate for 18 to 19 year olds equals 0.186 (i.e., $1 - 0.814$).

The rapid- and slow-growth scenarios can be converted to unemployment rates in a similar fashion.

[77] SOURCE: Unpublished tabulations provided by Robert M. Gay, The Rand Corporation.

[78] Thirty-five percent of the enlisted accessions during the first two years without the draft were 18 years old at the time of entry. The remainder were obviously either older or younger.

[79] See App. A to this chapter.

[80] Note that in the long run, the two approaches—using the 18 year old population versus a weighted average of the 17 to 21 year old population—must yield the same result. Thus, the DMC approach is wrong not so much because of the magnitude of the population decline, but rather in its timing. That is, the effects of the population decline will not be felt as quickly as implied by the DMC forecast, both because the military can draw on adjacent age cohorts and because the proportion of the population base with at least a high-school diploma is expected to increase.

Finally, the DMC economic forecasts are unrealistic, at best. It is difficult to imagine that moderate economic growth will result in 18 to 19 year old unemployment rates of nearly 19 percent and that slow growth will result in 30 percent unemployment for this group, when the postwar unemployment peak was about 19 percent. Thus, although the rapid-growth scenario seems reasonable, the moderate- and slow-growth scenarios project unemployment rates that are far higher than past history implies.

Moreover, the DMC results are based on (implied) unemployment elasticities that are far higher than a number of statistical analyses, including that presented here, suggest. For example, the estimates of enlistment supply shown in Table 9-B-1 imply that a fall from 18.6 percent unemployment to 9.3 percent will decrease enlistment supply by about 23 percent, thus implying an arc unemployment elasticity of about 0.46, much higher than the 0.1 to 0.3 found in other studies.

These results are shown in Table 9-B-1. The DMC supply forecasts, adjusted for the population base problem, provide nearly identical estimates of enlistment supply for an 18.6 percent unemployment rate as those projected by Eq. (9.5), using fiscal 1974 standards. However, a 28.7 percent unemployment rate shows the DMC

Table 9-B-1

Comparisons of Defense Manpower Commission Supply Projections and Those from Equation (9.5): Fiscal 1985[a]
(thousands)

	DMC		Equation (9.5)[d]	
Unemployment Rate	Unadjusted[b]	Adjusted[c]	FY74 Quality	AVF Quality
9.3 (rapid)	282	*326*	*375*	337
18.6 (moderate)	365	*421*	*428*	384
28.7 (slow)	440	*508*	*492*	442

[a]The italicized estimates are the ones that should be compared. That is, the italicized DMC estimates correct for the inappropriate population base used by the DMC; the italicized equation (9.5) estimates used the same quality standards assumed by the DMC.

[b]The DMC 18 year-old enlistment supply estimates were converted to total supply by dividing by 0.277 (the DMC estimate of 18 year-old supply relative to total supply).

[c]Whereas the DMC supply estimates are based on population base of all 18 year-old males, the estimates derived in Chapter 9 were derived on the basis of 17 to 21 year-old high school graduates. Thus, whereas the DMC population base declines by 15.1 percent between 1975 and 1985, the high school graduate 17 to 21 year-old male population base decreases by only 2 percent. To put the estimates on a comparable basis, the DMC estimates were therefore adjusted upward by (0.98 ÷ 0.849).

[d]The DMC results assume FY74 quality standards. The results in Chapter 9, however, assume the average quality standards experienced during the first three years without the draft will prevail.

forecasts much above those implied by Eq. (9.5). The 9.3 percent unemployment rate yields just the reverse, a result of the unduly large unemployment elasticities (which were assumed, not estimated).

To summarize the supply side, the DMC's approach seems to result in supply estimates that overstate the response to alternative employment outlooks. Furthermore, their results do not provide any alternative for assessing the effects of other policy options, such as pay, recruiters, and the like.

A more fundamental problem with the DMC approach is its failure to consider the demand side of the problem, for the DMC implicitly accepted the Services' own demand projections. The DMC chose instead to question whether such options as female NPS applicants can make up the difference. Though certainly an important issue in its own right, this only diffuses attention away from the more critical question of the Services' accession demand policies.

Whether viewed in terms of supply or demand, there are obviously very serious methodological shortcomings in the DMC projections regarding the future of the volunteer force.

Chapter 10

SOCIAL REPRESENTATION IN THE VOLUNTEER FORCE

It is ironic that one of the key issues to emerge from the volunteer debate is whether the AVF would lead to a military composed mainly of the poor and the black and, more generally, whether a volunteer military would be socially representative of the mainstream of American society.

The irony, of course, is that the historically unrepresentative nature of the draft was a principal reason for its termination: The draft placed a disproportionate burden on those least able to bear this burden. Due in part to rising social consciousness on the part of the American public, it was decided that the draft should be ended to remove this inequitable burden.

Although examination of the actual evidence would have effectively silenced much of the debate on this issue, the importance of social representation cannot be dismissed; it clearly would be undesirable to have a military composed entirely of individuals from one region of the country, one racial group, or one narrow socioeconomic group. Since a precise definition of what constitutes a "socially representative" military is elusive at best, questions of social representation deserve careful attention if we are to understand the full impact of the removal of the draft.

BACKGROUND

Social Representation With and Without the Draft

The issues related to social representation in the volunteer force should be put into some perspective, for no other AVF issue has received so much discussion based upon so little evidence. Three issues seem to have dominated the debate: first, concern that the military will become isolated from the "mainstream" of American society under a volunteer regime; second, concern that the AVF will lead to a mercenary force of professional soldiers; and third, concern that the poor and the black will bear an "unfair" burden in the nation's defense.

The point is not that these issues are unimportant, but rather that it is difficult to put them into an operational context—also, the volunteer force probably does not have much to do with them.

For example, it could be argued that the American military was never more estranged from the mainstream of American thinking than it was during the Vietnam War—the heyday of the draft. The key, of course, is the definition of the "mainstream of American thinking," for many would argue that the military's behavior during the Southeast Asian conflict was in accord with the public's interests.[1] In other words, it is difficult to imagine why military decisionmakers would behave any differently under a volunteer force than they would under the draft.

[1] Moreover, it has since been shown that many military leaders opposed the U.S. involvement in Southeast Asia.

Military decisionmakers have historically been drawn from the professional ranks, a process quite unlikely to be altered by the draft's removal.

Opposition to the volunteer force on the grounds that it will lead to a mercenary force and that the AVF requires payment of a market wage to junior military personnel seems particularly ill-considered. To begin with, the United States has always recognized the dangers of a professional military elite isolated from the mainstream of society and has taken precautions against such an eventuality. One such precaution is the policy of blending military and civilian workers, such that today more than 50 percent of those employed by the DoD are civilians. Moreover, AVF critics fail to acknowledge that more than 60 percent of the force was "volunteer" even under the draft and had to be attracted and retained accordingly, i.e., with pay incentives, favorable working conditions, patriotism, loyalty, and so forth. It is difficult to see why it is wrong to pay the other 40 percent a market wage and why this should necessarily lead to a mercenary force.

Third, a volunteer military is far less likely to exploit the poor than did past systems of conscription. Historically, draft systems have been heavily overrepresented by the poor. Chapter 4 showed that the 1918 draft boards were under explicit guidance to induct first those individuals with the least-valued civilian alternatives, namely, the poor. The methods of discriminating became more subtle with the introduction of peacetime conscription following World War II, through such devices as college deferments and draft-exempt jobs, but they were no less pervasive.

The result was that the poor were called upon to serve in disproportionately large numbers but were paid far less than the market clearing wage. Moreover, to the extent that the poor are currently participating in the military, they are doing so on a voluntary basis.

Developing a Representation Policy

It is not at all clear what constitutes a socially representative military and, therefore, what representation policy should be. Representation is usually defined in terms of the relevant population. Such a view, for example, would call for blacks to be represented in the military in approximately the same proportions as they are represented in the general population. As noted by the Defense Manpower Commission, though, there are many bases for comparison. To illustrate, should the black representation in the enlisted force be equal to the approximately 10 to 11 percent of the total population that is black, the 13 percent or so of the male 18 to 21 year old population that is black, the approximately 10 percent of the high-school graduate 18 to 21 year old population that is black, the approximately 20 percent of the noncollege 18 to 21 year old male population that is black, or what? Moreover, suppose that (for some reason) 13 percent is deemed the "desirable" percentage of blacks for the enlisted forces. Is a representation of 12 percent, or 14 percent, or 18 percent then unrepresentative?

In addition to such problems of definition, there are the substantial problems of administration. In particular, would young blacks, or young whites, be denied the chance to serve simply because the racial quotas had been met? Similarly, would those who seek to better their economic station in life be denied entrance simply because the military had accepted enough new recruits from poor backgrounds?

Since the answers to these questions are surely "No," the development of a specific representational policy is of doubtful use. The conclusion of the Defense Manpower Commission in this regard is especially worth noting:

> Equal opportunity should be positive in nature and application. A person's race, sex, ethnic background, or national origin should not cause either disadvantage or advantage. Neither should there be any policy, practice, or lack of policy which authorizes, permits, or allows to arise any form of discrimination, whether institutional or otherwise.
>
> As a matter of policy, the Services should recruit and assign personnel without regard to representational factors with the exception of women where unique considerations exist as will be discussed later in this report.
>
> The Secretary of Defense should regularly examine the activities of the Services to insure that the foregoing policy is being carried out in both spirit and fact.

Moreover, and with the exception of increased black participation that is attributable to other factors, there has been little change in the socioeconomic composition of the force under the AVF, rendering these questions about representation moot. It is far more important to understand the changes that have occurred over the past 10 years and why they have occurred.

INDIVIDUAL CHARACTERISTICS

Individual or personal characteristics provide one measure of the "social" composition of enlisted accessions; for our purposes here, these characteristics include race, educational attainment, and mental aptitude. The relevant policy question, then, is, What changes, if any, have occurred since the removal of the draft?

Educational Attainment and Mental Aptitude

Although it may be more common to view educational attainment and mental aptitude in terms of job requirements, they can also be viewed as indicators of social composition. Indeed, some have questioned whether a volunteer military would come to be populated by only the uneducated and mentally inept.

Beginning with mental aptitude, and as shown in Table 10-1, we recall that mental category distribution is broadly the same under the AVF as it was under the draft. The most notable exception to this is the dramatic reduction in Category IVs, from 19 percent during the draft down to 8 percent. The Category I percentage has likewise fallen, from 6 percent to 3 percent, while the other above-average mental group, Category II, has remained unchanged at 31 percent.

To put the above figures into some perspective, Table 10-1 also shows the so-called standardized population base—that is, the mental aptitude distribution that the mental aptitude tests are designed to yield. The volunteer force has had somewhat fewer Category I enlisted accessions than we would expect to find in the population as a whole (though this should not be viewed with much surprise, since these individuals have a greater tendency to go to college), but it has actually resulted in a modestly higher Category II percentage. In fact, the combined Category I and II percentage under the volunteer force is just about what would be expected for the 18 to 21 year old male population as a whole. On the other hand,

Table 10-1

Distribution of Enlisted Accessions and the General 18 to 21 Year Old Male Population by Mental Category (percent)

Mental Category	Accessions		US Population: Male 18-21 Year-Olds			
			All		Non-College	
	Draft	AVF	All	Non-V	All	Non-V
I	6	3	7	8	2	2
II	31	32	28	31	22	25
III	43	57	34	38	39	45
IV	19	8	21	23	24	28
V	--	--	10	--	13	--
TOTAL	100	100	100	100	100	100

Source: OASD(M&RA).

the Category III percentage under the AVF has been substantially higher than that found in the general population, while the Category IV percentage is markedly lower.

An alternative way of looking at the distribution of mental aptitude is to compare these percentages against those that we would expect to find in the noncollege population, since this is the primary recruiting pool for the enlisted ranks. From this viewpoint, the Services have clearly not witnessed a decline in mental aptitude relative to their recruiting base, for they have attracted more Category Is, IIs, and IIIs than we would expect to find in the 18 to 21 year old male population not attending college.

For the most part, then, the distribution of enlisted accessions according to mental category closely matches the relevant population base; and the differences that do exist are basically a result of Service policies, such as the limitations placed on the numbers of Category IV recruits accepted.

Regarding educational attainment, Table 10-2 shows that the Services have witnessed a decline in the numbers of college graduates and those with some college entering the enlisted ranks since the removal of the draft, though it is far from clear why the Services should want many college graduates for the enlisted ranks, in which the occupations are generally what would be viewed as "blue collar." Moreover, there has been a modest increase in the percentage of non-high-school graduate enlistees since the removal of the draft, from 30 percent to 36 percent (or from 30 to 33 percent if GEDs—individuals who have passed a general high-school equivalency test—are counted in the high-school graduate total).

As can also be seen from Table 10-2, the Services' non-high-school graduate percentage is likewise somewhat larger than for the 18 to 22 year old population in general, though just about what we find nationally in blue collar occupations. Since it is a by-product of intentional Service policies designed to reduce Category IV intake, this modest decline in the educational level of new recruits should not be attributed to the volunteer force.

A somewhat different perspective on educational attainment can be gained by

Table 10-2

Educational Attainment of Enlisted Accessions and the U.S. Male Population
(percent)

Maximum Educational Attainment	Enlisted Accessions[a]		U.S. Male Population[b]			
			All	Not in School		Blue Collar
	Draft	AVF	18-22	18-24	18-21	25-44
College Grad.	3	1	8	7	1	3
Some College	13	5	26	13	12	12
High Schl. Grad.	54	59	41	46	49	48
Some High Schl.	26	35	19	22	27	21
Elementary	4	1	6	11	12	16

[a]Source: OASD(M&RA).

[b]Source: U.S. Bureau of the Census and U.S. Bureau of Labor Statistics.

[c]Includes GEDs -- i.e., those who have passed a general high school equivalency test, but who do not possess a high school diploma.

viewing the educational level of the entire force in being. Table 10-3 shows how misleading it can be to focus on comparisons of enlisted accessions alone with the general population base. That is, a significant proportion of high-school graduates go to college, and for these individuals, the most likely form of military employment is as an officer. Including officers in the comparisons, for example, shows a much closer match between the proportions of the general population and the military that are college graduates.[2]

With respect to college graduates, we note another interesting result shown in Table 10-3—namely, the declining proportion of college graduates in the enlisted force up until 1965. To understand the implications of this, recall that the size of the cohort of young men eligible for military service began to increase substantially (relative to accession demands) during the late 1950s and early 1960s. Given the methods for avoiding "payment" of the conscription tax, it is not surprising to find that the proportion of college graduates in the enlisted force declined over this period, as college graduates clearly had the most to gain by not serving.[3]

The other major finding to emerge from Table 10-3 is the importance of distinguishing between the educational attainment of the force as a whole and that of new accessions. For the total force, as well as for the enlisted ranks, the proportion that are high-school graduates has actually increased since the beginning of the volunteer force. To understand this increase, it is important to recognize that far fewer non-high-school graduates do or are allowed to reenlist. This, combined with

[2] Note that since the number of officers relative to the number of enlisted members is policy driven, not supply driven, the proportion of the force with college degrees is likewise at least partially policy driven.

[3] Indeed, part of the rationale for the Selective Service deferment policy was to reduce the size of the eligible pool, and this is exactly what college deferments accomplished.

Table 10-3

Educational Attainment of All Male Military Personnel and the U.S. Male Population[a]
(percent)

	Male Military Personnel[b]						U.S. Male Population[c]		
	All		Officers		Enlisted		20-29	20-44	
Year	HSG	CG	HSG	CG	HSG	CG	HSG	HSG	CG
1952	58	8	96	47	53	3	60	51	n.a.
1956	60	9	98	56	55	3	66	58	12
1960	70	9	99	57	66	2	71	63	n.a.
1965	84	9	100	72	82	1	74	67	15
1970	87	15	100	79	85	6	78	72	16
1972	83	14	100	85	81	3	82	76	18
1974	88	13	100	89	87	2	83	78	19
1976	89	13	100	91	87	2	84	79	20

[a]High school graduate (HSG); college graduate (CG).
[b]Source: *Selected Manpower Statistics*.
[c]Source: U.S. Bureau of the Census.

the much higher rates of attrition for non-high-school graduates during the first term, means that the percentage of new accessions that are high-school graduates understates the percentage of the force as a whole that are high-school graduates, a point that is illustrated dramatically through a comparison of Tables 10-2 and 10-3.[4]

The overall impression we get from reviewing mental aptitude and educational attainment statistics is that, at least within fairly broad parameters, there have been relatively few changes since the end of the draft. Moreover, the personnel distributions by these characteristics are not too different from those in the population as a whole. To the extent that there are differences, such as the decrease in Category IVs and the increase in non-high-school graduates since the AVF, these differences appear to be the result of changing Service "quality" standards.

Racial Composition

The descriptor most frequently thought of in terms of social representation is the racial composition of the Armed Forces. Few subjects have generated as much interest or as much concern as the rising proportion of blacks in the enlisted ranks. This is viewed by many as evidence that the volunteer force has not, or cannot, draw from the middle and upper socioeconomic segments of American society and that as a result, the enlisted ranks will come to be occupied by only the poor and the black.

The reason why racial composition has become such an issue is aptly illustrated by Fig. 10-1, which shows that black enlisted accessions, which historically had

[4] A third factor is in the in-service degree granting programs maintained by the armed services.

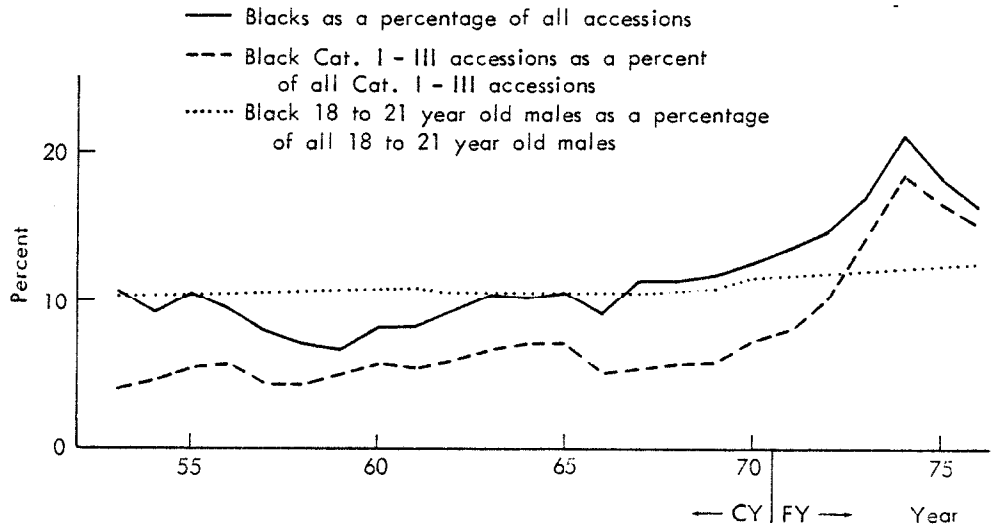

Fig.10-1—Blacks as a percentage of enlisted accessions and the 18 to 21 year old male population

SOURCES: CY53-CY70, Bernard D. Karpinos, "Male Chargeable Accessions: Evaluation by Mental Categories (1953-1973)," Human Resources Research Organization, Special Report, SR-ED-75-18, September 1975; FY71-FY76, data tapes provided by OASD (M&RA); population figures, U.S. Bureau of the Census.

varied between 7 and 11 percent of total accessions, began to increase substantially starting in the late 1960s. By fiscal 1974, the first full fiscal year without the authority to induct young men into the military, the black percentage had climbed to some 21 percent, about double the historical average. Although the black share of the young male population base also increased somewhat over this period, from about 10 percent in the early 1950s to about 12.5 percent in the mid-1970s, it is nonetheless clear from Fig. 10-1 that black representation in the military began to outdistance the black representation in the general population by a considerable margin beginning in the early 1970s.

This concern was exacerbated by the Service-specific results—Table 10-4 shows that the Army and, to a lesser extent, the Marine Corps bore most of the brunt of this "overrepresentation." However, the Army and the Marine Corps have historically experienced higher black participation rates.

Examination of the literature on racial composition, however, reveals a systematic failure to explore the reasons behind the dramatic increase in the proportion of new recruits who are black. Most appear to assume that the increase has been simply a result of the removal of the draft when, in fact, there are more fundamental reasons for the increase.

Specifically, the increasing percentage of blacks in the enlisted ranks can be attributed to three principal factors: (1) a dramatic increase over time in the proportion of blacks found eligible for military service, (2) particularly high unemployment rates that plagued the young black population during the beginnings of the volunteer force, and (3) a lag in earning potential for young blacks in the civilian work force.

Table 10-5 shows the generally well-recognized fact that blacks do not score as well on the mental aptitude tests as do nonblacks. For example, whereas 45 to 50 percent of nonblacks fall into Categories I and II, the number for blacks is a scant

Table 10-4

Enlisted Accessions: Percentage Black

	Draft[a]						AVF			
	62	65	68	70	72	73/1	73/2	74	75	76/1
Army	12	12	13	13	15	18	21	27	23	23
Navy	4	5	7	9	13	10	10	11	10	8
USMC	5	9	12	14	18	19	19	21	19	16
USAF	9	11	10	13	13	14	15	16	15	11
DOD	9	10	11	12	15	16	17	21	18	16

[a]For FY62-FY70, original data were for nonwhites. To estimate the percentage black, these nonwhite percentages were multiplied by 0.92, the actual proportion for FY71-FY73.

Source: OASD(M&RA).

Table 10-5

Mental Category Distributions for Pre-Inductees by Race: 1971-1972

	Non Black		Black		Total		Black as a Percent of Total
	percent[b]	number (000s)	percent[b]	number (000s)	percent	number (000s)	percent
18-21 Male Pop[a] (000s)	100.0	6630	100.0	888	100.0	7518	11.8
Mental Category							
I	8.1	537	0.2	2	7.2	539	0.4
II	38.5	2553	4.5	40	34.5	2593	1.5
III	37.0	2453	26.6	236	35.8	2689	8.8
IV	12.3	815	39.7	353	15.5	1168	30.2
V	4.1	272	29.0	258	7.0	530	48.7

[a]Source: U.S. Bureau of the Census.

[b]Source: Bernard D. Karpinos, Human Resources Research Organization (abstracted from study in progress).

4 to 5 percent. Conversely, nonblacks show an AFQT failure (i.e., Category V) rate of about 4 or 5 percent, in contrast to the 30 percent or so for blacks. The result of this is that whereas blacks make up only 5 percent of the Category I-III manpower pool, they constitute about 30 percent of the total Category IV population and nearly 50 percent of those legally ineligible for military service. As discussed in Chap. 8, however, the number of Category IV accessions is a policy parameter, not a measure of supply. As a practical matter, then, the overall black percentage is as much a reflection of Service policies toward Category IV accessions as it is a measure of supply response, since such a large share of the black young male population is classified as Category IV. In other words, to understand fully the growth in black enlistments, we should focus on Category III and above to avoid confusing policy changes with supply changes.

As shown in Fig. 10-1, the growth in the percentage of Category I-III accessions who are black is even more impressive than the black proportion of total accessions. In particular, black Category I-III enlisted accessions, expressed as a percentage of the total, averaged between 4 and 7 percent during the 1950s and 1960s. By the mid-1970s, the proportion had grown to some 15 percent or more, roughly triple the historical rates. In fact, from 1966 to 1974, the black percentage increased nearly fourfold. Yet this makes the very key point that the rising proportion of blacks in the military is not peculiar to the volunteer era, but instead can be traced back well before the AVF and, indeed, well before the AVF pay increase.

The single most important reason underlying the dramatic increase in the number of Category I-III black enlisted accessions is the likewise dramatic increase in the proportion of the military-age black population classified into Categories I-III. For example, Table 10-6 shows that the proportion of black pre-inductees, which is about as close as we can come to a random sample of the black population classified into Categories I-III, rose from 11.5 percent during the period 1953 to 1957 to 31.8 percent in 1971-1972, a nearly threefold increase.[5]

From two different perspectives, these results stand in marked contrast to those for nonblacks. First, a much higher proportion of nonblacks are classified into Categories I-III, as illustrated by the fact that when 11.5 percent of blacks were classified in these categories, 68.2 percent of nonblacks were so classified. Second, although nonblacks have also seen their Category I-III percentage increase over time, the increases have been far more modest. Indeed, the nearly threefold increase in the black population Category I-III percentage between the mid-1950s and the early 1970s compares with a less than 20 percent (i.e., about 13 percentage points) increase for the nonblack population.

Since pre-induction examinations stopped for all practical purposes in 1972, we cannot use pre-inductees as a basis for measuring how the Category I-III passage rates have changed under the volunteer force. Data for applicants for enlistment, however, do provide one source for determining how these rates have changed.[6]

[5] It is interesting to note that the last six months of the draft (i.e., the second half of calendar year 1972) showed a black Category I-III rate of 34.1 percent, as compared with the entire calendar year 1971-1972 average of 31.8 percent shown in Table 10-6, thus suggesting that the proportion of blacks classified into these categories was increasing even up to the end of the draft (and, as we will see below, into the AVF as well). Moreover, while calendar year 1973 saw only a few pre-induction examinations, there were quite a number during the last six months of 1972.

[6] The use of applicant results poses certain potential problems of self-selection bias. However, the relatively close correspondence (especially for blacks) between the three years for which there are data on both pre-inductees and applicants for enlistment (1971 to 1973) suggests that the self-selection bias does not present too much of a problem.

Table 10-6

Percentage of the Population Classified as Mental Categories I-III

Calendar Years	BLACK Actual[a] Pre-Inductees[b]	BLACK Actual[a] Applicants for Enl.[c]	BLACK Cat. I-III Population Estimate[d]	NONBLACK Actual[a] Pre-Inductees[b]	NONBLACK Actual[a] Applicants for Enl.[c]	NONBLACK Cat. I-III Population Estimate[d]
1953-57	11.5	------	13	68.2	------	69
1958-63	14.2	------	18	69.7	------	73
1964-68	22.5	------	25	77.2	------	79
1969-70	26.9	------	29	81.1	------	82
1971-72	31.8	31.9	33	81.4	74.5	83
1973	49.0	45.3	42	86.8	74.6	84
1974	------	45.4	43	------	75.3	84

[a]Sources: 1953-1970, from Bernard D. Karpinos, Human Resources Research Organization (abstracted from a study in progress); 1971-1974, from special tabulations provided by MARDAC, OASD (M&RA).

[b]Percentage of pre-inductees classified as Mental Categories I-III. The numbers for 1973 based on a very small number of holdover examinations conducted that year (about 17,000 nonblacks and about 2000 blacks).

[c]Percentage of applicants for enlistment categorized as Mental Categories I-III (data prior to 1971 were not available). For 1971-72, the percentages are for all applicants for enlistment; for 1973-74, the percentages are for Army enlistment applicants only because the other Services did not utilize the AFEES for all applicants (see text).

[d]Estimates of the proportions of the 18 to 24 year-old populations classified as Mental Categories I-III (see text for a description of the method of estimation).

The most striking feature of these data, as also shown in Table 10-6, is the enormous increase in the Category I-III percentage between 1972 and 1973 for black enlistment applicants (as compared with virtually no change for nonblack applicants).[7] This can be at least partially attributed to the change in testing procedures that took place in 1973. Specifically, the Army switched from the AFQT to the Army Classification Battery (the so-called ACB-73). One of the driving factors behind the development and implementation of the ACB-73 was the elimination of the "cultural bias" that was presumably present in earlier tests. The observed effect was clearly substantial: The nonblack Category I-III percentage hardly changed, but the black Category I-III percentage increased by nearly 50 percent (i.e., nearly 15 percentage points).

[7] As noted in Table 10-6, the 1971-1972 applicant data are for all Services, while those for 1973 and 1974 are for the Army alone. This is because whereas all four Services routed all (or most all) applicants through the AFEES in 1972 (and before), only the Army did so in 1973 and 1974. As a result, the Category I-III rates for the other Service applicants are unduly inflated, since many unqualified individuals never reached the AFEES. (To illustrate, the Navy's 1973 Category I-III rate for blacks in 1975 was 80 percent, as compared with 30 percent in 1972.) For the sake of comparison, the Army-alone 1971-1972 Category I-III rate was 31.1 percent for blacks and 71.7 percent for nonblacks.

Although it is difficult to estimate precisely the proportions of the black and nonblack populations classified into Categories I-III, the data shown in Table 10-6 suggest that the black Category I-III passage rate increased from about 13 percent during the mid-1950s to somewhere between 40 and 45 percent during the mid-1970s.[8] Nonblacks, on the other hand, had far less dramatic changes, from about 70 percent in the mid-1950s to 84 or 85 percent in the mid-1970s.

The general thrust of these trends is supported by broadly similar trends in the proportions of blacks and nonblacks who have completed high school, as shown in Table 10-7. For example, from the mid-1960s to the mid-1970s, the proportion of

Table 10-7

Percentage of Male Population Pool that Are High-School Graduates

Time Period	18-19 Year Olds		20-21 Year Olds		18-21 Year Olds	
	Whites	Blacks	Whites	Blacks	Whites	Blacks
1953-57[a]	n.a.	n.a.	71.5	43.2	n.a.	n.a.
1958-63[a]	n.a.	n.a.	74.3	46.4	n.a.	n.a.
1964-67	59.0[b]	27.5[b]	78.8	47.5	67.7[b]	37.8[b]
1968	57.0	32.0	82.3	50.8	69.2	40.3
1969	57.5	35.4	82.6	47.5	68.7	40.6
1970	59.8	39.2	82.3	62.7	70.0	50.0
1971	59.7	37.0	82.3	61.2	70.0	47.9
1972	61.4	40.4	84.9	62.5	72.6	50.4
1973	62.7	39.5	84.6	70.4	73.3	53.6
1974	62.9	43.5	86.7	66.1	74.5	54.0
1975	61.1	41.9	84.9	65.4	72.9	53.3

n.a. = not available.

Source: *Current Population Reports*, U.S. Bureau of the Census, Series P-20, Nos. 169, 182, 194, 207, 229, 243, 274.

[a]Estimated from 1967 CPS data by projecting back in time.

[b]For 1967 only.

nonblack 18 to 21 year old males who had completed high school increased from 68 percent to 73 percent. Blacks experienced a far greater increase, from about 38 percent to about 53 percent over the same time period. The basic conclusion, then, is that there has been a substantial increase in the proportion of blacks, relative to nonblacks, who fall into the "prime" manpower pool, whether this is viewed as Category III and above, having a high-school diploma, or both.[9]

[8] The Category I-III population percentages shown in Table 10-6 were judgmentally "estimated." Specifically, during the 1950s and 1960s, pre-inductees tended to be somewhat older than applicants for enlistment. Because of the markedly increasing trends in the percentage of the black population falling in Categories I-III, the pre-inductee rates (for these largely 21 to 25 year old pre-inductees) will tend to underestimate the Category I-III percentage for the 17 to 24 year old population. Therefore, the overall population percentages for a given time period were estimated as the average of that time period's pre-inductee percentage and the next time period's. For 1973 and 1974, where there were no reliable pre-inductee rates, the estimates were based on the general trends.

[9] Ideally, as discussed in Chap. 8, we should focus on the Category I-III high-school graduate accessions and population bases. However, data on the Category I-III high-school graduate population bases were unavailable.

The implications of the increasing proportion of blacks in these higher mental ability groups, combined with the moderately faster rate of growth in the overall black population, can be seen in Table 10-8. Whereas blacks made up about 2 percent of the total Category I-III manpower pool during the mid-1950s, their share had grown to more than 6 percent by calendar 1973, the first year of the volunteer force, and is estimated to have been nearly 7 percent in 1975.

Table 10-8

Category I-III Manpower Pools

Calendar Years	Nonblack			Black			Total Cat. I-III Manpower Pool[c] (000s)	Black Cat. I-III[d]	
	Pop.[a] (000s)	Cat. I-III[b] %	Cat. I-III[b] (000s)	Pop[a] (000s)	Cat. I-III[b] (%)	Cat. I-III[b] (000s)		Percent of Pool	Percent of Accessions
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1953-57	966	69	667	112	13	15	681	2.2	4.7
1958-63	1071	73	782	130	18	23	805	2.9	5.4
1964-68	1480	79	1169	174	25	44	1213	3.6	6.0
1969-70	1622	82	1330	218	29	63	1393	4.5	6.5
1971-72	1720	83	1428	230	33	76	1504	5.0	10.5
1973	1775	84	1491	245	42	103	1594	6.5	16.7
1974	1804	84	1515	256	43	110	1625	6.8	18.2
1975	1823	85	1660	263	44	116	1666	7.0	14.6

[a]Average year group population. Defined as the average number of 18 year-old males during the time period.

[b]Columns (2) and (5) from the "Category I-III population estimate" in Table 10-6. Column (3) = column (1) x column (2); column (6) = column (4) x column (5).

[c]Column (7) = column (3) + column (6).

[d]Column (8) = column (6)/column (7); column (9) from Figure 10-1.

These historical data on the Category I-III classification rates can be used to explore past and future "participation" rates by blacks and nonblacks. By converting the Category I-III manpower pools to annualized equivalents—that is, the average number of individuals in a single year-age cohort (e.g., 19 years old) over a particular time period[10]—and comparing these with the average number of Category I-III enlisted accessions, we can gain a rough measure of the proportion of each manpower pool that served in the military.[11] To illustrate, Table 10-9 shows that the average number of 19 year old nonblack Category I-IIIs between 1958 and 1963 was about 782,000. That is, if we had a steady-state world, approximately

[10] In other words, the Category I-III manpower pool was estimated as the average number of 19 year olds over the relevant time period.

[11] Note that this is an "average" or "steady-state" type of measure, since in any given year the Services can draw from adjacent age cohorts.

782,000 Category I-III nonblacks would have become eligible for military service each year during the period 1958 to 1963. Since the number of such accessions averaged about 336,000 per year during this period, the participation rate for Category I-III nonblacks was about 43 percent.

Viewed from this perspective, Table 10-9 shows the incredible result that the black Category I-III participation rate averaged more than 80 percent during the period 1958 to 1963, almost twice the participation rate for nonblacks in these

Table 10-9

Category I-III Enlisted Accessions and Manpower Pools

Calendar Year	Nonblack			Black		
	Acc. (000s)	Av. Pool[b] (000s)	Participation Rate[c] (Percent)	Acc (000s)	Av. Pool[b] (000s)	Participation Rate[c] (Percent)
	(1)	(2)	(3)	(4)	(5)	(6)
1958-63	336	782	43	19	23	83
1964-68	520	1169	44	32	44	73
1969-70	451	1330	34	34	63	54
1971-72	340	1428	24	40	76	53
1973	244	1491	16	49	103	48
1974	284	1515	19	63	110	57
1975	287	1550	19	49	116	42

[a]Source: CY 53 - CY 70, Bernard D. Karpinos, "Male Chargeable Accessions: Evaluation of Mental Categories (1953-1973)", Human Resources Research Organication, Special Report: SR-ED-73-18, September 1975, FY 71 - FY 75, special tabulations provided by the Manpower Research and Data Analysis Center, OASD (M&RA); FY 76, estimated based on the first half of the fiscal year.

[b]Category I-III manpower pool from Table 10-8.

[c]Column (3) = column (1)/column (2); column (6) = column (5)/column (4).

categories.[12] This is only partly explained by the higher true volunteer enlistment rates for blacks, since the black percentage of true volunteer enlistments (see Table 10-10) during the draft was only about 20 percent higher than the overall black percentage. The remainder of the difference probably reflects the fact that blacks had fewer opportunities to avoid induction than nonblacks, given the structure of the Selective Service System deferments and draft exemptions. Although such a draft policy was economically efficient in the very narrow sense, it was also discriminatory, and extraordinarily so.[13]

[12] Table 10-9 also helps to explain the small decline in the percentage of black Category I-III enlisted accessions during the period 1966 to 1969 that we saw in Fig. 10-1. This was the period of the Vietnam buildup, during which the number of enlisted accessions nearly tripled over preceding years. Since, as shown in Table 10-9, Category I-III blacks experienced a participation rate of nearly 75 percent during this period and if we take into account the fact that 20 to 25 percent of the young blacks were probably in high school or college (and therefore eligible for draft deferments), we find that black participation in the military nearly reached its saturation point. That is, it was simply not possible to find many more Category I-III blacks than in fact served, so that the only way of meeting accession requirements was to increase the numbers of nonblack enlistments.

[13] Recall from the discussion in Chap. 5 that the simple model of expected utility maximum predicted a much lower participation rate for nonblacks, simply because nonblacks could bring more resources to bear in draft avoidance than blacks.

Table 10-10

Annual Income for Year-Round Full-Time Employed 18 to 24 Year Old Males with Four Years or Less High-School Education by Race

	Median			Mean		
Year	White	Black	Ratio	White	Black	Ratio
1967-68	$5000	$3800	0.76	$5129	$3930	0.77
1969-70	6000	4733	0.79	6162	4827	0.78
1971-72	6200	5200	0.84	6458	5464	0.85
1973	7000	5460	0.78	7153	5748	0.80
1974	7200	5200	0.72	7388	5357	0.72

Source: Richard V.L. Cooper, Gus Haggstrom, and Patricia Gowen, *Age-Earnings Profiles*, The Rand Corporation, forthcoming.

The larger point is that there is really no way to distribute the burden of military service evenly under a selective service draft when one racial group has inferior economic opportunities to another. Only with a truly universal draft can an even sharing be reasonably assured. The socioeconomic or racial groups that have more economic resources at their command will find ways of avoiding induction under a selective service draft, just as they very clearly did during most of the 1950s and 1960s.

The preceding discussion regarding the increased numbers of Category I-III blacks, however, does not fully account for the dramatic increase in black accessions that occurred between fiscal 1971 and fiscal 1974—an increase in the black percentage of Category I-III accessions from about 8 percent to nearly 18.5 percent of the total.[14]

[14] As shown below, however, the black proportion of enlisted accessions is not that large when compared with the percentage of true volunteer enlistments that are black:

Black Enlisted Accessions: Total and True Volunteers (percent)

	Draft			All-Volunteer Force			
	71	72	73/1	73/2	74	75	76/1
All Accessions							
All	13.6	14.6	16.4				
True Volunteers	16.9	17.3	19.5	18.0	21.2	18.3	16.4
Category I-III							
All	8.0	10.0	12.4				
True Volunteers	10.2	12.0	14.9	15.6	18.4	16.5	15.1
Category I-III/HS							
All	7.2	9.3	10.9				
True Volunteers	9.9	11.6	13.7	14.6	17.2	15.9	14.8

The first factor contributing to this recent trend is the change in civilian employment opportunities for whites and blacks during the 1970s. Whereas the unemployment rates for 18 to 19 year old blacks averaged about 22 percent from 1960 to 1970, they jumped to 30 percent or more beginning in fiscal 1971 (see Fig. 10-2). In contrast, unemployment rates for white 18 to 19 year olds averaged about 13 percent between 1960 and 1970—not very different from the rates experienced during the first few years of the 1970s. In other words, young blacks never really recovered from the mini-recession of 1970, while young whites were only marginally affected.

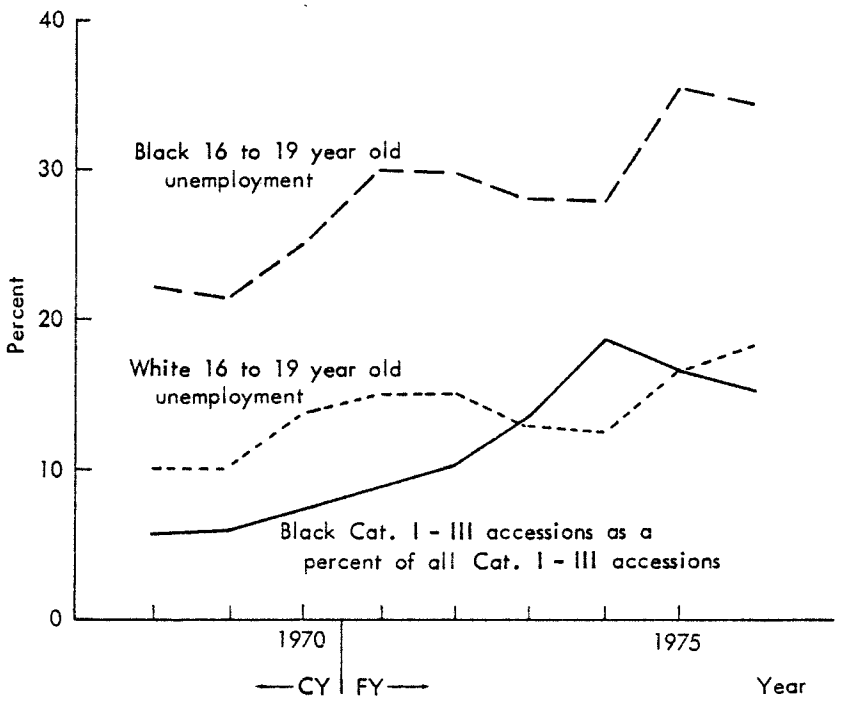

Fig.10-2—Black accessions and unemployment

Thus, the unemployment rates for young black males were about 50 percent higher during the 1970s than they were during the 1960s (per Fig. 10-2), as compared with a 5 to 10 percent rise for young white males. Only in fiscal 1975 and 1976 did white unemployment rates begin to increase appreciably. As is evident from Fig. 10-2, this is the period in which the black proportion of enlisted accessions began to decline, a result of the increasing numbers of whites attempting to join the military.[15]

The second factor that contributed to the increasing proportion of new black enlistees is the relative changes in income opportunities among nonblack and black young men. Although it is generally acknowledged that income opportunities for blacks have improved over the long run, Table 10-10 shows a modest reversal of

[15] As noted earlier, this meant that the Services were better able to accept only the "cream" from among the applicants, e.g., they did not have to accept as many Category IIIBs. Since blacks fall more heavily into the lower categories (such as IIIB), the effect is to reduce the numbers of blacks.

this long-run trend since about 1971. For example, whereas the median income for 18 to 24 year old blacks employed year-round and full-time was about 85 percent of that for their nonblack counterparts in 1971-72, by 1974 it was only 72 percent.

Thus, not only did the employment prospects for young blacks decrease during the early 1970s, the income they could earn even if they could find a job also decreased relative to the amount that nonblacks could earn. Since military pay is obviously the same for blacks and nonblacks (assuming, of course, equal promotion opportunities), this means that military pay increased more, relative to civilian pay, for blacks than for nonblacks during this period.

As summarized in Table 10-11, these three reasons—the increasing proportion of blacks found eligible for military service, the relatively higher unemployment rates experienced by young black civilians, and the lag in the earnings opportunities for full-time employed blacks—thus provide an explanation for much, if not most, of the growth in black enlisted accessions during the late 1960s and early 1970s.[16] In other words, the increasing number of blacks in the enlisted accession of the 1970s would probably have taken place *even in the presence of the draft.*

In addition to explaining much of the increase in black participation rates during the early 1970s, the methodology presented here suggests that further significant increases in black participation rates in the Armed Forces are unlikely. It is of course difficult to make precise forecasts of black participation rates in the future because they depend on so many factors—Service policies toward Category IV and non-high-school graduate accessions, demographic trends in the population bases and the proportions of those who will be eligible for military service, and economic variables such as wages and unemployment, among others. Nevertheless, some reasonable assumptions regarding the above factors suggest that black participation in the enlisted forces can be expected to fall between 15 and 22 percent during the 1970s and 1980s.[17] And the participation rate is unlikely to return to the

[16] A fourth possible reason for the increase is that blacks may have been more responsive to the AVF pay raise in 1971, contrary to the predictions of the Gates Commission. One rationale for this can be found in the logistic supply estimation presented in Chap. 9. In this formulation, the pay elasticity reaches a maximum when the percentage of the cohort volunteering is about 0.4 to 0.5. Since a larger fraction of the Category I-III black population base (than of the white) were true volunteers, as shown in Table 10-10, the logistic supply curve implies that blacks would show a larger (i.e., a higher percentage) response to the AVF pay increase. Based on the assumption that blacks have income opportunities equal to about 75 percent of those for whites, the simple logistic supply model developed in Chap. 9 implies a pay elasticity (at the draft wage) of about 1.25 for blacks and 1.00 for whites.

[17] Because blacks make up a disproportionate share of the Category IV and non-high-school graduate populations, the overall black percentage will be dictated largely by Service policies toward Category IV and non-high-school graduate enlisted accessions. Assuming the Services maintain the same quality standards that they averaged during the first three years of the AVF, the overall black percentage can be projected to be 1.17 times the Category I-III high-school graduate black percentage. (Recall that 18.5 percent of all enlisted accessions during these first three years were black, as compared with 15.8 percent of Category I-III high-school graduate accessions—hence 18.3 divided by 15.8 equals 1.17.)

The percentage of Category I-III high-school graduates that will be black can in turn be projected, albeit only approximately, based on demographic and economic projections. Assuming that (1) the proportion of blacks that are Category I-III high-school graduates increases by 1 percentage point per year (as opposed to 0.3 percentage points per year for nonblacks), (2) that black unemployment rates return to their historical position (i.e., 1950 to 1970) relative to whites, and (3) that the wages for young blacks resume their longer-run trends of catching up with whites, we can project the black percentage of Category I-III high-school graduate enlisted accessions to be between 13 and 16 percent in 1985, which thus means that the percentage of total accessions who are black will be between 15 and 19 percent. If, on the other hand, black incomes do not resume their longer-run trends of catching up with those for young whites, then the black percentage of Category I-III high-school graduate accessions will probably be between 16 and 19 percent, which would result in an overall black percentage of 19 to 22 percent in 1985.

Table 10-11

Determinants of Racial Composition of Enlisted Accessions

	Fiscal Year					
	1960	1964	1970	1972	1974	1976
Enlisted Accessions: Percent Black	8	10	12	15	21	16
Cat. I-III Accessions: Percent Black	6	7	7	10	18	15
Cat. I-III True Volunteers: Percent Black	n.a.	n.a.	10	12	18	15
18 Year-Old Category I-III Male Population: Percent Black	2.9	3.5	4.5	5.5	6.8	7.1
Black 18 to 24 Year-Old Male Earnings: Percent Relative White	n.a.	75	78	85	72	n.a.
18 to 19 Year-Old Male Unemployment Rates: Difference Between Black & White (percentage points)	10	10	11	16	18	16

n.a. Not available.

Sources: See Figures 10-1 and 10-2, and Tables 10-1 through 10-9.

rates witnessed during the 1960s, just as they are unlikely to exceed the maximum rates experienced during the initial stages of the volunteer force. Only under fairly dramatic circumstances, such as a very large increase in black unemployment rates relative to those for whites, would we expect the percentage of blacks to fall outside the above range.

It is important to note that the attention directed to this rising proportion of blacks among the active duty enlisted ranks has defused two equally important policy issues: First, as Table 10-12 shows, black participation rates among the officer corps have historically been less than what might be regarded as socially optimal. However, the Services have made substantial strides in recent years in attracting more blacks into the officer ranks through such programs as the establishment of ROTC units at some predominantly black colleges. As a result, the number of black accessions into the officer ranks is approaching the overall black share of the college graduate population base.[18]

Second, Table 10-13 provides some insight as to why the draft impacted so heavily upon blacks relative to whites, since whites were able to participate in far greater numbers in the reserve forces. As described earlier, the reserves provided individuals in certain favored occupations and pursuits (such as attending college) shelter from the draft. Because these favored activities were disproportionately

[18] In 1975, between 6 and 7 percent of all 22 to 24 year old college graduates were black, and about 5 percent of all 25 to 29 year old college graduates were black.

Table 10-12

Black Officer Accessions
(percent)

Service	FY 64	FY 70	FY 72	FY 73	FY 74	FY 75
Army	2.4	1.4	2.1	3.4	9.4	7.0
Navy	0.3	n.a.	2.7	5.2	5.8	6.5
USMC	0.4	2.0	4.4	4.7	6.2	5.3
USAF	n.a.	1.4	3.2	5.4	7.0	7.5

Source: Defense Manpower Commission.

Table 10-13

Black Enlisted Accessions into the Guard and Reserves
(percent)

Component	FY 71	FY 72	FY 73	FY 74	FY 75
Army National Guard	1.5	3.0	13.0	24.0	26.0
Army Reserve	1.3	2.0	9.0	29.0	42.0
Naval Reserve	1.4	3.0	6.0	18.0	9.0
Marine Corps Reserve	7.1	27.0	36.0	27.0	23.0
Air National Guard	0.8	2.0	5.0	26.0	10.0
Air Force Reserve	0.7	2.0	9.0	37.0	23.0
Total	1.8	5.0	15.0	26.0	28.0

Source: Defense Manpower Commission.

populated by nonblacks, nonblacks were better able to miss the brunt of the draft by serving in the reserves.

To summarize, the policy question concerns not so much the percentage of blacks in the volunteer force, but rather the penalties that the draft inflicted upon the black population. This rising proportion of blacks should be viewed as a positive sign, given that the main cause is the vastly larger numbers of blacks qualifying for military service. Since analysis suggests that the percentages would have been about the same whether or not the draft was ended, the difference is that the AVF—in paying a market wage—has not discriminated against blacks the way that the draft did.

SOCIOECONOMIC BACKGROUND

Whereas the last section explored the social composition of the force in terms of individuals' personal characteristics, this section focuses on the distribution of

enlisted accessions according to the areas from which they are drawn, in order to determine how that distribution has changed, if at all, since the removal of the draft.

The rationale for this approach is twofold. First, to the extent that individuals' attitudes, mores, and behavior are shaped by their environment, then measures that reflect the environmental background of enlisted accessions are important descriptors of social composition. For example, since individual attitudes may differ somewhat by region of the country, examination of the regional distribution of enlisted accessions both before and since the removal of the draft is warranted. Similarly, those who come from high-income areas may have different social values from those who come from low-income areas, suggesting an examination of the distribution of enlisted accessions according to the socioeconomic characteristics of their home areas.

Second, there are some individual characteristics that are difficult or impossible to measure through the use of standard personnel data files. Family income and education, for instance, are frequently cited as examples of the background that individuals bring with them when they join the service. Although the periodic surveys of new recruits occasionally ask questions about family background (e.g., income, education of parents, and so forth), it is difficult to obtain consistent data over time, thus rendering comparisons over time very difficult.

A potential solution to this problem is to assume, for example, that families with higher incomes live in high-income *areas*. In other words, the distribution of enlisted accessions according to the income of individuals' home areas can also be viewed as a proxy for the distribution of accessions according to the income of individuals' own families.[19] Therefore, distributions of enlisted accessions according to home areas provide a useful measure of how the social composition of the force has varied over time.

In the following discussion, we examine how this distribution has changed since the removal of the draft, for broad regional groupings and then for smaller areas. Because detailed machine-readable personnel files are available only back to fiscal 1971, our analysis of the draft years is limited to the last 2½ years. However, this was the period of the lottery draft which was presumably the most "socially representative" period of the draft. In a sense, then, our comparison is a form of "worst case analysis," since we are comparing the volunteer force against the selective service draft at its best.

Regional Composition of Enlisted Accessions

A widely held view, even among some AVF proponents, was that the volunteer force would draw a disproportionately large number of recruits (officer and enlisted) from the South. According to this argument, Southerners are more favorably disposed toward military service and also have lower civilian earnings opportunities than those from other regions of the country. For both ideological and economic reasons, then, the proportion of enlisted accessions from the South might be expected to increase with the removal of the draft and also to be substantially larger than the South's share of the nation's population.

[19] The evidence presented in App. B to this chapter suggests that the aggregate data are in fact a reasonably good proxy for the individual data.

Table 10-14 shows that the volunteer force has evidenced little change in the regional distribution of enlisted accessions, however, and may even be somewhat *more representative* than the draft (whether the population base is viewed as all 18 to 21 year old males or whether it is viewed as those 18 to 21 year old males not enrolled in college). To illustrate, 27.1 percent of all 18 to 21 year old males reside in the North Central census region (as do 25.5 percent of all 18 to 21 year old males not enrolled in college), but 30.3 percent of all enlisted accessions were from this area during the draft, as compared with the 26.5 percent since the draft's removal.

An alternative way of viewing the macro distribution of enlisted accessions is according to the urban-rural status of the enlistees' home residences. As shown in Table 10-15, there appears to have been a systematic shift toward a larger proportion of enlisted accessions coming from nonmetropolitan areas. However, the magnitudes of the shifts are small. Thus, whether viewed in terms of the regional composition or the urban-rural makeup, *there has been very little overall change in the macro distribution of enlisted accessions since the beginning of the volunteer force.*

Socioeconomic Indicators of Localities

The previous analysis does not really touch on the most frequently expressed reservation about the volunteer force—namely, that the poor will be greatly overrepresented in a volunteer military and will therefore have to bear an unfair burden in the provision of the nation's defense.

Has there in fact been a disproportionate increase in the numbers of individuals from poor families? Or are members of more well-to-do families no longer serving in the same numbers as they did under the draft? The remainder of this section focuses on these questions.

Historically, it has been difficult to deal with these types of questions because of a lack of data. As a result, analysts were forced to rely on such measures as the proportion of recruits that were black as a proxy for changes in the socioeconomic composition of the force, under the assumption that because blacks on average are poorer than whites, a larger proportion of blacks in the force implies a larger representation of the poor in the military. Indeed, the rising percentage of blacks in the force has been cited over and over again as "evidence" of the fact that the poor are bearing a disproportionately large share of the burden of military service, an assumption that will be shown to be incorrect in the discussion below.[20]

The 1970 Census of the United States provides us with an alternative way of examining the questions raised above. In particular, the "fifth count" census data files contain detailed information on a random subset of the American population living in standard metropolitan statistical areas (SMSAs). This information includes such statistics as income, education, and the like, both for individuals and for families. Fortunately, the data files include the postal Zip codes of the individuals and families, so that we are able to reconstruct some of the key socioeconomic characteristics of the population living within each Zip code located in an SMSA. For example, we can calculate per capita income for each Zip code, average family income, median family income, average years of education completed, and the percentage of the Zip code's residents that are white (or black), as well as detailed

[20] See, for example, Cortwright, "Economic Conscription . . .," op. cit.

Table 10-14

Distribution of Enlisted Accessions by Census Division and Region (percent)

	Total				Non-Black				Black			
	Accessions[a]		18-21 Male Pop.[b]		Accessions[a]		18-21 Male Pop.[b]		Accessions[a]		18-21 Male Pop.[b]	
	Draft	AVF	All	N.C.	Draft	AVF	All	N.C.	Draft	AVF	All	N.C.
Northeast	*18.3*	*18.8*	*21.8*	*20.1*	*18.6*	*19.6*	*22.6*	*20.9*	*16.7*	*15.5*	*16.8*	*16.8*
New England	4.6	4.8	5.7	5.1	5.1	5.7	6.3	5.8	1.4	1.4	1.7	1.6
Mid Atlantic	13.7	13.9	16.1	15.0	13.4	13.9	16.4	15.1	15.2	14.2	15.0	15.2
North Central	*30.3*	*26.5*	*27.1*	*25.5*	*32.0*	*29.0*	*28.5*	*27.2*	*20.5*	*16.4*	*19.0*	*18.6*
E. No. Cent.	21.0	18.3	19.0	18.2	21.7	19.5	19.7	19.0	16.8	13.3	15.9	15.6
W. No. Cent.	9.3	8.2	8.0	7.3	10.3	9.5	8.7	8.2	3.7	3.1	3.2	3.0
South	*34.3*	*36.8*	*33.3*	*36.8*	*30.2*	*30.5*	*30.4*	*33.2*	*57.8*	*62.5*	*55.9*	*56.8*
So. Atlantic	15.9	17.6	16.3	18.1	13.4	13.5	14.6	15.9	30.4	34.1	30.0	30.7
E. So. Cent.	7.1	7.4	6.8	7.7	6.1	5.8	6.2	6.9	12.6	13.5	12.0	12.1
W. So. Cent.	11.3	11.8	10.1	11.0	10.7	11.1	9.7	10.4	14.8	14.9	13.9	13.9
West	*17.1*	*17.8*	*17.9*	*17.6*	*19.2*	*20.9*	*18.5*	*18.7*	*5.0*	*5.6*	*8.3*	*7.8*
Mountain	4.9	5.2	4.2	4.1	5.7	6.3	4.6	4.4	0.7	0.7	1.1	1.1
Pacific	12.2	12.7	13.7	13.6	13.6	14.6	13.9	14.2	4.4	4.9	7.2	6.7

Source: Enlisted accession data files furnished by OASD(M&RA).

[a]Draft defined as January 1971 through December 1972; AVF defined as January 1973 through June 1975.

[b]The entire 18 to 21 year-old male population and those not in college (N.C.).

Table 10-15

Distribution of Enlisted Accessions According to Urban Status of Home Residence (percent)

	Accessions		
	Draft	AVF	Population[a]
All			
Central City	53.1	52.5	59.2
City Fringe	14.8	12.7	9.8
Non-Metropolitan	32.1	34.8	31.0
Non Black			
Central City	50.6	49.8	57.7
City Fringe	15.9	14.1	10.6
Non-Metropolitan	33.5	36.2	31.7
Black			
Central City	67.5	63.5	69.8
City Fringe	8.4	7.4	4.4
Non-Metropolitan	24.1	29.1	25.8

[a]Entire U.S. population; age specific estimates were not available.

Source: Data tapes furnished by OASD(M&RA).

descriptors of the population characteristics of each Zip code, such as the numbers of young males, the numbers of young males not enrolled in school, and so forth.

We focus on Zip codes because the areas they encompass are relatively small and homogeneous in terms of their resident populations, certainly more so than regions, states, or even cities. To illustrate, areas defined as SMSAs include about 12,000 Zip codes. Given that the total SMSA population numbers about 150 million people, this means that the average Zip code population is about 12,500 residents. Even if we take into account the heavier concentration of population in the "central city" Zip codes, the basic message is still the same. In particular, the census-defined central cities claim a population of about 125 million people, who are divided into somewhat more than 5,000 Zip codes, so that the average central city Zip code has slightly fewer than 25,000 residents. Although there will certainly be differences in the socioeconomic characteristics of individuals residing in any given Zip code, both casual and more formal analysis suggests that these differences are relatively minor, particularly as compared with the differences in socioeconomic characteristics *between* Zip codes. In other words, intra-Zip code variations in socioeconomic characteristics would seem to be small relative to inter-Zip variations.

In terms of the two perspectives outlined at the beginning of this section, the socioeconomic characteristics of a given Zip code will provide a reasonably good measure of the environment in which the Zip code's residents live. The distribution of enlisted accessions by Zip code thus provides us with a measure of the environmental backgrounds of new recruits. In terms of more individual-specific socioeco-

nomic indicators, we would expect, for example, that high-income families would tend to live in Zip codes that show a high average family income. To the extent that the volunteer force is supposed to have resulted in fewer enlisted accessions from higher-income families, then, we would expect to see fewer accessions coming from high-income Zip codes since the removal of the draft. Therefore, the distribution of enlisted accessions according to Zip code socioeconomic characteristics provides us with a measure, albeit approximate, of the individual socioeconomic characteristics of new recruits.

Using the enlisted accession data files maintained by the DoD, which include the home address Zip code for nearly every enlisted accession since fiscal 1971, we can match each enlisted accession with his home address Zip code and, hence, with its corresponding socioeconomic characteristics. These matches then provide us with a measure of the distribution of enlisted accessions according to the various socioeconomic measures available from the census data files.

The results of this procedure, using average family income for Zip codes, are illustrated in Table 10-16. The within-Zip code average family income was first estimated for each of the approximately 12,000 SMSA Zip codes in the census file. As shown in Table 10-16, these Zip codes were marked and grouped according to average family income, with the result, for instance, that Zip codes reporting an average family income of $24,500 or more in the 1970 Census fell into the upper 1 percent (i.e., the 99th percentile or greater) of all Zip codes located in SMSAs; Zip codes showing average family incomes of between $17,000 and $24,500 fell between the 95th and 99th percentiles; and so forth. In other words, by ranking Zip codes in this fashion, we are able to identify high-income areas (e.g., those falling in or above the 95th or 99th percentiles), medium income areas (e.g., the 50th to 75th percentiles), and the like.

Also shown in the table are the distributions of all enlisted accessions within these Zip code groupings for the two years preceding the removal of the draft, as well as the first 2½ years of the AVF. The remarkable fact is that there has been virtually no change in the distribution of enlisted accessions according to the average family income of their home address Zip codes. In fact, whatever changes have occurred can be measured in tenths of a percentage point. For example, during the last two years of the draft, about 3.22 percent of all enlisted accessions (i.e., inductees and enlistees) came from the highest-income areas—i.e., those falling in the upper 5 percent of all Zip codes according to average family income. Since the removal of the draft, the proportion has been about 3.01 percent coming from these same Zip codes, a scant 0.21 percentage point difference.

Also shown in the table are the distributions of all 16 to 21 year old males and 16 to 21 year old males not enrolled in school according to these Zip code groupings.[21] As is evident from these results, the Services have historically drawn a disproportionately small number of enlisted accessions from the upper-income areas, at least as reflected by the percentage of all 16 to 21 year old males living in these higher-income areas.[22] It is interesting to note, however, that although the distribution of enlisted accessions, both before and since the volunteer force, is somewhat skewed toward the lower-income groups relative to the distribution of

[20] See, for example, Cortwright, "Economic Conscription . . .," op. cit.

[21] Distributions for 18 to 21 year old males were not available in the census files.

[22] Note, though, that these are the areas that would be expected to yield the most officers. Data were not available, however, to test this hypothesis.

Table 10-16

Distribution of Male Enlisted Accessions by SMSA Zip Codes Ranked According to Average Family Income[a]
(percent)

Percentile[b]	Income Range[c] ($000s)	Enlisted Accessions[d]		16-21 Male Population[e]	
		Draft	AVF	All	N.S.
≥ 99	≥ $24.5	0.38	0.34	1.06	0.43
95-99	$17.0-$24.5	2.84	2.67	5.13	2.59
90-95	$14.7-$17.0	5.08	4.93	7.36	4.61
75-90	$12.2-$14.7	19.33	18.95	20.83	16.65
50-75	$10.3-$12.2	29.88	29.70	28.56	28.01
25-50	$8.4-$10.3	25.17	25.23	22.63	27.70
10-25	$6.3-$8.4	13.21	13.99	12.13	16.70
5-10	$1.3-$6.3	2.88	3.02	2.10	2.91
< 5	< $1.3	1.24	1.18	0.19	0.42

[a]Reports the percentage distributions for total DoD enlisted accessions (inductions and enlistments) by percentile rankings of five-digit Zip codes located in Standard Metropolitan Statistical Areas. SMSA five-digit Zip codes were ranked according to average family income within the Zip code, and then grouped into percentile groupings. Accessions were then matched with these percentile groupings by using the home address Zip code for each enlistee or inductee. Sources: U.S. Census and Manpower Research and Data Analysis Center, OASD(M&RA), provided the data tapes.

[b]Percentile rankings, based on within Zip code average family income, for five-digit SMSA Zip codes. Based on 10,708 five-digit Zip codes out of 11,972 Zip codes located in SMSAs (data on either population or income were not available for the remaining 1,264 Zip codes).

[c]The range of within Zip code average family incomes for each percentile grouping. Based on 1969 incomes reported in the 1970 census.

[d]Percentage distributions for DoD enlisted accessions (see note above). Time periods draft, 1/71 through 12/72; AVF, 1/73 through 6/75.

[e]Percentage distributions for all 16 to 21 year-old males residing in these Zip codes (ALL) and those not enrolled in school (N.S.).

all 16 to 21 year old males, it actually exceeds somewhat the distribution of 16 to 21 year old males not enrolled in school. Thus, the Services have and are continuing to draw a "socially representative" sample of those young men not enrolled in school, which, recognizing the blue collar nature of the majority of jobs in the enlisted ranks, is probably the appropriate basis for comparison.

It is clear, therefore, from Table 10-16 that there has not been a systematic reduction in the proportion of new recruits accessed from high-income areas, just as there has been little change in the proportion of new recruits coming from very low-income areas. Moreover, the distribution of enlisted accessions by income area generally falls between the distribution of all 16 to 21 year old males and the

distribution of 16 to 21 year old males not enrolled in school. This suggests that the military is getting a reasonably representative sample of the nation's youth, at least in terms of the family income of the area in which they lived prior to joining the service. Even the most wealthy areas—i.e., those in the upper 1 percent of all Zip codes nationwide—are contributing about the same percentage as they did before the AVF.

A somewhat different perspective on the distribution of enlisted accessions according to income can be gained by examining the distributions for blacks and nonblacks separately, as shown in Table 10-17. The most immediate implication of those results is not at all unexpected: Far fewer blacks than nonblacks live in high- and middle-income areas, so there are correspondingly fewer black enlisted accessions from high- and middle-income areas—both before and since the removal of the draft. This fact alone accounts for the decline, very modest though it has been, in the overall proportion of enlisted accessions coming from higher-income areas.[23]

Tale 10-17

Distribution of Black and Nonblack Enlisted Accessions by SMSA Zip Codes Ranked According to Average Family Income (percent)

Percentile	Non Black				Black			
	Accessions		16-21 Male Pop.		Accessions		16-21 Male Pop.	
	Draft	AVF	All	N.S.	Draft	AVF	All	N.S.
≤ 99	0.4	0.4	1.2	0.5	0.1	0.1	0.1	0.1
95-99	3.3	3.2	5.8	3.0	0.8	0.9	0.9	0.7
90-95	5.8	5.8	8.1	5.1	1.6	1.6	1.9	1.8
75-90	21.8	22.0	22.8	18.6	7.4	7.8	7.0	6.4
50-75	32.2	32.6	30.2	30.3	18.5	19.3	17.5	16.6
25-50	23.9	23.5	21.3	26.7	31.5	31.5	32.0	32.7
10-25	9.5	9.5	9.2	13.4	31.1	30.3	32.4	33.1
5-10	1.8	1.8	1.2	1.8	3.2	7.6	8.1	8.3
<5	1.3	1.3	0.2	0.4	0.7	0.9	0.1	0.2

[a]See notes to Table 10-16.

The results in Table 10-17 reveal that the differences between the AVF and the draft are even less for nonblacks and blacks separately than for all enlisted accessions together. If anything, both blacks and nonblacks have come in somewhat larger proportions from middle- and high-income areas under the volunteer force than they did under the draft, though the smallness of the changes must again be

[23] That is, since there has been an increase in the number of black enlisted accessions under the volunteer force, relative to the draft, the fact that blacks reside in disproportionately smaller numbers in higher-income areas than nonblacks means that there will be a modest decline (which we have seen in Table 10-16 to be measurable in tenths of a percentage point) in the proportion of total enlisted accessions coming from higher-income areas.

emphasized. To illustrate, 30.7 percent of nonblack volunteer enlistments has come from the quarter of the Zip codes with the highest average family income, as compared with 30.5 percent for all nonblack enlisted accessions under the draft. For blacks, the increase has been even more systematic. The point is obviously not that the magnitudes of these shifts are substantial, for they clearly are not, but rather that the direction of the shifts runs entirely contrary to the conventional wisdom regarding the socioeconomic distribution of enlisted accessions under the volunteer force. Furthermore, these distributions of black and nonblack enlisted accessions according to Zip code average family income roughly match the percentages of black and nonblack 16 to 21 year olds not enrolled in school that reside in these Zip codes.

We can therefore conclude that the AVF has resulted in little or no change in the socioeconomic composition of the enlisted force, as reflected by the characteristics of their surrounding environment at the time of enlistment. This conclusion is buttressed by a number of different and more detailed comparisons, as shown in App. A to this chapter. Specifically, there has been little or no change in the distribution of enlisted accessions (1) for various socioeconomic measures such as median family income and the racial composition of the surrounding environment, (2) for different subpopulations of recruits grouped by factors such as mental aptitude, (3) for the different Services, (4) for different regions of the country, and (5) for more disaggregated time intervals. Thus, the standard types of socioeconomic indicators all provide essentially the same quantitative and qualitative results.

Moreover, the data presented in App. B to this chapter suggest that the results from the aggregate Zip code analysis such as shown in Tables 10-16 and 10-17 are reflective of *individual behavior* as well. For example, more detailed analysis of these data shows that about as many individuals from high-income families (as well as high-income areas) are joining the military under the AVF as did under the draft. In other words, not only has the composition of enlisted accessions not changed in terms of the characteristics of the areas from which they are drawn, there also appears to be little change in the individuals themselves since the removal of the draft (with the exception of the racial composition of the enlisted force, which was shown earlier to be the result of factors other than the volunteer force).

CONCLUSIONS

This chapter has taken a somewhat different methodological approach to the question of social representation. Rather than constructing a series of detailed hypotheses and tests of hypotheses regarding social representation in the volunteer force, it has followed a somewhat more circuitous route: The general arguments that appeared in the AVF debate were presented first, and the actual evidence was then examined. The results run directly contrary to conventional wisdom pertaining to the issue of social representation.

The rationale for this approach has its roots in the fact that much of the social representation debate has been the result of either a lack of information or misinformation. By presenting a more accurate picture as to *what* has actually happened and *why*, this discussion provides a basis for a better-informed discussion about the true issues. To illustrate the "what," it has been assumed by some that AVF enlistments were coming largely from the poor and disadvantaged. However, the

evidence shows that there has been little or no change in the distributions of enlisted accessions according to resident areas, as measured by a variety of socio-economic indicators. Individuals raised in middle- and high-income areas, for instance, are serving in almost the identical proportions under the volunteer force that they did under the draft. Indeed, even the very highest-income areas—those falling in the top 1 percent of all SMSA Zip codes nationwide—are contributing just about the same proportion of enlisted accessions without the draft as they did with it. Thus, the American military is clearly not becoming an army of the poor.

To illustrate the "why" and its importance, consider the case of black enlistments. The rise in black enlistments before and during the volunteer force is well known, but the reasons for the increase have gone virtually unnoticed. There has been a more than threefold increase in the size of the "eligible" black population over the past 20 years, relative to the nonblack population. In addition, young blacks were struck particularly hard, relative to young whites, by adverse economic conditions during the early 1970s; not only were their chances of finding employment slimmer, they were offered smaller wages if they found a full-time job.

Even more striking, though, is the discrimination toward blacks that took place under the draft. The evidence presented earlier shows that young blacks in the eligible population base were about twice as likely to end up serving in the military as young whites. The reason is that fewer blacks could afford the ways of avoiding the draft, such as college deferments and draft-exempt jobs. Even during the lottery, when these forms of avoiding military service were presumably eliminated, blacks still served in proportions about twice those for whites (again expressed as a percentage of the eligible population base). The differences between the volunteer force and the outright discrimination that characterized the draft, then, is that blacks (and, of course, nonblacks) who have joined the military since December 1972 have done so voluntarily and under competitive wage and working conditions.

Those who have expressed alarm over the rising numbers of blacks joining the service are thus faced with a peculiar dilemma. Past history shows that a return to selective service would still result in blacks serving in larger proportions relative to their eligible population base. Therefore, not only would the number of blacks entering the military not be reduced, but discrimination would be reintroduced. As long as young blacks continue to experience inferior employment and earnings conditions in the civilian marketplace, the only way of reducing the black percentage of new enlistments to the former 10 or 12 percent rate (which seems to be the objective of AVF critics) is either to explicitly deny some blacks the opportunity to serve in the military or to pay blacks less that whites. Both of these alternatives, however, are clearly discriminatory and unconstitutional.[24]

Thus, rather than wasting concern over the rising proportion of blacks in the military, which analysis suggests will continue to be approximately the same for the next 10 years or so, it is better to concentrate on two very positive facts: First, the fact that larger proportions of the young black population are high-school graduates and are classified as Category I-III means that more will have the opportunity to obtain more desirable military (and civilian) employment. Second, the AVF pay increase, which brought first-term military wages up to the level earned

[24] A third alternative is of course to implement universal military service, but for reasons which have been described, UMS is not presently a practical alternative for the United States.

by comparably aged white high-school graduates, means that military employment offers young blacks the earnings and employment opportunities that have sometimes been denied them in the civilian sector.

The evidence presented here thus shows that the American military has not been nor is it becoming an army of the poor or the black. Though a military force composed entirely of young men from one region, one race, or one narrowly defined socioeconomic class would be clearly undesirable, the AVF has not resulted in such a situation. Instead, military service apparently continues to be viewed as an alternative employment option for a very broad cross section of American society, from the wealthiest to the poorest.

Appendix 10-A

SOCIOECONOMIC COMPOSITION OF ENLISTED ACCESSIONS: SUPPLEMENTARY RESULTS

Whether the characteristics of recruits' home address Zip codes are viewed as proxy measures of recruits' own socioeconomic characteristics or merely as representative of the home environments from which these new recruits are accessed, Zip codes are a useful descriptor regarding the socioeconomic composition of enlisted accessions. This appendix provides a more detailed presentation of these results and shows how these distributions vary (1) according to mental aptitude, education, and race; (2) according to less aggregated time intervals; (3) by Service; and (4) according to alternative measures of incomes.

MENTAL APTITUDE, EDUCATION, AND RACE

As discussed in this chapter, since blacks tend to reside in disproportionately large numbers in lower-income areas, more black recruits tend to come from these areas than do nonblacks. Similarly, Table 10-A-1 shows that recruits with lower mental aptitude and less education tend to come in larger proportions from lower-income areas.[25] For example, about 70 percent of Category I high-school graduate enlistees come from Zip codes representing the top half of average family income, whereas only 40 percent of Category IV non-high-school graduate enlistees come from such areas.

These findings are influenced by the fact that blacks tend to make up a large fraction of Category IV and non-high-school enlistees. As shown in Table 10-A-2, about 65 percent of all nonblack Category I-III high-school graduates come from Zip codes representing the top half of average family income, and about 50 percent of all nonblack Category IV non-high-school graduate enlistees come from such areas. The corresponding figures for blacks, however, are 30 percent and 25 percent, respectively.

The point of the above is twofold. First, the aggregate distributions of enlisted accessions (i.e., including all races, mental aptitudes, and levels of educational attainment) are partially a result of the numbers of black, lower-mental-aptitude, and less well-educated individuals accessed, since these all tend to reside in larger numbers in lower-income areas. These in turn are affected by Service quality standards and external market conditions (such as differential employment patterns among blacks and nonblacks). In other words, the aggregate distributions are in some ways policy driven as much as they are supply driven.

Second, the results presented in Table 10-A-2 show that there has been virtually no change in the distributions of enlisted accessions according to the average family

[25] Whereas the census data enable us to measure the proportions of nonblacks and blacks residing in the Zip codes of different socioeconomic characteristics (see Table 10-17), the statistics do not include measures of mental aptitude, so we cannot compare the populations of enlisted accessions by mental aptitude with their corresponding population bases.

Table 10-A-1

Distribution of Enlisted Accessions by SMSA Zip Codes Ranked According to Average Family Income by Mental Category and Education[a]

Percentile	Education	MENTAL CATEGORY I Draft	I AVF	II Draft	II AVF	III Draft	III AVF	IV Draft	IV AVF
>99	HSG	0.6	0.7	0.4	0.4	0.3	0.3	0.3	0.2
95-55		4.7	4.8	3.5	3.8	2.5	2.4	1.5	1.4
90-95		7.3	7.4	6.6	6.7	4.8	4.7	3.0	2.8
75-90		25.9	25.8	23.8	23.8	19.3	18.3	13.1	12.8
50-75		33.0	32.3	33.2	32.2	30.2	29.1	24.3	24.6
25-50		20.3	20.4	22.3	21.8	25.3	25.6	28.5	28.0
10-25		6.0	6.0	7.6	8.4	13.3	15.0	22.1	23.0
5-10		0.8	0.8	1.3	1.5	2.9	3.4	5.9	6.1
1- 5		1.2	1.2	1.1	1.1	1.0	0.9	0.9	0.8
< 1		0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3
>99	NHS	0.6	0.4	0.4	0.4	0.2	0.2	0.2	0.2
95-99		4.0	3.8	2.9	3.0	1.9	1.9	1.3	1.3
90-95		6.6	7.0	5.1	5.2	3.8	3.8	2.8	2.5
75-90		23.5	21.7	21.2	21.3	17.1	16.8	13.2	12.3
50-75		32.4	32.8	32.5	32.6	29.9	29.7	26.5	24.9
25-50		21.8	21.0	24.7	24.7	28.0	27.3	29.7	29.5
10-25		8.6	10.8	10.3	10.1	15.0	15.9	20.3	22.6
5-10		1.1	1.5	1.8	1.7	3.1	3.2	4.8	5.6
1- 5		1.2	0.8	0.9	0.9	0.9	0.8	0.9	0.7
<1		0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.4

[a]See notes to Table 10-16.

Table 10-A-2

Distribution of Nonblack and Black Enlisted Accessions by SMSA Zip Codes Ranked According to Average Family Income, by Mental Category and Education[a] (percent)

		Cat I-III/HSG		Cat I-III/NHS		Cat IV/HSG		Cat IV/NHS	
Race	Percentile	Draft	AVF	Draft	AVF	Draft	AVF	Draft	AVF
Nonblack	> 99	0.4	0.4	0.3	0.3	0.3	0.2	0.3	0.2
	95-99	3.3	3.5	2.4	2.5	2.3	2.2	1.5	1.5
	90-95	6.1	6.4	4.6	4.9	4.5	4.4	3.3	3.3
	75-90	23.2	23.4	19.9	20.4	18.8	19.0	16.1	16.7
	50-75	33.1	32.8	32.4	32.7	30.8	31.3	30.5	30.4
	25-50	22.9	22.4	26.3	25.4	26.2	24.9	28.7	27.6
	10-25	8.1	8.3	10.9	10.7	12.9	13.5	15.0	15.7
	5-10	1.5	1.5	1.9	1.9	2.9	3.3	3.2	3.5
	1-5	1.2	1.1	1.0	1.0	1.1	0.9	1.1	0.8
	< 1	0.3	0.2	0.3	0.3	0.2	0.3	0.3	0.3
Black	> 99	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1
	95-99	0.8	0.9	0.8	1.1	0.6	0.7	0.8	0.9
	90-95	1.7	1.7	1.6	1.5	1.3	1.3	1.6	1.4
	75-90	7.9	8.2	8.1	7.8	6.3	6.8	6.8	6.3
	50-75	19.3	19.3	19.7	19.9	16.6	18.2	17.7	17.3
	25-50	31.4	31.3	31.8	31.5	31.2	31.0	31.8	32.2
	10-25	30.4	30.0	30.1	30.2	33.0	32.1	32.0	32.1
	5-10	7.6	7.5	7.4	7.3	9.6	8.7	8.4	8.5
	1-5	0.4	0.5	0.4	0.4	0.6	0.6	0.5	0.6
	< 1	0.3	0.5	0.1	0.3	0.5	0.4	0.3	0.5

[a]See notes to Table 10-16.

income of their home address Zip codes once race, mental aptitude, and education are taken into account. Whereas the text of this chapter showed that the aggregate distributions had changed little, the results in Table 10-A-2 show even less change once these individual characteristics are taken into account. In fact, to the extent that there has been any change within these supply groupings,[26] there has been an almost uniform increase in the proportions of all such supply groupings coming from higher-income areas since the removal of the draft, though the changes are clearly very small.

The foregoing is aptly illustrated by the eight supply groupings shown in Table 10-A-2. Since the removal of the draft, the proportions of enlisted accessions coming from the upper half of all Zip codes (as measured by average family income) have increased for each of the following supply groupings:

1. Nonblack Category I-III high-school graduates, by 0.4 percent;
2. Nonblack Category I-III non-high-school graduates, by 1.2 percent;
3. Nonblack Category IV high-school graduates, by 0.4 percent;

[26] These are referred to as "supply groupings," since, in general, the alternative civilian employment opportunities for each of these groups would be expected to differ. That is, blacks, lower-mental-aptitude individuals, and non-high-school graduates would all be expected to face less advantageous income opportunities in the civilian sector than would others.

4. Nonblack Category IV non-high-school graduates, by 0.4 percent;
5. Black Category I-III high-school graduates, by 0.4 percent;
6. Black Category I-III non-high-school graduates, by 0.1 percent; and
7. Black Category IV high-school graduates, by 2.1 percent.

Only black Category IV non-high-school graduates show a decline, down by 1.0 percent.

STABILITY OVER TIME

In addition to there being little difference between the overall draft and AVF periods in the area distributions of enlisted accessions, there has in general been an almost remarkable stability over time, even over such short time intervals as six months.

To illustrate, the distributions of enlisted accessions by region and division of the country shown in Table 10-A-3 show little change over these disaggregated intervals. Only two general trends emerge, the first being a rather steady decline through the draft and AVF periods in the proportions of new recruits coming from the North Central region. As discussed, this decline has resulted in the AVF percentage being much closer to the national proportion of 18 to 21 year olds residing in the North Central part of the country. Second, there was a modest increase in the proportion of new recruits coming from the South, but this increase during the early part of the AVF was due almost solely to the larger numbers of blacks, who tend to reside in larger numbers in the South. (The results presented in Table 10-A-3 show that by the last part of fiscal 1975, the percentage from the South was returning to the draft level, thus indicating that there is no real trend involved.)

The distributions of enlisted accessions according to the average family income of their home address Zip codes, shown in Table 10-A-4, are even more stable over time. The only general trend to emerge is a gradual downward shift in the proportion of enlisted accessions coming from higher-income areas during the early part of the AVF (and this shift is indeed gradual, as it can be measured in tenths of a percentage point, for the most part). However, this very gradual shift was largely reversed by fiscal 1975.

The results in Table 10-A-5 suggest that the modest variations over time can be explained almost entirely by variations in the numbers of blacks, Category IVs, and non-high-school graduates accessed, since these individuals tend to reside in lower-income neighborhoods. For example, Table 10-A-5 shows that about 8.0 percent of enlisted accessions came from areas registering in the top 10 percent of all Zip codes in terms of average family income during the first 6 months without the draft. This dropped to about 7.5 percent during fiscal 1974, the time period showing the largest percentages of black, Category IV, and non-high-school graduate accessions. With the reductions in Category IVs and non-high-school graduates during the last half of fiscal 1976, however, the proportion of enlisted accessions coming from these areas amounted to some 8.8 percent, higher than at any time during either the draft or volunteer environments. These modest trends disappear almost entirely once race, mental aptitude, and education are taken into account, as also illustrated in Table 10-A-5.

Table 10-A-3

Distribution of Enlisted Accessions by Division and Region of the Country, by Six-Month Intervals
(percent)

	Draft					AVF					
Region/Division	1/71-6/71	7/71-12/71	1/72-6/72	7/72-12/72	*1/71-12/72*	1/73-6/73	7/73-12/73	1/74-6/74	7/74-12/74	1/75-6/75	*1/73-6/75*
Northeast	17.1	19.6	17.0	18.8	*18.3*	17.5	18.4	17.0	20.3	20.7	*18.8*
New England	4.1	5.3	4.4	4.6	*4.6*	4.5	4.6	4.5	5.2	5.5	*4.8*
Mid Atlantic	13.0	14.3	12.6	14.2	*13.7*	13.0	13.7	12.5	15.2	15.2	*13.9*
North Central	31.8	30.8	29.9	28.9	*30.3*	27.3	25.7	25.9	25.9	28.6	*26.5*
East N.C.	22.4	21.2	20.4	20.0	*21.0*	18.3	17.7	17.8	18.1	20.0	*18.3*
West N.C.	9.4	9.6	9.6	8.9	*9.3*	9.0	8.0	8.1	7.9	8.6	*8.2*
South	34.5	32.5	34.6	34.8	*34.3*	37.0	38.3	37.8	36.0	34.0	*36.8*
So. Atlantic	16.0	15.3	15.6	16.0	*15.9*	17.0	18.9	17.5	17.3	16.6	*17.6*
East S. Central	7.2	6.7	7.2	7.1	*7.1*	7.7	7.7	7.7	6.9	6.5	*7.4*
West S. Central	11.3	10.5	11.9	11.7	*11.3*	12.3	11.6	12.6	11.8	10.9	*11.8*
West	16.7	17.0	18.4	17.5	*17.1*	18.2	17.6	19.2	17.6	16.6	*17.8*
Mountain	4.8	4.9	5.3	4.7	*4.9*	5.3	4.9	5.5	5.2	5.2	*5.2*
Pacific	11.8	12.1	13.1	12.8	*12.2*	12.9	12.7	13.6	12.5	11.5	*12.7*

Table 10-A-4

Distribution of Enlisted Accessions by SMSA Zip Codes Ranked According to Average Family Income, by Six-Month Intervals[a]
(percent)

	Draft					AVF					
Percentile	1/71-6/71	7/71-12/71	1/72-6/72	7/72-12/72	*1/71-12/72*	1/72-6/73	7/73-12/73	1/74-6/74	7/74-12/74	1/75-6/75	*1/73-6/75*
99	0.4	0.4	0.3	0.4	*0.4*	0.3	0.3	0.3	0.3	0.4	*0.3*
95-99	2.9	2.9	2.7	2.9	*2.8*	2.8	2.6	2.5	2.6	2.9	*2.7*
90-95	5.0	5.1	5.0	5.2	*5.1*	4.9	4.7	4.7	4.9	5.5	*4.9*
75-90	19.2	19.8	18.9	19.4	*19.3*	18.7	18.6	18.6	18.8	20.4	*19.0*
50-75	29.7	30.4	29.9	29.7	*29.9*	29.6	29.1	29.2	30.0	31.0	*29.7*
25-50	25.1	25.0	25.7	25.1	*25.2*	25.4	25.5	25.6	25.3	24.2	*25.2*
10-25	13.4	12.5	13.6	13.3	*13.2*	13.9	14.6	14.8	14.1	11.9	*14.0*
5-10	3.0	2.8	2.7	3.0	*2.9*	3.1	3.3	3.2	2.9	2.4	*3.0*
1-5	1.0	1.0	1.0	0.9	*1.0*	1.0	0.9	0.9	0.8	1.0	*0.9*
1	0.3	0.3	0.2	0.3	*0.3*	0.3	0.3	0.3	0.3	0.2	*0.3*

[a]See notes to Table 10-14.

Table 10-A-5

Percentage of Enlisted Accessions Falling in the Upper 10 Percent and Upper 50 Percent of all SMSA Zip Codes Ranked According to Average Family Income[a] (percent)

Race/MC/Ed	Percentile	Draft					AVF					
		1/71-6/71	7/71-12/71	1/72-6/72	7/72-12/72	*1/71-12/72*	1/73-6/73	7/73-12/73	1/74-6/74	7/74-12/74	1/75-6/75	*1/73-6/75*
All	> 90	8.3	8.4	8.0	8.5	*8.3*	8.0	7.6	7.5	7.8	8.8	*7.9*
	> 50	57.2	58.6	56.8	57.6	*57.5*	56.3	55.3	55.3	56.6	60.2	*56.6*
All Non blacks	> 90	9.5	9.5	9.1	9.7	*9.5*	9.4	9.3	8.9	9.4	10.1	*9.4*
	> 50	63.2	64.1	62.9	63.3	*63.5*	63.2	63.7	63.1	64.2	65.7	*64.0*
All Blacks	> 90	2.4	2.3	2.6	2.5	*2.5*	2.7	2.3	2.6	2.9	3.2	*2.5*
	> 50	27.6	29.0	28.3	28.7	*28.4*	27.9	27.3	28.9	31.6	35.0	*29.7*
Cat III/HSG												
Non black	> 90	8.3	8.6	8.9	9.2	*8.8*	8.6	9.2	8.5	9.0	9.1	*8.9*
	> 50	62.9	64.2	63.2	63.2	*63.4*	61.3	64.0	62.7	64.4	64.1	*63.5*
Black	> 90	2.6	2.3	2.4	2.8	*2.5*	2.6	2.2	2.5	3.2	2.7	*2.7*
	> 50	29.0	29.6	29.1	29.5	*29.3*	27.3	28.2	28.9	31.2	33.6	*30.2*

[a]Reports the percentage of enlisted accessions coming from ZIP codes with average family incomes falling in the top 10 percent and top 50 percent of all SMSA ZIP codes. Also, see the notes to Table 10-14.

SERVICE DISTRIBUTIONS

The general socioeconomic trends described in this chapter were mainly for all DoD enlisted accessions, but these basic findings are not substantively altered when the distributions are examined on a Service-by-Service basis. For example, the regional distributions presented in Table 10-A-6 are in line with the aggregate DoD distributions given in the text, with several exceptions.

First, Table 10-A-6 shows that the increased proportion of enlistments coming from the South has gone mainly to the Army. The Army shows an increase of 5 to 6 percentage points; the Navy shows an increase of 1.6; the Marines, 0.7; and the Air Force has no increase. Second, Table 10-A-6 shows the disproportionately large numbers of enlisted accessions coming from the North Central region during the draft. This is primarily a result of the induction process, which seems to have drafted heavily from this region, and these numbers fall mainly in the Army.

The individual Service distributions of enlisted accessions according to the average family income of the Zip codes are likewise not very different from the aggregate DoD results described in the text, as shown in Table 10-A-7. Whereas it was shown earlier that there has been a very modest decrease in the proportion of DoD enlisted accessions coming from higher-income areas (see Table 10-16), the results in Table 10-A-7 show that this decrease is entirely attributable to the Army, as each of the other three Services either has experienced no change or has actually had an increase in such accessions. The Air Force and Navy have shown the largest increases—1.9 and 1.8 percentage points, respectively—in the enlisted accessions coming from the upper half of all Zip codes ranked by average family income. The Marines have had a 0.4 percentage point increase.

The Army, however, has seen a decline in the proportion of its enlisted accessions coming from the top half of Zip codes so measured, down by 4.8 percentage points with respect to inductions and 3.7 percentage points with respect to enlistments during the draft. This decline can be largely attributed to the fact that the Army has accessed larger numbers of Category IVs and non-high-school graduates than the other Services. Indeed, when we examine a more narrow supply grouping, such as nonblack Category III high-school graduates (shown in Table 10-A-8), we see that the Army has also witnessed an increase, albeit modest, in the proportion of draftees and enlistees coming from higher-income areas. Thus, the Army's small decline in the proportion of total accessions coming from higher-income areas is mostly a result of its large accession requirements since the removal of the draft.

MEDIAN VERSUS AVERAGE FAMILY INCOME

It was stated in the text of this chapter that the same general results emerge, whether Zip codes are ranked according to average family income within the Zip code or median family income within the Zip code. This can be clearly seen from Table 10-A-9. Thus, the implications of using the distributions of enlisted accessions according to average family income within the Zip codes, which have served as the basis for the discussion thus far, would be essentially unaltered if median family income had been used instead.

Table 10-A-6

Distribution of Enlisted Accessions According to Region of the Country, by Service[a]
(percent)

	Army			Navy		Marines		Air Force		DoD	
	Draft		AVF	Draft	AVF	Draft	AVF	Draft	AVF	Draft	AVF
Region	Ind.	Enl.									
Northeast	16.5	16.1	16.2	20.5	21.2	20.0	19.6	21.0	21.1	18.3	18.8
North Central	32.7	29.8	23.5	29.6	28.9	30.7	31.9	29.0	26.8	30.3	26.5
South	35.1	36.0	41.3	28.9	30.5	31.7	32.4	37.4	37.4	34.3	36.8
West	15.6	18.1	18.9	20.9	19.3	17.5	16.1	12.6	41.7	17.1	17.8

[a]Inductions (Ind.) and Enlistments (Enl.)

Table 10-A-7

Distribution of Enlisted Accessions by SMSA Zip Codes Ranked According to Average Family Income, by Service[a]
(percent)

Percentile	Army			Navy		Marines		Air Force	
	Draft		AVF	Draft	AVF	Draft	AVF	Draft	AVF
	Ind.	Enl.							
>95	3.3	3.0	2.5	3.1	3.5	2.4	2.3	2.8	2.9
90-95	5.1	4.6	4.2	5.2	5.5	3.7	3.8	4.8	4.8
75-90	18.6	17.9	16.7	20.2	20.8	16.7	16.5	17.8	18.9
50-75	28.5	28.9	27.3	30.2	30.7	28.2	28.8	28.4	29.1
25-50	23.7	24.5	24.9	23.9	22.9	26.6	26.0	25.3	25.1
10-25	11.6	12.1	13.8	10.4	10.1	12.9	12.8	12.3	11.4
5-10	4.5	4.5	5.5	3.5	3.2	5.2	5.4	4.2	3.9
< 5	4.5	4.5	5.2	3.5	3.3	4.4	4.3	4.5	3.9

[a]See notes to Table 10-16.

Table 10-A-8

Distribution of Nonblack Category III High-School Graduate Enlisted Accessions by SMSA Zip Codes Ranked According to Average Family Income, by Service[a] (percent)

Percentile	Army			Navy		Marines		Air Force	
	Draft		AVF	Draft	AVF	Draft	AVF	Draft	AVF
	Ind	End							
>95	2.8	2.9	2.7	3.1	3.4	2.6	2.8	2.8	2.8
90-95	4.9	5.0	5.1	5.5	5.7	4.5	4.8	5.0	4.9
75-90	20.0	20.4	20.4	22.6	22.5	20.1	19.7	19.7	20.2
50-75	32.4	32.0	31.3	32.7	32.1	31.6	32.0	29.8	30.9
25-50	23.9	23.7	23.5	23.4	22.3	25.0	24.0	25.4	24.7
10-25	10.0	9.7	10.3	8.2	8.8	9.9	9.9	10.4	10.4
5-10	2.5	2.8	3.1	2.0	2.4	2.9	3.2	2.9	2.6
<1	3.5	3.4	3.7	2.6	2.7	3.4	3.6	3.9	3.5

[a]See notes to Table 10-16.

Table 10-A-9

Distribution of Enlisted Accessions by SMSA Zip Codes Ranked According to Average and Median Family Income[a]
(percent)

Average Family Income			Median Family Income		
Percentile[a]	Enlisted Accessions		Percentile[a]	Enlisted Accessions	
	Draft	AVF		Draft	AVF
>99	0.4	0.3	>99	0.3	0.3
95-99	2.8	2.7	95-99	2.7	2.6
90-95	5.1	4.9	90-95	5.1	5.0
75-90	19.3	19.0	75-90	18.2	17.8
50-75	29.9	29.7	50-75	27.4	27.0
25-75	25.2	25.2	25-50	24.4	24.3
10-25	13.2	14.0	10-25	13.2	13.7
5-10	2.9	3.0	5-10	4.7	5.0
1- 5	1.0	0.9	1- 5	3.6	3.9
< 1	0.3	0.3	< 1	0.4	0.4

[a]See notes to Table 10-16.

[b]Zip codes ranked according to within Zip code average family income.

[c]Zip codes ranked according to within Zip code median family income.

OTHER SOCIOECONOMIC MEASURES

Income is only one type of socioeconomic descriptor. An alternative indicator of considerable socioeconomic importance is educational background. In the first part of this chapter we examined the educational attainment of individuals actually joining the service. Another technique would be to examine the educational background of individuals residing in the same area as the enlisted accessions, much the same as we examined the family income for Zip codes in which individuals lived prior to service.

Table 10-A-10 shows the distribution of enlisted accessions before and since the volunteer force, according to the average years of education completed for adults 21 years or older residing in the Zip code. That is, the average years of education for adults were estimated for each Zip code in the sample, and the Zip codes were then ranked in the same fashion as they were for average family income. Again, there has been practically no change in the distributions since the removal of the draft. Whatever changes have occurred can again be measured in terms of tenths of percentage points.

A third descriptor of the socioeconomic background from which new recruits come is the racial mix of their immediate environment. In particular, we have examined the distribution of enlisted accessions according to the percentage of the Zip code's residents that are white. Nonblacks would be expected to come from areas that have proportionately more whites, and conversely for blacks. As shown in Table 10-A-11, there is considerable similarity between the draft and volunteer periods, though it appears that larger proportions of both blacks and nonblacks appear to come from areas less heavily black in their resident populations. Thus,

Table 10-A-10

Distribution of Enlisted Accessions by SMSA Zip Codes Ranked According to Average Years of Education Completed[a]

Percentile	Education Range (Years)	Enlisted Accessions		16-21 Year-Old Males	
		Draft	AVF	All	Non-School
> 95	> 14.0	nil	nil	0.2	0.1
90 - 95	13.1 - 14.0	2.0	2.0	5.1	2.0
75 - 90	12.1 - 13.1	14.5	14.4	20.4	16.7
50 - 75	11.4 - 12.1	23.1	23.1	25.3	26.8
25 - 50	10.6 - 11.4	29.4	29.0	24.9	25.3
10 - 25	10.0 - 10.6	15.7	15.9	12.5	14.2
5 - 10	9.5 - 10.0	6.2	6.0	4.8	5.9
< 5	< 9.5	9.1	9.5	7.0	9.0
Total		100.0	100.0	100.0	100.0

[a]See notes to Table 10-16.

Table 10-A-11

Distribution of Nonblack and Black Enlisted Accessions by SMSA Zip Codes Ranked According to Percentage Whites[a] (percent)

Percentage White[b]	Nonblack				Black			
	Accessions		16-21 Male Pop.		Accessions		16-21 Male Pop.	
	Draft	AVF	All	Non-School	Draft	AVF	All	Non-School
> 95	67.6	68.6	62.6	52.6	7.4	8.3	5.0	4.8
90 - 95	11.9	12.0	13.4	15.2	6.1	6.7	6.3	6.9
75 - 90	11.3	11.1	15.0	21.6	15.3	16.9	17.0	19.5
50 - 75	6.2	5.7	6.2	7.4	25.4	26.1	23.3	21.8
25 - 50	2.4	2.1	2.3	2.6	23.3	22.7	23.2	22.6
10 - 25	0.4	0.4	0.4	0.5	11.5	10.3	13.3	13.1
5 - 10	0.1	0.1	0.1	0.1	5.0	4.2	5.5	5.1
< 5	0.1	0.1	nil	nil	6.0	4.8	6.5	6.2

[a]See notes to Table 10-16.

[b]Percentage of the residents in the individuals' hometown ZIP code that are white.

it would seem that fewer blacks are coming from essentially all-black ghettos than was the case under the draft. Other than the very modest shifts which indicate that blacks are coming from more integrated neighborhoods during the AVF, these results again demonstrate that there have been only very minor changes in the socioeconomic backgrounds of recruits since the removal of the draft.

Appendix 10-B

ZIP CODE DATA AS A UNIT OF ANALYSIS

Some have conjectured that even though Zip code distributions have remained virtually unchanged since the removal of the draft, the individuals volunteering under the AVF have come from the lower socioeconomic groups *within* these Zip codes. Although such a circumstance is unlikely, this appendix investigates how representative the aggregate Zip code data are of individual behavior, using two different approaches.

The first approach consists of comparisons with some of the limited available survey data, while the second is based on a more comprehensive statistical examination of the aggregate Zip code data. The results from these two approaches support the basic conclusion presented in the text—namely, that the AVF has brought little or no change in the proportions of enlistees coming from different income classes.

SURVEY DATA

Ideally, we would approach the issue of individuals' socioeconomic backgrounds by actually examining measures of individual socioeconomic status. Since such statistics are not kept in the personnel files, however, we must resort to proxy measures. One obvious approach would be to use data from surveys of incoming recruits to construct measures of individuals' socioeconomic backgrounds. However, what few surveys there have been tend not to be comparable over time, thus making comparisons between the draft and the AVF difficult at best.

It is possible, however, to check the validity of the aggregate Zip code results, using a survey of incoming recruits conducted at the Armed Forces Entrance and Examination Station (AFEES). In this survey, individuals were asked about their parents' total family income. The responses were then compared with the distribution of U.S. families according to family income, as shown in Table 10-B-1. For example, 21.8 percent of all U.S. families had an income of $20,000 per year or more in March 1975, as reported by the U.S. Bureau of the Census. At the same time, 16.0 percent of all enlistees in the May 1975 AFEES survey came from families with incomes of $20,000 or more.

Because the data reported in the 1970 Census reflect 1969 income, there is no direct way of comparing the aggregate SMSA Zip code average family income results with the 1975 income data used in the AFEES survey. Instead, Zip codes were ranked according to average family income, as they were for Table 10-16, but in this instance they were grouped according to the percentage distribution of 1975 family incomes shown in Table 10-B-1.[27] To illustrate, Zip codes with an average family income of $14,000 or more in 1969 accounted for 21.8 percent of all families living in SMSAs in the 1970 Census, corresponding to the top 21.8 percent of U.S.

[27] For convenience to the reader, the percent distributions for families are italicized in Table 10-B-1 for both approaches.

Table 10-B-1

Recruits and the Income of their Parents: Comparisons of AFEES Individual Survey Data with Aggregate Zip Code Data

Individual Data: May 75[a]			SMSA ZIP Codes: Jan - June 75[b]				
Family Income (000)	Percent of DoD Enlistees	Percent of DoD Families	Average Family Income	Percent of DoD Enlistees	Percent of 16-21 Y.O. Males N.S.	Percent of 16-21 Y.O. Males	Percent of Families
≥$20	16.0	*21.8*	≥$14	14.8	12.4	20.0	*21.8*
$14-$20	22.0	*22.3*	$12-$14	20.8	17.7	20.7	*22.3*
$ 8-$14	35.1	*29.3*	$10-$12	31.8	28.7	28.3	*29.3*
$ 3-$ 8	20.5	*21.0*	$ 7-$10	24.3	31.2	23.8	*21.0*
<$3	6.4	*5.3*	<$7	8.3	10.0	7.2	*5.3*

[a]Source: *The All Volunteer Force: Current Status and Prospects*, Department of Defense, December 17, 1976.

[b]See notes to Table 10-16.

families in terms of family income in 1975. Similarly, 22.3 percent of all SMSA families in 1970 lived in Zip codes reporting average family incomes of at least $12,000 but less than $14,000 in 1969. Again, these corresponded with the next 22.3 percent of March 1975 families, ranked according to family income. By ranking Zip codes in this fashion, we have an indirect way of comparing the aggregate Zip code data shown in this chapter with the individual survey data shown in Table 10-B-1.

As can be seen from Table 10-B-1, the distribution of enlistees according to the average family income in their home address Zip codes is remarkably like the distribution of enlistees according to their family incomes reported in the AFEES survey. For example, 14.8 percent of all January to June 1975 enlistees came from the top 21.8 percent of Zip codes—that is, the highest average family income Zip codes, which collectively have 21.8 percent of all SMSA families. This compares with 16.0 percent of all enlistees coming from the top 21.8 percent of all families ranked according to individual family incomes. In other words, the aggregate data closely match the individual data. Thus, although comparable survey data of individuals are not available over time, the facts that (1) the individual data distributions and the aggregate Zip code data distributions closely match one another and (2) the aggregate distributions have remained virtually unchanged since the removal of the draft are strongly suggestive of little or no change in the distribution of enlistees according to their parents' family incomes since the advent of the AVF.

Moreover, Table 10-B-1 also shows that it may be somewhat misleading to focus on the distribution of families according to income, since there are proportionately fewer 16 to 21 year old males living in high-income areas than there are families (and even fewer 16 to 21 year old males not enrolled in school).[28] Thus, not only has

[28] This may be partially a result of age, since older families tend to have higher incomes and older children who, in turn, are less likely to live with their families.

there been little change in the distribution of enlisted accessions according to family income since the removal of the draft, the distribution of enlisted accessions is also broadly similar to the distribution of the manpower pool (i.e., 16 to 21 year old males, not all U.S. families).

STATISTICAL ANALYSIS OF ZIP CODE DATA

The possibility has been raised that even though each Zip code grouping is supplying the same proportion of recruits under the AVF, the volunteer recruits are coming from the more economically disadvantaged families within each Zip code grouping.

Although such a circumstance is unlikely, the census data files provide a way of testing for this possibility, since estimates of the 10th, 25th, 75th, and 90th percentile family incomes within the Zip code can be constructed for each Zip code in the sample. For Zip codes with the same average family income, the above hypothesis would presumably predict that a larger proportion of enlisted accessions under the volunteer force would have come from Zip codes showing lower within-Zip-code 10th, 25th, 75th, or 90th percentile income cutoffs, since these Zip codes would be expected to have relatively more families (and individuals) at lower levels of income.

A simple regression model was developed to test the validity of this hypothesis. In particular, the difference between the percentage of enlisted accessions from the Zip code under the volunteer force and the percentage under the draft, Dp_i, for each Zip code i is regressed on (1) average (or median) family income, AFI or MFI, (2) the 10th (or 25th) percentile income level within the Zip code, $F10_i$, and (3) the 90th (or 75th) percentile income level within the Zip code, $F90_i$.[29] If the above hypothesis is correct, we would expect to see negative and significant coefficients for F10 and F90 (or, equivalently, F25 and F75), since those Zip codes with lower income levels for the 10th and 90th percentiles would have an increase in enlistments under the volunteer force.

As can be seen from the regression results presented below, this is not the case:[30]

$$DP_i = \underset{(1.62)}{-0.89AFI_i} + \underset{(3.06)}{1.84F10_i} - \underset{(4.52)}{2.66F25_i} + \underset{(3.11)}{1.10F75_i} - \underset{(0.82)}{0.13F90_i}, \qquad (10.B.1)$$

$$DP_i = \underset{(0.38)}{-0.26MFI_i} + \underset{(3.00)}{1.82F10_i} - \underset{(3.68)}{2.76F25_i} + \underset{(2.26)}{1.82F75_i} - \underset{(1.84)}{0.26F90_i}, \qquad (10.B.2)$$

Although some of the coefficients shown in Eqs. (10.B.1) and (10.B.2) are statistically significant, the signs of the coefficients do not reveal any consistent patterns with respect to the aforementioned hypotheses. For example, the coefficients for F25 are negative and significant in both equations, consistent with the notion that more enlistments have come from poorer neighborhoods since the removal of the draft.

[29] A number of interaction terms were also included, but none proved statistically significant.

[30] For ease of presentation, the regression coefficients shown are given as 10^7 times the actual coefficient values (e.g., the actual coefficient for AFI in Eq. (10.B.1) is 0.89×10^{-7}); the intercept terms were omitted; and t-statistics are given in parentheses.

But the coefficients for F10 and F75 are positive and significant in both equations and thus contradict the above hypothesis. Finally, the coefficients for AFI, MFI, and F90 are all statistically insignificant.

Overall, then, the results from Eqs. (10.B.1) and (10.B.2) yield essentially the same conclusions shown in Table 10-16; namely, there has been a very modest increase in the share of enlistments coming from less affluent neighborhoods since the advent of the AVF, but these changes are indeed modest.

To put these regression results into some perspective, consider two hypothetical Zip codes: (1) one that ranks in the top 5 percent of Zip codes in terms of each AFI, F10, F25, F75, and F90 (i.e., the mean plus two standard deviations for each); and (2) one that ranks in the bottom 5 percent in terms of each of AFI, F10, F25, F75, and F90.[31] The coefficients in Eq. (10.B.1) imply that the high-income Zip code could be expected to show a 0.0004 percentage point decline in its share of enlisted accessions since the end of the draft, while the low-income Zip code could be expected to show a 0.0004 percentage point increase. These figures compare with the fact that the average Zip code yields 0.009 percent of all enlisted accessions.[32] Thus, even with such radically different Zip codes as hypothesized above, there has been only a very modest decrease (increase) in the proportions of enlisted accessions coming from high- (low-)income areas—in fact, less than 10 percent.[33]

Similar regressions can be estimated separately for nonblacks and blacks and yield similar results, as shown below:

$$DP_i = \underset{(1.95)}{-1.08AFI_i} + \underset{(4.19)}{2.55F10_i} - \underset{(1.91)}{1.13D25_i} + \underset{(1.91)}{0.70F75_i} - \underset{(0.49)}{0.08F90_i} \qquad (10.B.3)$$

$$DP_i = \underset{(0.50)}{-0.70AFI_i} + \underset{(1.73)}{2.70F10_i} - \underset{(0.64)}{0.97F25_i} + \underset{(0.25)}{0.23F75_i} - \underset{(0.03)}{0.01F90_i} \qquad (10.B.4)$$

As with Eqs. (10.B.1) and (10.B.2), the results in Eqs. (10.B.3) and (10.B.4) show no consistent patterns with respect to the signs of the coefficients.

[31] The income characteristics of the 10,708 Zip codes included in the sample are as shown below:

Family Income ($ thousands)

	Mean	Std. Dev.	Mean + 2 s. d.	Mean − 2 s. d.
	(1)	(2)	(3)	(4)
AFI	11.0	3.7	18.4	3.6
MFI	10.0	3.0	16.0	4.0
F10	3.9	1.7	7.3	0.5
F25	6.7	2.3	11.3	2.1
F75	14.4	4.8	24.0	4.8
F90	21.0	7.6	36.2	5.8

The high-income area is therefore one with income characteristics shown in column (3) above; the low-income Zip code has the income characteristics shown in column (4).

[32] That is, 100 percent divided by the 10,708 Zip codes in the sample equals 0.00934 percent.

[33] That is, if both Zip codes had yielded the average (i.e., 0.00934 percent) proportion during the draft, the AVF percentages would be 0.00894 for the high-income Zip code and 0.00974 for the low-income. Therefore, 0.00974 divided by 0.00894 is less than 1.1.

Using the same hypothetical high- and low-income Zip codes described earlier, the results in Eq. (10.B.3) imply that the percentage of nonblack enlisted accessions generated by the high-income areas has increased by 0.0001 percentage points since the end of the draft, while the low-income Zip code has witnessed a decrease of 0.0001 percentage points. Similarly, Eq. (10.B.4) shows that the percentage of black enlisted accessions coming from the high-income Zip code would have increased by 0.0006 percentage points since the AVF, and the amount coming from the low-income Zip code would have decreased by a similar amount.

Overall, then, the regression results presented above show, first, that the simpler tabular presentations, such as in Table 10-16, are not masking other changes that have taken place *within* Zip codes. Holding constant average family income in the Zip code, Zip codes with larger numbers of low-income (high-income) families have not evidenced a systematic increase (decrease) in their shares of enlisted accessions since the removal of the draft. Second, the changes that have taken place have been very modest. And third, although the overall result has been a very modest shift toward recruits coming from lower-income areas, this shift is entirely accounted for by the increasing numbers of blacks joining the Armed Forces. Indeed, there has actually been a shift in the reverse direction for blacks and nonblacks individually—that is, the AVF has witnessed larger proportions of blacks *and* nonblacks coming from high-income areas.

Chapter 11

COST OF THE VOLUNTEER FORCE

There is no single issue more visible but less well understood than the cost of the AVF. Indeed, the supposed costs of maintaining the AVF have been one of the principal motivations underlying the renewed interest in the draft that has emerged, particularly since the end of 1976. It is not surprising that the concern for defense costs, particularly manpower costs, has become a recurring theme, especially on Capitol Hill, for the cost issue is far from new. Cost played a crucial role in the draft debate of the 1960s, in the Gates Commission deliberations, and in the early post-draft debate, but the issue assumed an even greater urgency once the defense budget passed the $100 billion mark. What is surprising is the tendency to blame the AVF for these increased costs.

The $100-billion-plus defense budget of the mid-1970s clearly offers cause for concern—especially since burgeoning defense manpower costs consume over half this budget, at the expense of other defense objectives such as force modernization. However, attribution of these rising manpower costs to the AVF is plainly incorrect. In fact, it will be shown that the volunteer force has added less than $300 million to the budget cost of defense manpower—about two-tenths of one percent of the defense budget.

The misplaced notion that the AVF is at least partially, if not largely, responsible for soaring manpower costs can probably be traced, first, to simple comparisons of costs in the 1970s with those of the 1950s and 1960s and, second, to past estimates of AVF costs. Not only did past estimates uniformly overstate the true costs, some studies have estimated the cost of the AVF at somewhere between $3 and $5 billion annually.[1] Moreover, although the sources of manpower cost growth were at work long before the advent of the AVF, the public did not really become aware of the magnitude of these costs until the 1970s, which led to the association of these large manpower costs with the volunteer force.

The analysis presented in this chapter shows that the AVF provides the opportunity to realize substantial cost savings if the appropriate policy changes are implemented. By failing to examine the real sources of defense manpower cost increases, the debate has failed to spur the type of dialogue and policy changes needed to realize these very large potential cost savings. That is, by using the AVF as a scapegoat for rising manpower costs, the policy community has neglected alternatives for controlling future manpower cost increases. Thus, although it is common to hear that manpower costs consume 60 percent of the defense budget, it is uncommon to hear an articulate discussion about how these costs might be better controlled.

[1] See, for example, Chap. 6 of *Problems in Meeting Military Manpower Needs in the All-Volunteer Force*, General Accounting Office, Report B-177952, Washington, D.C., May 1973.

THE COST ISSUE

At the very core of the cost issue is the basis of comparison: What should be compared with what? From the standpoint of budget expenditures alone, it is unrealistic to simply compare manpower costs today with what they were under the draft. Instead, today's costs must be compared with *what they would have been had the draft remained,* for this is the only way to separate out the true AVF costs.

This method of comparison is of course much more difficult than the simple comparison of today's costs with yesterday's, since it involves the important and essentially unverifiable assumption about what manpower costs would have been under the draft. But many previous estimates have impaired their validity by failing to include the cost increases that would have taken place even if the draft had remained.

Although the focus of the cost debate has been upon budget expenditures, the appropriate comparison is not between budget costs, but between the amounts of society's real resources consumed—i.e., economic cost—with and without the draft. In this regard, the Gates Commission argued that the approximately $2 billion increase in budget expenditures that would result from its proposed pay increase for first-term personnel should not be viewed as an increase in the true cost of manpower, but rather as a redistribution of the burden of paying for the real resources used for defense. Moreover, by disguising the true cost of manpower, the draft encouraged the development and use of wasteful manpower policies, thus making the real resource costs of manpower under the draft actually larger than they need be without it.

The problem with this approach to the measurement of AVF costs is that the real resource cost of manpower is a reasonably abstract concept, one that is not readily apparent in the budget accounts, particularly under the draft. The historic focus on budget expenditures is understandable because they are more easily observable than economic costs. But this focus is at least partially responsible for the difficulties in coming to grips with the AVF cost issue and the misleading impressions that have been formed with respect to the effects of the volunteer force on manpower costs. For this reason, the discussion in this chapter examines not only the budget expenditures that have resulted from the volunteer force but, more importantly, the economic costs associated with both draft and volunteer forces.

BUDGET COSTS

It has been argued here that economic cost should be viewed as the policy criterion for evaluating the cost of the volunteer force, but budget costs have in fact become the basis for the debate, largely due to their visibility. This discussion therefore begins with an analysis of the budget expenditures associated with the volunteer force, not because they provide *the* answer, but because they provide a convenient benchmark.

The concern about budget costs can of course be traced to the dramatic growth in the budget expenditures associated with defense manpower. Between the pre-Vietnam base year of 1964 and fiscal 1976, defense manpower costs more than doubled, increasing from $22.5 billion to more than $50 billion, all while the numbers of personnel in uniform declined by 20 percent. These cost increases clearly

signal the growing importance of manpower but do not necessarily point to military personnel (and, hence, the volunteer force) as the principal culprit. Indeed, while the costs for uniformed personnel (active and reserve) about doubled during this period, the costs for such other items as military retirement and civilian personnel underwent a threefold increase. In other words, the increasing budget costs for defense manpower are not primarily attributable to the volunteer force, or even to active duty military personnel.

Exactly what role has the AVF played, then? The discussion below first examines previous estimates of the AVF budget costs (and their shortcomings). An alternative way of estimating AVF budget costs is then provided. Given that growing manpower costs are not a result of the AVF, the next section explores the reasons underlying manpower cost growth. The section concludes with a discussion of the budget costs associated with alternatives to the AVF.

Past Estimates

Recognizing that simple comparisons of manpower costs in the 1970s with those of the 1960s do not provide a basis for measuring the cost of the volunteer force, most previous estimates have instead focused on the Project Volunteer funds expended to approximate the cost of achieving and maintaining the AVF.[2] The results of this approach to the problem, shown in Table 11-1, imply that by fiscal 1974 the volunteer force was adding more than $3 billion to the cost of maintaining a national defense effort. The General Accounting Office went one step further by noting that the Project Volunteer funds did not include certain "soldier-oriented" expenditures undertaken by the Army, such as improvements to barracks, and so forth.[3] Estimating that these expenditures added about $1.1 billion to the Army's budget in fiscal 1974, the GAO concluded that the AVF was adding more than $4 billion to the DoD budget by that time.

This approach to estimating AVF budget expenditures is fundamentally incorrect in that it fails to recognize that the Project Volunteer budget account was essentially a legislative and administrative convenience, not a measure of the incremental budget costs resulting from the AVF. This means, first, that Project Volunteer falsely attributes many non-AVF costs to the volunteer force and, second, that it does not capture the AVF-related budgetary savings.

Nowhere is the misattribution of non-AVF costs to the volunteer force more apparent or more important than in the case of the 1971 pay increase for first-term military personnel. Whereas the Project Volunteer totals include the increases in basic military pay and basic allowance for quarters awarded to *all* military personnel as a result of the passage of Public Law 97-129, the most that can possibly be attributed to the volunteer force is the pay increase for first-termers. Thus, even if the 1971 first-term pay increase is viewed as a cost of the volunteer force, Table 11-1 shows that the Project Volunteer account overestimates the AVF portion of the pay increases by more than $500 million per year—simply because Project

[2] The Project Volunteer Committee was established in April 1969 by the DoD to provide a vehicle for coordinating the various OSD and Service initiatives with respect to the implementation of the volunteer force.

[3] See General Accounting Office, *The Problems in Meeting Military Manpower Needs . . .*, op. cit.

Table 11-1

Budget Expenditures Associated with the AVF: Alternative Approaches
($ millions)

	Fiscal Year				
	1972	1973	1974	1975	1976
I. Project Volunteer[a]					
1. Pay Increase[b]	1546	2377	2377	-	-
2. Special Pays, Scholarships, etc.	31	91	366	-	-
3. Administrative Programs (e.g., recruiters)	309	249	449	-	-
Total	1886	2717	3192		
II. Alternative Approach					
1. Costs					
a. First-Term Pay Increase[c]	1064	1801	1697	1729	1778
b. Recruiting, Bonuses, etc.[d]	317	244	384	416	444
Total	1201	2945	2081	2145	2222
2. "Savings"					
a. Increased Tax Revenue	137	241	234	232	244
b. Selective Service[e]	2	30	57	75	79
c. Training[f]	n.a.	n.a.	n.a.	187	198
Total	139	271	291	494	521
3. Budget Cost					
a. DoD Budget Increase	1201	2045	2081	1958	2024
b. "Cost" to Taxpayer:					
(1) With Pay Increase	1062	1772	1790	1651	1697
(2) Without Pay Increase	135	214	327	154	163

[a]Formal Project Volunteer accounts were not kept beyond FY1974. Source: "Problems in Meeting Military Manpower Needs in the All-Volunteer Force," General Accounting Office, Report B-177952, May 1973.

[b]Includes increases in basic military pay and basic allowances for quarters for military personnel.

[c]Cost of the 1971 AVF pay increase for first-term officer and enlisted personnel, based on the assumption that first-term pay would have maintained its 1970 position relative to career pay.

[d]Incremental recruiting costs associated with the AVF, including recruiter, recruiting support, recruiter aides, advertising, enlistment bonuses, special pay for physicians, and health professional scholarships. Incremental costs were estimated by assuming that recruiting effort (i.e., recruiters, recruiting support, and advertising) would have been continued at their FY1970 rates (adjusted for inflation), and that no enlistment bonuses or health professional special pays would have been paid under a draft.

[e]Cost savings resulting from reductions in the Selective Service System estimated by assuming that, under the draft, the numbers of personnel and the amount of supporting costs would have been maintained at their FY1970 rates. The costs of the Selective Service System if the draft had been retained were then estimated by assuming that (i) support costs would have inflated from their 1970 amount by the wholesale price index and (ii) that personnel costs would have been equal to the FY1973 average personnel cost (inflated over time by the pay increases for GS personnel) times the number of Selective Service personnel in FY1970. Cost savings were then estimated by subtracting the actual Selective Service System costs from the estimated costs had the draft remained (with the exception of fiscal 1976, for which it was assumed that personnel strengths would not have been reduced below their fiscal 1975 levels, in order to maintain an effective standby draft).

[f]Cost savings resulting from fewer two- and three-year enlistees and inductees. Estimates of cost savings prior to FY1975 not available, but were probably quite small because the increased length of the initial obligation (and the corresponding savings from lower training costs) had probably not taken effect. Source: Andrew Uscher, "DoD Manpower Costs," speech presented to the Manpower Commission, May 30, 1974. Uscher's estimates of savings in training costs were halved, so as to present a conservative estimate.

Volunteer includes the politically inspired, but not AVF-required, pay increase for career personnel.[4]

Similar arguments can be mustered for other elements of the Project Volunteer account. For example, recruiting expenditures that can properly be attributed to the AVF are overestimated, since many of these costs would have been incurred if the draft had remained.[5] Even with a draft system, the Services need a reasonably sized recruiting establishment in order to attract and process the longer-serving personnel needed but not provided by the draft. This is amply illustrated by the fact that during fiscal 1970, more than three years before the draft was ended and even before the release of the Gates Commission recommendations, the military services collectively had more than 7,200 recruiters in the field, only 40 percent fewer than they maintained during fiscal 1974.[6]

The Project Volunteer account also includes some funds expended for the selective reenlistment bonus, despite the fact that reenlistment bonuses were instituted during the draft. Indeed, if anything, reenlistment bonus costs would probably have been larger with the draft than without it, since larger bonuses would probably be needed to obtain the desired numbers of reenlistees from cohorts with large proportions of draft-motivated volunteers. Thus, what is entered in Project Volunteer as a cost of the AVF ought probably to be viewed as a saving. In a similar vein, the GAO's inclusion of such "soldier-oriented" programs as improvements to living quarters in their AVF cost estimates fails to take into account the fact that many of these programs were originally scheduled for implementation in the mid- to late 1960s but were deferred because of the large amounts of money being spent in Vietnam at that time.[7]

Finally, Project Volunteer includes costs for items such as in-service education opportunities, recreation programs, and civilianization of kitchen duties, when in fact, these would probably have been undertaken whether or not the draft had been ended.[8] That is, such programs were simply "good management," irrespective of the decision to end the draft, but for management convenience they were grouped with other AVF programs.

The larger point is that the Project Volunteer account should not be viewed, nor was it originally intended, as a measure of the incremental budget costs resulting

[4] Recall from Chap. 6 that the Gates Commission did not recommend pay increases for career personnel (nor did the bill that originally passed in the Senate). Thus, the pay increase for careerists (in the form of a large boost in quarters allowances) was an essentially political decision pushed by the House of Representatives, not an AVF-required policy.

[5] The case of recruiting expenditures is actually a bit more complicated. Specifically, the Project Volunteer account estimated incremental recruiting expenditures as the simple difference between actual fiscal 1974 recruiting costs, for example, and the actual costs incurred in fiscal 1971. In so doing, it obviously failed to take into account the substantial inflation and pay increases that occurred between fiscal 1971 and fiscal 1974. Thus, rather than the $210 million fiscal 1974 recruiting costs shown in Project Volunteer, a more accurate figure would seem to be about $140 million incremental fiscal 1974 recruiting costs. (Moreover, there is the additional, though small, factor of double counting in the Project Volunteer account, since it includes the pay increases awarded to recruiters twice—once under the AVF pay increase and again under the increased recruiting effort accompanying the volunteer force.)

[6] It is interesting to note that the Services spent advertising money even under the draft, about $7 million in fiscal 1970.

[7] Project Volunteer also included some costs spent for improvements to living quarters, about $100 million between fiscal 1972 and 1974.

[8] Again, it is interesting to note that whereas the civilianization of kitchen duties is counted in Project Volunteer as an AVF cost, under the heading of "other service initiatives," the reductions in the numbers of military billets resulting from this management solution are not counted as savings, thus illustrating the asymmetry of the Project Volunteer account.

from the volunteer force. On the one hand, the DoD had an incentive to put many of these budgetary items into the Project Volunteer budget account because that simplified justification of the expenditures. On the other hand, and more important, it was simply inefficient to manage AVF-related programs such as the incremental recruiting effort separately from programs not implemented directly as a result of the volunteer force. Thus, the past fixation on Project Volunteer has led to estimates that substantially overstate the cost of the volunteer force.

Cost of the AVF

The key to measuring the budget expenditures that have resulted from the removal of the draft is in determining what manpower budget costs would have been had the draft continued. This in turn requires specific assumptions regarding the force sizes that would have been maintained under the draft and the incremental budget costs to support these given force strengths.

Assuming, for the present, that force sizes would have varied under the draft as they have in fact varied without it, measurement of AVF costs reduces to a determination of what budget costs would have been required to support the force strengths of the early AVF years. Costs that could be included with such an approach include incremental recruiting expenditures (such as recruiters, advertising, and enlistment bonuses) and the pay increases awarded to first-term military personnel.

Results calculated with this approach appear in Table 11-1 and reveal cost estimates significantly smaller than the Project Volunteer estimates of AVF costs. The reasons for this divergence are twofold, as indicated earlier. First, the Project Volunteer totals include the increases in basic military pay and the basic allowance for quarters awarded to all military personnel in November 1971, whereas those shown for the alternative approach include the pay increase for first-term personnel only. Second, the Project Volunteer totals include all recruiting expenses, bonuses and special pays, improvements to living quarters, education programs, etc., per the discussion above. The alternative approach is instead based on estimates of (1) the incremental recruiting expenditures (for recruiters, advertising, bonuses, and so forth) under the assumption that recruiting effort would have been maintained at its fiscal 1970 level had the draft been retained, and (2) the other incremental AVF budget costs such as enlistment bonuses.[9] Together, then, the costs that can even remotely be associated with the AVF are between $0.5 and $1.0 billion less than those implied by the Project Volunteer totals.

In addition to overestimating the costs associated with the AVF pay increase and the increased recruiting effort, the Project Volunteer approach also fails to take into account the budget savings and offsets to cost increases that have taken place since the removal of the draft. For example, partially counterbalancing the first-term AVF pay increase are the increased tax revenues collected as a result of the higher rates of pay earned by junior personnel. This offset to the larger budget costs of first-term personnel does not of course show up in the DoD budget but is instead reflected in the larger tax revenues collected by the Treasury. Thus, the *net* increase to the taxpaying public is not the total of first-term pay increases, but rather this total *less the amount of increased tax revenues.* The effect of counting the net

[9] That is, education programs, reenlistment bonuses, improvements to living quarters, and "other service initiatives" were specifically excluded.

pay increase for first-termers, as opposed to the gross pay increase for all military personnel, is that the additional burden imposed on the taxpayer is about $1 billion less than that implied by the Project Volunteer total.

Second, the Project Volunteer account does not reveal the budgetary savings realized from reductions in the Selective Service System. To illustrate, the Selective Service System had about 8,600 full-time equivalent personnel in fiscal 1970.[10] Assuming that an effective emergency standby draft could be maintained by a staff of about 2,500, the implementation of the AVF and corresponding reductions in the Selective Service System resulted in budgetary savings amounting to $75 million or so in fiscal 1975 (about the same amount as was spent for the combat arms enlistment bonus).

Third, the conventional approach to estimating AVF budgetary costs does not include some of the other savings such as reductions in the amount of training given to military personnel. The Project Volunteer account, for example, includes the enlistment bonuses for the combat arms as a cost of the AVF. Yet, to receive a bonus, a new recruit must have at least a high-school diploma, must be at least a Category III, and must obligate himself for a four-year enlistment tour (versus the standard three-year enlistment or two-year draft tour), thereby reducing the numbers of personnel requiring training because of the lower personnel turnover rates in the combat arms. In other words, the Project Volunteer account includes the increased costs associated with enlistment bonuses, but not the savings that have resulted.

The overall increase in the DoD budget that can be attributed to the volunteer force in fiscal 1974, for example, therefore amounts *at most* to about $2.1 billion—$1.1 billion less than the Project Volunteer total, as shown in Table 11-1. The increased cost to the taxpayer has been even less, since some of the savings and offsets to these cost increases (specifically, the increased tax revenues and reductions in the Selective Service System) do not show up in the DoD budget, but rather appear in other elements of the Federal budget. Thus, even if the 1971 pay increase for first-termers is counted as an AVF cost, the net increased cost to the taxpayer was $1.8 billion in fiscal 1974.

Finally, yet equally important, it should be recalled that the Gates Commission argued vigorously that first-term military pay should be increased, irrespective of whether the draft should be ended. Indeed, the moral arguments for raising first-term pay were stronger if the draft was to be retained than if it was not, simply because of the inequities imposed on those who would be required to serve under a selective service draft.[11] Therefore, a persuasive argument can be made for not counting the AVF pay increase for junior military personnel as part of total AVF budgetary expenditures. If the pay increase is excluded, total AVF budgetary expenditures have amounted to a few hundred million dollars annually, not the

[10] The Selective Service System had 8,635 full-time equivalent positions in fiscal 1970; 8,372 in 1972; 5,942 in 1973; 3,318 in 1974; 2,253 in 1975; 220 in 1976; and is projected to have none by 1978. Budgetary savings for fiscal 1975 and beyond, however, are based on the assumption that an effective standby draft would require about 2,500 personnel. (That is, an effective standby draft could be based on fewer personnel than the Selective Service System because it could rely on other Federal facilities for space and support and would not require the sizable infrastructure maintained by the Selective Service System. The 2,500 personnel "needed" to staff such a standby draft capability is an admittedly arbitrary estimate but was based on conversations with various defense officials.)

[11] In fact, a substantial amount of floor discussion in the Congress was devoted to the fact that the then-prevailing first-term pay rates put thousands of American servicemen below the poverty level.

several billion dollars usually counted as resulting from the volunteer force (see Table 11-1).

The discussion thus far has been based on the explicit assumption that manpower strengths under the draft would have been the same as they have been under the volunteer force. The analysis presented earlier in Chap. 5, however, indicated that the amount of manpower used for defense purposes ought to be a function of the cost of manpower. Thus, by pricing manpower below its "true" cost to society, the draft encouraged the use of too much manpower through inefficient policies of manpower management and utilization.

This theoretical argument is given some empirical support by a casual review of the historical patterns in manpower strengths. For example, the DoD employed (directly or indirectly) about 4,076,000 personnel in 1964: 2,687,000 uniformed, 1,030,000 direct-hire civilians, 140,000 indirect-hire civilians, and 219,000 contract hires. In fiscal 1976, by way of contrast, the DoD employed about 3,667,000 individuals: 2,087,000 uniformed personnel, 1,029,000 direct-hire civilians, 96,000 indirect-hire civilians, and 455,000 contract hires. Thus, as manpower costs have risen, the military has adjusted both the numbers and mix of personnel it employs.

These reductions in personnel strengths do not necessarily imply an equivalent reduction in defense capability, since rising manpower costs have also spurred greater efficiency in using manpower resources. To illustrate, a recent report by the Congressional Budget Office notes:[12]

> . . . Through a combination of efficiency cuts and changes in the force structure, the services reduced total military manpower requirements by 60,200 spaces between fiscal year 1974 and 1976, *while at the same time increasing the number of active divisions, tactical air wings, and naval combatant ships* . . .

It is of course difficult to predict how manpower strengths would have changed had the draft remained, but it is interesting to note that it would have cost about $62 billion to maintain the 1964 manpower force structure in 1976 even if the first-term pay raise had not been implemented, as opposed to the actual expenditures of some $60 billion in fiscal 1976 (based on the assumption that average costs would have been as they in fact are). In other words, viewed from this perspective about what force strengths would have been maintained in the presence of the draft, implementation of the AVF may have resulted in *budget savings* of $2 billion or so.

To summarize, determination of the additional expenditures brought on by the removal of the draft is a difficult problem and depends critically upon what is being compared. Depending of course on the particular assumptions adopted, the discussion above suggests that the maximum expenditure that can properly be attributed to the volunteer force is no more than about $1.8 billion a year, only about 2 percent of the defense budget. Moreover, if the 1971 first-term pay raise is not counted as an AVF cost, under the rationale that such a pay increase was necessary to offset at least part of the inequities created by having only a selective service draft, then *the costs of maintaining the volunteer force amount to only a few hundred million dollars a year.*

[12] *The Costs of Defense Manpower: Issues for 1977*, Congressional Budget Office, U.S. Government Printing Office, Washington, D.C., January 1977, p. 7, emphasis added.

Finally, by recognizing that implementation of the AVF has resulted in improved manpower utilization policies that have enabled the DoD to reduce force strengths, the AVF may have actually led to budget savings of up to $2 billion per year.

Sources of Manpower Budget Increases

The preceding discussion has demonstrated that the attribution of rising manpower costs to the volunteer force is basically incorrect, but it must be emphasized that concern for manpower costs in general is not. Manpower costs have grown enormously since the early 1960s, as shown in Chap. 2, and controlling these costs in the future will continue to be one of the major challenges before the DoD and the Congress.

To understand the opportunities for controlling future manpower costs, it is important to understand past cost increases also. In this regard, manpower costs are basically a function of both the numbers (and types) of personnel used and the amount paid to these personnel. Although a more complete examination of both sets of issues must be deferred to Part III of this report, a review of the factors concerning how much is paid to defense personnel helps to shed some light on the reasons for the enormous growth in manpower costs during the last two decades—and hence on the opportunities for realizing cost savings in the future.

As shown in Table 11-2, the reasons underlying the tremendous growth in manpower costs—and, specifically, the amount paid to defense personnel—can be traced back three decades or more. To begin with, the period immediately following World War II saw the first widespread use and implementation of the 20-year military career. The 30-year career had been the historical norm, and this major policy change would come to have a dramatic effect on military retirement costs about 25 years later.

There were relatively few changes in compensation and retirement policies during the 1950s, the main ones being the introduction of reenlistment bonuses in 1952, the Civilian Health and Medical Program for the Uniformed Services (CHAMPUS) in 1956, and proficiency pay in 1958.

Many such changes, however, were implemented during the 1960s. For example, the "comparability" pay principle for civilian employees of the Federal government was introduced, whereby the official policy became one of paying General Schedule personnel at a level comparable to private sector wages and salaries. Similarly, although military pay had been increased at only infrequent intervals during the 1940s and 1950s, 1963 marked the beginning of annual pay increases for career military personnel. Even entering recruits, whose pay had been frozen since 1952, began to receive annual pay increases starting in 1966.

The Rivers Amendment, passed in 1967, required further that military pay increases be comparable (in terms of percentages) to the pay increases for the white collar Federal civilian work force. The Rivers Amendment had an interesting feature in that it also mandated that the entire increase go to basic military pay, which of course makes up only a portion of total military pay—i.e., RMC. Thus, to keep the percentage increase for RMC comparable to that for Federal civilians, every 4 percent increase in Federal civilian pay resulted in a 5 percent increase in basic military pay. Because other compensation items such as retirement and separation pay are tied not to total military pay but to basic pay, these other items

Table 11-2

Chronology of Major Factors Affecting Defense Manpower Compensation

1946-48	20-year military retirements
1952	Reenlistment bonus
1956	Civilian Health and Medical Program for the Uniformed Service (CHAMPUS)
1958	Proficiency pay program
1962	Federal Salary Reform Act: Beginning of GS "comparability"
1963	Beginning of annual pay increases for career military
1965	Cost-of-living adjustments for Federal retired pay
1966	Beginning of annual pay increases for military recruits
1966	Variable reenlistment bonus
1966	Major revisions to CHAMPUS
1967	"Rivers Amendment": Comparable pay increases for military
1967-69	"Catch-up" pay raises for career military
1969	"1% kicker" for adjusting Federal retired pay
1970	Introduction of "automatic" annual Federal pay increases
1971	AVF pay increase for first-termers
1971	Substantial pay increase (BAQ) for career military
1971	Authorization for enlistment bonus and other AVF-related special pays
1972	Double pay increase for Federal employees (January and October)
1975-76	Pay "caps" for Federal employees
1976	Elimination of "1% kicker"

(often called drag-alongs) increased much faster than they probably should have. In addition to the Rivers Amendment, so-called "catch-up" pay raises for career military personnel—to bring their pay in line with private sector wages and salaries—were put into effect during the period 1967 to 1969.

Pay policy was not the only item to evidence change during the 1960s; the military fringe benefit package was also improved, especially for retired personnel. For example, 1966 saw a substantial liberalization in the CHAMPUS program, including increases in both the benefits and the number of beneficiaries (primarily the inclusion of retired personnel). In fact, this liberalization would be largely responsible for driving the costs of CHAMPUS up to more than $700 million by 1978. Implementation of the "1 percent kicker" for adjusting Federal military and civilian retirement pay in 1969 meant that for every 3 percent increase in the cost of living, there would be a 4 percent increase in retirement pay, thus increasing retirement costs even more than the cost of living.

The 1970s witnessed the beginning of the so-called automatic annual pay increases for Federal employees,[13] the substantial increase in quarters allowance for career military personnel that was tacked onto the 1971 AVF pay bill, and the double pay increase for all Federal employees that was implemented in 1972.[14] Together, these various changes in pay policy meant that the amount paid to defense personnel—military and civilian alike—would be largely outside the control of either the DoD or the Congress, except of course for explicit intervention to the contrary, such as the AVF pay increase in 1971 and the pay "caps" implemented in 1975-1976.

Thus, the list goes on. In fact, the only increased compensation costs that can be even remotely related to the volunteer force are the large pay increase for first-term military personnel and the enlistment bonus which were implemented in 1971. As noted earlier, even the first-term pay increase should not really be viewed as an AVF cost, since the Gates Commission argued vigorously that pay discrimination against junior military personnel ought to be eliminated for equity reasons alone—whether or not the draft was to be ended.

Table 11-2 is not, of course, meant to provide an all-inclusive list of the factors that have affected defense manpower compensation over the years. Nor is it meant to imply that any or all of these changes that have taken place are necessarily inappropriate. Rather, the point is simply that increasing manpower costs are a direct result of the individual and cumulative effects of many different policy decisions implemented since the end of World War II—almost all of which were entirely unrelated to the volunteer force. Thus, although increasing manpower costs are clearly an important problem, they are just as clearly not a result of the volunteer force.

The reason why the draft provides so little leverage over manpower costs in the post-Vietnam environment is illustrated by Table 11-3, which shows that the cost elements over which the draft provides little or no control are the ones that have been primarily responsible for the enormous increase in defense manpower costs. Between 1964 and 1976, for example, the costs for retired personnel increased about six times; the costs for civilian personnel employed by the DoD more than doubled; the costs for those uniformed personnel beyond the first two years of service almost doubled; and the cost for "other" items nearly tripled.

The pay for military recruits has, of course, been raised substantially relative to what it was in the 1960s, but the total pay bill for those in their first two years of service—i.e., those most immediately affected by the draft[15]—amounted to only

[13] Unless the President explicitly intervenes and the Congress concurs (by not overriding the President's recommendation), annual Federal pay increases are set "automatically" according to the recommendations of the Advisory Committee on Federal Pay. These, in turn, are based on a complicated procedure involving surveys of private sector wages and salaries, and consultations with the President's Pay Agent and Federal employees' representatives. For a discussion of the process, see Defense Manpower Commission, op. cit.

[14] Federal pay was increased twice in 1972: in January and again in October.

[15] To be sure, the draft also served to depress somewhat the wages of those in their third and fourth years of service. However, because the Services needed to attract longer-serving enlistees (as well as two-year draftees), the military was not able to hold down the pay for those in their third and fourth years of service as much as that for those in their first and second years. To illustrate, military pay for those in their first and second years of service during the draft was about 40 percent below the median wages and salaries earned by comparably aged and educated civilian workers, while the military pay for those in their third and fourth years was only 10 percent below. Thus, although a draft can be used to hold down the amount paid to those in their third and fourth years, the degree to which this can be done would not seem to yield significant budgetary savings under a return to the draft.

Table 11-3

Defense Mapower Costs by Source[a]
($ billions)

Year	Active Military[b]				Civilian[c]	Other[d]	Total
	First-Term						
	0-1 YOS	2-3 YOS	Career	Retired			
1956	2.1	2.0	6.8	0.5	5.3	2.6	19.3
1964	2.3	2.4	7.6	1.2	7.6	4.4	25.6
1976	5.2	4.6	13.5	7.3	16.6	11.5	59.9

[a]Sources: see Table 2-5

[b]"First-term" broken into less than 2 years of service (recruits) and those with at least 2, but less than 4 years of service. Distribution of active military personnel costs based on estimates of average pay according to years-of-service and on the years-of-service distribution.

[c]Includes direct hires and indirect hires.

[d]Includes family housing, reserve pay and allowances, personnel support, and contract-hires.

$5 billion or so in fiscal 1976. Thus, the draft provides leverage over only a portion of manpower costs, and that portion adds up to less than 10 percent of total manpower costs. *In other words, the draft provides little or no control over cost elements that collectively make up about 95 percent of the defense budget.*[16]

The real key to controlling manpower costs therefore does not lie so much in the amount paid to recruits, since this makes up less than 10 percent of the manpower budget, but rather in the amount paid to personnel in general and in the efficiency with which defense personnel are used.

Alternatives to the AVF

A corollary to what the volunteer force has cost is what the budget expenditures would be for alternatives to the AVF. As discussed earlier, there are several alternative forms of conscription, including national service, universal military service, universal military training, and selective service. As also indicated, because of force readiness requirements and force strength constraints, universal military service and universal military training are not likely to represent viable procurement options under present defense requirements; thus, a national service draft and selective service represent the remaining frequently discussed alternatives to the AVF.

[16] By way of contrast, the draft provided considerable leverage over budgetary expenditures in the 1950s and early 1960s. Because of the smaller population base and large force sizes, the budget expenditures required for an all-volunteer military in 1956, for example, would probably have added from $4 to $8 billion dollars. Combined with the fact that other manpower costs—most notably military retirement—had not yet come home to roost, an all-volunteer military would thus have added between 20 and 40 percent to the manpower budget. In the 1970s and 1980s, just the reverse is true: a large population base, smaller forces, and large "noncontrollable" costs.

The budget costs and savings that would result from a reinstatement of the selective service draft depend, as did the determination of AVF budget costs, on what is assumed regarding military pay for first-termers; costs and savings associated with recruiting, training, and operation of the selective service administration; and force sizes under the draft. Given the inherent inequities associated with a selective service draft for the United States for the remainder of this century—namely, that only about one out of every five young men would be forced to serve—it seems unlikely that the government would add further to the inequities by reducing military pay for first-term personnel below the present "comparability" levels. In other words, it is unlikely that pay would be rolled back (in either nominal or real terms) from the present level. The budget savings resulting from a selective service draft again would therefore amount to only the few hundred million dollars difference between the cost savings resulting from reductions in recruiting activities (e.g., recruiters, bonuses, etc.) and increased costs resulting from increased training and the reactivation of selective service.[17]

Determination of the budget costs resulting from implementation of a national service policy where all young men (and possibly young women) would be required to perform a period of service for the country likewise depends on a variety of factors, including the numbers of young Americans serving in the program (which also depends upon the extent to which young women would participate), the length of the service commitment, the pay for national service, the costs of accession and training, and the costs of administering the program.

Assuming that about 2 million young men (and an equal number of young women) become 18 years old every year, that between 75 and 87.5 percent of all those coming of age would be found eligible for national service,[18] and that military force readiness requirements dictate two years minimum length of service, the number of young men in national service at any point in time would be between 3.0 and 3.5 million, as shown in Table 11-4. (Depending on how many women would participate, the total number of national service members would be between 3 and 7 million.)

Assume further that (1) the pay for national service would be about $2.30 (the Federal minimum wage) to $2.50 per hour,[19] and (2) the costs of training, accession and separation (primarily travel and processing), and administration are as shown in Table 11-4. The total costs of national service would therefore be somewhere between $20 and $40 billion annually if only men were eligible for national service,

[17] It is interesting to note that even if no pay increases were awarded to first-termers for 10 years, the annual budget savings at the end of 10 years would amount to only about $2 billion per year (relative to a total defense manpower budget of $75 to $85 billion). The reason the draft provides so little leverage for controlling U.S. defense costs is that the draft affects only first-term pay significantly, and first-term pay makes up only about $5 to $7 billion out of the $50 billion plus spent on defense manpower in fiscal 1976. (See Table 11-3.)

[18] It is likely that the disqualification rates for a national service program would be substantially below those experienced during the selective service draft, since the same rationale (e.g., force readiness, etc.) could not be used to exclude the large numbers of individuals who were in fact disqualified for physical or mental reasons during the draft. Moreover, viewed as a social policy, national service might have its greatest positive impact on those who would have been disqualified under the selective service draft.

[19] Even if the 1971 first-term pay increase had not been implemented and first-term pay had simply maintained its position relative to the pay for careerists (as required by law), the pay for the first two years of military service would have been about $4,960 per year in fiscal 1976—about $2.38 per hour. To expect that pay could be reduced much below this level is at best unrealistic.

Table 11-4

Cost of National Service: Men Only[a]

Cost Element	Minimum			Maximum		
	Number (000s)	Average Cost ($/yr)	Total Cost ($bil)	Number (000s)	Average Cost ($/yr)	Total Cost ($bil)
Salary[b]	3,000	$ 4,750	$14.25	3,500	$ 5,200	$18.20
Accession/Separation	1,500	1,000	1.50	1,750	2,000	3.50
Training	1,500	1,500	2.25	1,750	3,000	5.25
Administration[c]	300	12,500	3.75	700	15,000	10.50
TOTAL			21.75			37.45

[a]Total program costs depend on how many women would serve.

[b]Annual salary minimum based on minimum wage of $2.30 per hour; maximum based on wage of $2.50 per hour. Number based on cohort of two million young men; minimum number based on disqualification rate of 25 percent and two-year service tour; maximum number based on disqualification rate of 12.5 percent and two-year service tour.

[c]Minimum based on one administrator (supervisors, clerical, etc.) per 10 service members; maximum based on one administrator per five service members.

with $30 billion per year representing probably the best estimate.[20] Recognizing that about $5 billion in costs are currently incurred for first-term enlisted personnel who would be replaced by conscripts, the best estimate for the net budget increase resulting from a national service policy is about $25 billion.

Some women would also participate, since it is unlikely that they would be legally ineligible for service even if they were not required to serve, thus adding perhaps another $10 to $40 billion. The total cost of a national service draft could thus vary between $20 and $80 billion, depending upon which assumptions would prevail and how many women would serve. Under the assumption that 50 percent of all young women would serve, the best estimate for the total cost of a national service draft is probably about $45 billion per year.

[20] It is important to emphasize that these cost figures are only illustrative of the potential magnitudes of the budget costs associated with a national service draft. To illustrate the alternatives, the problem of salary and service commitment differential (between military and nonmilitary service) could be resolved by first maintaining military pay for recruits at its present level—about $7,000 per year for the first two years of military service—but paying nonmilitary national service members $3,500 per year. Second, under such a scheme, nonmilitary national service participants might be required to serve only one year, as opposed to the minimum two-year commitment for military service. Assuming that 1.5 million young men would become eligible for national service each year and that military accession requirements would number about 400,000 per year, the total salary cost for such a national service program (i.e., for both military and nonmilitary service) would amount to about $9.5 billion per year, as compared with the $14.25 billion shown in Table 11-3. That is, the military portion is calculated as 800,000 (i.e., 400,000 recruits for two years each) times $7,000, yielding $5.6 billion; the nonmilitary portion is calculated as 1.1 million (i.e., 1.5 million in the pool less the 400,000 serving in the military) times $3,500, yielding a total of $3.9 billion.

ECONOMIC COSTS

Since the appropriate measure of cost for policy purposes is the amount of society's real resources consumed, the traditional focus on AVF budget expenditures has failed to illuminate the "real" costs and savings resulting from the removal of the draft. Because of the way that the budget accounts are structured and because the draft enabled the military to pay less than the economic cost for conscripted labor, budget expenditures for military manpower do not necessarily reflect the true cost of manpower to society, particularly under the draft. These two aspects of the problem—i.e., the structure of the budget accounts and the fact that draft wages did not reflect the true value of labor resources under the draft—provide the basis for rough estimates of the economic cost of manpower with and without the draft.

To estimate the economic cost of military personnel, we need first to measure those personnel costs that are not directly recorded into the military personnel budget account. The two major items in this regard were shown in Chap. 2 to be the accrued liability for future retirement benefits for those currently in the force and the tax advantage resulting from the tax-exempt status of quarters and subsistence allowances. Second, from Chap. 5 we need to include estimates of the conscription tax (since this measures the difference between the economic value of military labor resources and the amount these personnel were paid) and the costs of its collection.

The results obtained when these other factors are taken into account provide some illuminating comparisons, as shown in Table 11-5. A simple comparison of the budget costs as reflected in the military personnel budget account shows total active duty military personnel costs in fiscal 1976 to be about twice as high as they were in fiscal 1964 (i.e., $23.8 billion as compared with $12.3 billion). However, inclusion of the accrued liability for military retirement, the tax advantage, the conscription tax, and the costs of collecting the conscription tax makes the total costs associated with active duty military personnel in fiscal 1976 only about 50 percent more than they were in fiscal 1964. In fact, expressed in 1976 constant dollars, the nation actually spent less on manpower in fiscal 1976 under the AVF than it did in fiscal 1964 under the draft, despite the fact that real wages in the economy as a whole increased by about 6 percent over this period.

This cost comparison highlights an interesting asymmetry in the budget process regarding the method of manpower procurement. On the one hand, most of the costs associated with the AVF (such as pay raises, bonuses, recruiters, advertising, and so forth) are recorded in the DoD budget, thus making them very visible. On the other hand, many of the costs associated with maintaining a military labor force under the draft were hidden from the DoD budget (e.g., the conscription tax, the costs of collecting the conscription tax, operation of the Selective Service System, and so forth). Thus, whereas a simple comparison of the DoD budget costs might appear to favor the draft, comparisons of the total economic costs incurred actually show the volunteer force to be considerably less expensive than its draft-reliant predecessor.

Making the costs of defense more visible was in fact an important part of the rationale for the AVF, since by disguising the true cost of manpower, the draft encouraged the military to pursue policies and traditions—many of which still remain—that did not and do not make the best use of the nation's resources. Indeed,

the basic theme underlying much of the next four chapters is that continuing these policies and traditions results in unnecessary costs and constraints, enough so that savings of $5 to $10 billion per year could probably be realized without adversely affecting defense capability. By putting the costs of defense "up front," one of the principal by-products of the AVF has been to focus attention on the importance of manpower and the ways of making better utilization of defense resources.

Table 11-5

Economic Cost of Military Personnel
($ billions)

	Fiscal Year		
	1964	1974	1976
Personnel Costs			
Military personnel budget account[a]	12.3	22.2	23.8
Accrued retirement liability[b]	3.1	4.7	5.4
Tax advantage[c]	0.9	1.1	1.3
Subtotal	*16.3*	*28.0*	*30.5*
Conscription Tax[d]			
Tax	2.1	0	0
Costs of collection	2.6	0	0
Subtotal	*4.7*	*0*	*0*
Total: Current dollars	*21.0*	*28.0*	*30.5*
1976 constant dollars[e]	*37.6*	*32.6*	*30.5*

[a] From Table 2-6.

[b] From Table 2-7.

[c] From Table 2-8.

[d] From Table 5-2 (based on constant elasticity formulation).

[e] Based on GNP implicit price deflator.

PART III

RESOURCE ALLOCATION AND MANPOWER MANAGEMENT

Chapter 12

RESOURCE ALLOCATION WITHOUT THE DRAFT

The seemingly endless supply of inexpensive labor provided by the draft fostered an environment in which concern for efficient manpower management and utilization was in many ways of only secondary importance. This resulted in patterns of resource allocation that were frequently driven more by history and tradition than by real resource costs, giving rise to substantial inefficiencies.

As we saw in the last chapter, the advent of the All-Volunteer Force, coupled with increased public awareness of burgeoning manpower costs, has changed all this. Whereas the principal issues before the defense community were once mostly strategic and tactical in nature, more visible and tighter defense budgets now mean that defense capability will be severely eroded unless alternative ways of conducting defense missions are found. The military must find ways to control cost growth in the future and to compete effectively for qualified personnel in the civilian marketplace. New patterns of resource allocation and manpower management are key parameters in finding cost-effective alternatives.

Resource allocation refers to the way in which total defense resources (as represented by the defense budget, for example) are distributed among the various inputs to the defense mission. These inputs include equipment (from such obviously military items as ships, planes, and artillery to such seemingly ordinary items as forklift trucks at a base depot, desks, file drawers, and the like), supplies, and manpower, among others. The point is that there are innumerable ways of conducting the defense mission, each of which uses a different combination of the specific resources, so resource allocation refers to how the military chooses from among the alternatives.

The importance of resource allocation derives from the fact that each defense resource has costs associated with its use. The combination of resource inputs used therefore has major implications for defense costs or, with a given defense budget, for how much capability can be generated. In other words, there are many different technologically efficient alternatives for achieving the defense mission but, given the prices of the specific inputs, there is only one combination that is cost-effective—i.e., economically efficient. Therefore, the amount of defense that can be obtained from a given amount of defense spending is critically dependent upon how defense resources are allocated.

Resource allocation is emphasized here because of the historic preoccupation with "personnel" policy in the defense manpower community. The problem is that manpower costs are driven as much by the numbers and types of personnel required as by such personnel policies as pay, promotion policy, and career management. Since resource allocation has traditionally been viewed as being outside the manpower planner's purview, the manpower planner has had little control over the fundamental determinants of manpower costs. This has resulted in manpower requirements that are more a function of traditional utilization patterns than of actual costs and needs.

CONCEPTUAL FRAMEWORK FOR DEFENSE RESOURCE ALLOCATION

An analytic framework is needed to properly address the issue of resource allocation. The framework must be sufficiently general to encompass the spectrum of issues raised earlier, such as capital-labor tradeoffs, military-civilian tradeoffs, and so forth. But at the same time, it must be specific enough to provide guidelines to the actual allocation of resources among these inputs.

The concept of the *production function* from economic theory offers a useful analytic device for investigating the conditions for efficient allocation of military resources. Guidelines for efficient manpower utilization can be developed from a careful analysis of the relationships between military inputs and outputs. These guidelines make it possible to determine the importance of changes in the prices of inputs and how the military should respond to these changes.

The Production Function and the Optimum Allocation of Resources

The technological relationship between inputs and outputs is given by the production function—that is, the production function specifies the maximum amount of output resulting from each alternative combination of inputs.[1] In its simplest form, the production function is commonly written in terms of primary (versus intermediate) inputs. The two-factor production function—often with capital and labor as inputs—is a useful representation of the military production process.

The general two-factor production function may be given algebraically as

$$Q = f(X_1, X_2), \tag{12.1}$$

where Q = amount of output produced,
X_1 = amount of the first input, and
X_2 = amount of the second input.[2]

The production function in Eq. (12.1) may be represented graphically as in Fig. 12-1. Each of the curved lines in the (X_1, X_2) plane is an isoquant—that is, it represents a fixed level of output. Each isoquant shows the various combinations of the two inputs capable of producing the given amount of output. The slope of the isoquant measures the rate at which capital and labor can be substituted for one another. Therefore, the curvature of the isoquants in Fig. 12-1 reflects the intuitively appealing notion that as less and less of one input is used, it becomes increasingly difficult to further substitute for that input.

[1] For a more thorough discussion of the issues related to the production function, see Paul A. Samuelson, *Foundations of Economic Analysis*, Harvard University Press, Cambridge, Mass., 1947; and Robert M. Solow, "The Production Function and the Theory of Capital," *Review of Economic Studies*, XXIII, 1955-1956, pp. 101-108.

[2] Using the capital-labor formulation, for example, the production function could be written in terms of several different types of labor and capital inputs:

$$Q = f(K_1, \ldots, K_n; L_1, \ldots, L_m), \tag{12.1a}$$

where $K_i = i^{th}$ type of capital input, $i = 1, \ldots, n$; and $L_i = i^{th}$ type of labor input, $i = 1, \ldots, m$.

The military planner, for instance, may wish to consider the tradeoffs between highly skilled maintenance personnel and less highly skilled (and, hence, less costly) maintenance personnel. Such an examination follows easily from Eq. (12.1a).

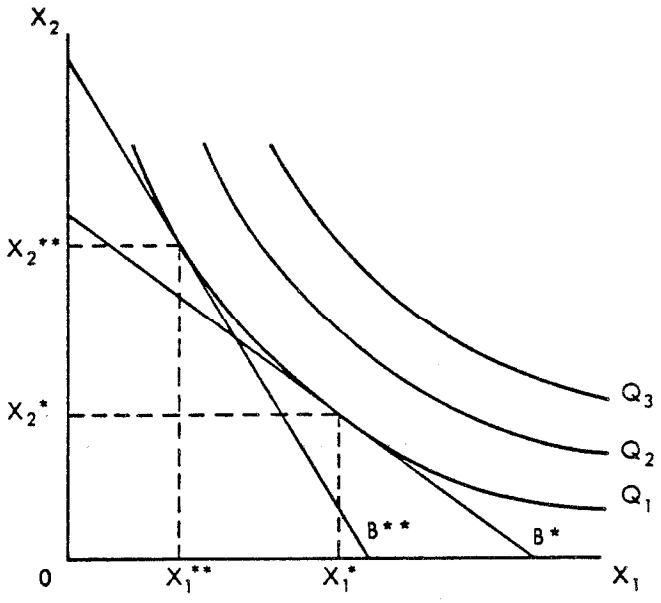

Fig.12-1—A hypothetical production function

The production function does not, by itself, determine the optimum allocation of resources; it simply identifies the alternative combinations of inputs that are *technologically* efficient (or feasible) for the production of a specified amount of output. The optimal allocation of resources is instead the particular combination that is *economically efficient* and is the result of putting the production function into a cost framework. Specifically, the optimal resource allocation is determined as that combination that maximizes output for a given budget or, in terms of its analytic equivalent, the combination that minimizes costs for a specified objective output.

This can be illustrated in terms of the simple two-input production function cited earlier. Since the total cost of using any combination of these inputs can be written as

$$C = p_1X_1 + p_2X_2, \tag{12.2}$$

where C = total cost of the inputs and
p_i = cost or price (per unit) of the services provided by the i^{th} input,

the optimum allocation of resources can be found by maximizing Eq. (12.1) subject to a budget constraint imposed via Eq. (12.2).[3]

Given the costs of the two inputs, p_1 and p_2, and the budget constraint, B, it can be shown that a necessary condition for the optimal allocation of resources between the two inputs is

$$\frac{MP_1}{MP_2} = \frac{p_1}{p_2}. \tag{12.3a}$$

[3] In its analytic equivalent (called the "dual" in economic theory), the problem becomes one of minimizing costs in Eq. (12.2) subject to an output constraint represented by Eq. (12.1).

or, equivalently,

$$\frac{MP_1}{p_1} = \frac{MP_2}{p_2} \quad (12.3b)$$

Thus, output is maximized for a given budget B when resources are allocated such that the ratio of the marginal products of the two inputs equals the ratio of their costs—i.e., Eq. (12.3a). In lay terms, Eq. (12.3b) means that it makes sense to use an additional unit of one input only so long as the ratio of the return (i.e., marginal product) to the cost for that input is equal to or greater than that for every other input.

This is illustrated by Fig. 12-1. If the costs of the first and second inputs are such that the ratio of the costs is given by $(p_1/p_2)^*$, then the optimum amounts of the two inputs are such that the ratio of X_2 to X_1 is given by the tangency between the budget line B^* and the isoquant Q_1, thus leaving $(X_2/X_1)^*$ as the optimum for the ratio of the amount of the second input to the amount of the first. This can be more easily visualized by assuming that capital and labor are the two inputs. Equation (12.3a) indicates that resources are optimally allocated between capital and labor when the ratio of the marginal product of labor to the marginal product of capital (usually referred to as the "technical rate of substitution" of capital for labor) equals the ratio of the cost of labor to the cost of capital. Since the technical rate of substitution of capital for labor is a monotonically increasing function of the capital-labor ratio, the optimum capital-labor ratio is a monotonically increasing function of the ratio of the cost of labor to the cost of capital.

The general response to a change in *relative* factor prices can be seen from a closer examination of Eq. (12.3a). Cost is minimized for a specified level of output when the technical rate of substitution of capital for labor equals the ratio of the cost of labor to the cost of capital. Since the marginal products of capital and labor are decreasing functions of the amounts of capital and labor used, the technical rate of substitution of capital for labor is an increasing function of the capital-labor ratio. Therefore, as the ratio of the cost of labor to the cost of capital increases (decreases), the capital-labor ratio should be increased (decreased) such that the technical rate of substitution of capital for labor equals the ratio of the cost of labor to the cost of capital. For example, if the ratio of the cost of labor to the cost of capital increases from $(p_1/p_2)^*$ to $(p_1/p_2)^{**}$, so that the budget line in Fig. 12-1 shifts from B^* to B^{**}, then the optimum capital-labor ratio increases from (X_2^*/X_1^*) to (X_2^{**}/X_1^{**})—that is, by substituting capital for labor.

The above discussion relates to the amounts of physical units of inputs used. That is, if the cost of labor rises relative to the cost of capital, then capital should be substituted for labor—namely, the amount of physical units of capital used should be increased, while the amount of physical units of labor used should be decreased. However, the amount of dollars spent on capital and labor, as a function of the ratio of the cost of labor to the cost of capital, depends on the elasticity of substitution of capital for labor.[4] For example, if the elasticity of substitution of

[4] The elasticity of substitution of capital for labor is defined along the production function isoquant as the percentage increase in the capital-labor ratio resulting from a percentage increase in the ratio of the marginal product of labor to the marginal product of capital. If labor and capital are paid their marginal products (i.e., if w and r equal the marginal products of labor and capital, respectively), then the elasticity of substitution of capital for labor is given by:

$$\epsilon = \frac{\partial(K/L)}{K/L} \frac{\partial(w/r)}{w/r}.$$

For example, if the efficient capital-labor ratio changes by 1 percent as a result of a 1 percent change in ratio of the cost of labor to the cost of capital, then the elasticity of substitution equals 1.

capital for labor is greater (less) than one, the share of the budget spent on labor will decrease (increase) with a rise in the ratio of the cost of labor to the cost of capital. Thus, the share of the budget allocated to labor could actually increase with a rise in the relative cost of labor, even though fewer units of labor would be used. It is therefore misleading to focus solely on the share of the budget allotted to various inputs. Instead, attention should be directed toward the relative costs of capital and labor and the elasticity of substitution of capital for labor.

The foregoing makes the obvious, but important, point that as one or more inputs rise in cost relative to the costs of alternative inputs to the production process, resources should be reallocated by substituting the less expensive inputs for the more expensive ones. As a result, attention should be focused on changes in the relative costs of the various inputs to the defense mission and the relative use of these various inputs.

Military Production Function

The production function illustrates the relationships between various combinations of inputs and the resultant outputs. Thus, the production function representation of the alternative ways of providing national defense is a useful abstraction of the military manager's problem. Conceptually, we could write a production function of the type shown in Fig. 12-1 and then apply the optimization techniques to obtain the least costly combination of military inputs to achieve the specified level of national defense (or, alternatively, to maximize defense effectiveness for a given cost). Unfortunately, in the real world, measurements of the relationships between national defense outputs and military inputs are not easily made. In addition, the precise meaning of a "military production function" is not clear.

Since the production function relates quantities of inputs used to quantities of outputs produced, inputs and outputs must be given in terms of measurable quantities. Such quantities may be hard to come by in the case of providing national defense, as well as in many other activities. Perhaps the most difficult conceptual problem, though, is the definition of output as described earlier in Chap. 2.

One method for dealing with the problem of defining national defense would be to categorize defense according to the various military missions that are part of national defense. That is, national defense can be decomposed into its separate military components.[5] For example, a military component might be the capability to destroy 1,000 tanks in a 90-day Central European war scenario, or the capability to deliver a given amount of bomb tonnage in Southeast Asia, or the capability to provide a given number of surveillance steaming hours in the Mediterranean. Therefore, rather than develop a production function for national defense, we can think in terms of military production functions, which relate military inputs to military outputs (i.e., the "military mission"). This can be represented algebraically as

$$Q = f(M_1, M_2, \ldots, M_n), \tag{12.4}$$

where Q represents national defense and M_i, i = 1 to n, represent the n different military missions. Each of these military missions can be thought of as a function

[5] Presumably, other factors, such as diplomatic skills, would also be a part of the production of national defense. However, the focus here will be on the military components of national defense.

of the inputs to that mission. For simplicity, assume that there are two inputs for each mission: the amount of capital and the amount of labor. The mission production function is then given as

$$M_i = g_i(K_i, L_i), \qquad i = 1, 2, \ldots, n, \tag{12.5}$$

where K_i = capital used in the i^{th} mission, and
L_i = labor used in the i^{th} mission.

It can be shown that the optimal allocation of defense resources between capital and labor is achieved when each mission is separately optimized with respect to capital and labor usage, per Eq. (12.3a) or (12.3b).[6] This enables us to examine the allocation of defense resources to capital and labor by way of the individual military missions. In fact, since the production function for national defense is just the combination of production functions for the specific missions, changes in the allocation of defense resources between capital and labor are a result of changing the allocation within the missions.

The conceptual approach represented by Eqs. (12.4) and (12.5) thus has two important implications. First, because resource allocation at the aggregate DoD level presents an intractable *management* problem—i.e., there cannot be one single resource manager who simultaneously manages the resources for all DoD activities —Eq. (12.5) means that resource allocation must be managed essentially at the mission level. In other words, Eq. (12.5) provides the management approach to resource allocation.

Second, the combination of Eqs. (12.4) and (12.5) provides an *analytic* approach for viewing resource allocation in the DoD. Specifically, since the aggregate DoD capital and labor stocks, for instance, are just the sum of the capital and labor stocks maintained for each mission, Eqs. (12.4) and (12.5) jointly mean that the aggregate DoD output can be viewed as a function of the aggregate DoD capital and labor stocks. To the extent that the mix of military missions has not changed substantially over time, then, the aggregate capital and labor stocks provide a useful analytic tool for investigating how the DoD has historically allocated its resources. Thus, Eq. (12.5) provides a management approach to DoD resource allocation, while Eq. (12.4) provides the link between the management problem and the analytic basis for using Eq. (12.1) as a tool for examining DoD resource allocation.

The production function given in Eq. (12.1) or, equivalently, Eq. (12.5) is directly applicable to the design of new military systems, for the designer of a system is explicitly confronted by a vast array of alternative configurations, each of which may embody different amounts of capital and labor. For example, in the case of a new ship of some specified capability, subsystems for the ship (including support on shore) can each be designed to incorporate different levels of automation (capital intensity). Therefore, the designer faces the type of capital-labor tradeoffs shown in Fig. 12-1 for the total ship, since the ship is the sum of the various subsystems, each of which embodies different amounts of capital and labor. The optimum configuration is that for which the capital-labor ratio satisfies Eq. (12.3a). In other words,

[6] The major condition that must be satisfied for this result to hold is that the missions must be aggregated such that the contribution of the capital and labor of one mission to the output of all others must be small. For example, if daytime and nighttime reconnaissance were managed as separate missions, then each mission commander would most likely require separate aircraft. However, if the same aircraft could be used for both missions, but different cameras were required, the rule of aggregation suggests that these two activities should be managed as one mission with one aircraft and two cameras.

the least-cost solution is obtained when the isoquant in Fig. 12-1 is tangent to the budget line.

The production function is also applicable to the allocation of military resources for existing systems, though the opportunities for changing the mix of inputs are more limited in this case. Generally, the military uses a variety of different systems in the course of fulfilling a specified mission. Further, different combinations of these systems can be used in the performance of a mission. Since these existing systems incorporate different capital-labor ratios, the capital-labor ratio for the mission can be changed implicitly by explicitly altering the mix of systems used. That is, even if each system has a fixed capital-labor ratio, the usage of capital and labor in the mission can be altered by altering the mix of systems. To illustrate, consider a hypothetical antitank mission in a 90-day Central European scenario. The mission may be performed by various combinations of close air support, helicopters, tanks, artillery, infantry, and other systems, each of which most likely embodies a different capital-labor ratio. The capital-labor ratio for the mission can be altered by using different combinations of these systems, even though the capital-labor ratio for each system might be fixed.

For simplicity, the above discussion has been phrased in terms of a simple two-factor production process, with capital and labor as the primary inputs to the defense mission. Although the allocation of defense resources in this aggregate sense between capital and labor is certainly an important policy issue, there are clearly other important allocation issues as well. The discussion should therefore be viewed as illustrative of the types of issues that apply to all resource allocation concerns. The important point is that the allocation of defense resources among the specific factors of production depends on the costs of these inputs. The policy issue is thus not simply one of cutting force sizes in the face of increasing costs, but rather one of making the appropriate tradeoffs among the numerous factors contributing to the defense missions so as to allocate a given resource base in the most efficient manner.

Given the production function for the mission, the optimal allocation of that mission's resources between capital and labor is determined by Eq. (12.3a). *The larger point is that force structure itself should be a function of the costs of the specific inputs.*

Resource Allocation and Manpower Requirements

The above discussion has considerable practical importance for the ways in which the DoD realizes its basic objectives and the costs of doing so. To illustrate this, the following discussion examines briefly the relationship between the resource allocation issues considered thus far in the abstract and actual manpower requirements.

To begin with, manpower requirements are in general a function of four basic factors: the force structure, operations and maintenance policies, the amounts and types of equipment in the force structure, and the types of personnel used. Thus, whereas defense capability varies on a one-to-one basis with variations in the numbers of personnel, other things being equal, variations in any or all of the above four factors will affect both the numbers of personnel required and the corresponding costs of achieving a given defense mission.

At the most aggregate level, the numbers of personnel required are determined in part by the basic structure of the force, where by force structure we mean, first, the numbers of divisions, ships, air wings, and so forth; second, their internal makeup (e.g., the mix of armored and infantry battalions in a division or the mix of strategic and tactical aircraft); and, third, the support infrastructure, including such items as the training establishment, medical support, and central supply. The importance of force structure and its composition was illustrated in the last chapter, where it was noted that the Services recently increased the numbers of divisions, combatant ships, and aircraft in the inventory, while simultaneously reducing total manpower spaces by 60,000—simply by revising the makeup of the support establishment.

In addition to the role played by force structure, the numbers of personnel needed are also driven by basic operations and maintenance policies such as the frequency of maintenance and overhaul cycles and the mix of depot, intermediate, and field maintenance activities required to support the force structure. For example, there was a considerable reduction in Air Force maintenance manpower requirements when the Air Force switched from a two-year depot maintenance overhaul cycle for its F-4 aircraft to a three-year cycle in the late 1960s.

Third, the numbers of personnel required to man the force are a function of the amount and types of equipment in the force. Obviously, more equipment (e.g., tanks) means that more personnel will be needed, other things being equal. Moreover, equipment can be either easy or difficult to operate and maintain, which has a corresponding effect on the numbers of personnel required. Finally, equipment can in some cases be substituted for manpower, and vice versa. The substitution of a forklift truck for warehousemen and the use of replaceable rather than repairable parts are examples.

Last, though generally less well recognized, manpower requirements are also determined in part by the types of personnel used to man the force structure. Fewer very productive personnel can be used to replace a larger number of less skilled personnel, for instance.

Together, these four factors help shape the Services' manpower requirements. In a sense, the first two—i.e., force structure and operations and maintenance policies—can be viewed as establishing the size and organization of the defense effort, while the last two can be viewed largely as matters of resource allocation, given decisions regarding the first two. In other words, the allocation of defense resources has a major impact on manpower requirements. Though certainly not dismissing the importance of the first two determinants of manpower requirements, the analysis presented here focuses on the resource allocation issues, since it has been and will be argued that one of the principal effects of the draft's removal was to alter the cost structure facing the DoD. The mix of manpower and equipment and the mix of individual types of personnel used should therefore be reevaluated in light of these changes in the basic cost structure.

The Production Function as a Tool for Analysis

The analytic framework presented here provides a useful method for examining the issues related to the allocation of military resources among various inputs. In particular, the following have been established:

- Military capability is directly related to the inputs used, so efficient management of military resources is achieved by choosing appropriate combinations of those inputs.
- The classification of inputs into broad categories, such as capital and labor or military and civilian labor, is a useful device for examining alternative management approaches to such problems as rising manpower costs and rising procurement costs.
- The optimum allocation of military resources among specific inputs is then a function of the relative costs of these inputs. Thus, for example, the optimum capital-labor ratio is an increasing function of the ratio of the cost of labor to the cost of capital.

To determine the appropriate allocation of military resources among inputs, attention should be focused on changes in the relative prices of these inputs and on the opportunities for substitution. The aggregate production function framework developed earlier enables us to examine the evidence on input costs in a systematic manner and to prescribe general guidelines for more efficient management of defense resources. For example, both manpower costs and capital procurement costs have been rising. If the cost of labor has risen more than the cost of capital, then the appropriate response is to substitute capital for labor, not simply to cut the force size. In this chapter and the next we explore the empirical evidence with respect to three key allocation issues. The remainder of this chapter examines the aggregate issue of capital-labor resource allocation. Chapter 13 examines some of the less aggregated allocation issues—specifically, the allocation of defense manpower resources between military and civilian personnel and the allocation of military personnel between first-termers and careerists.

CAPITAL AND LABOR[7]

At the most aggregate level of defense decisionmaking, the question of defense resource allocation can be viewed in terms of how defense resources are distributed between the manpower and nonmanpower inputs to the defense mission or, in other words, between capital and labor. On the one hand, defense capability clearly depends upon both the manpower and nonmanpower resources available to defense use. For example, the United States (and its allies) is frequently compared with its adversaries not only in terms of manpower strengths, but also in terms of such important capital resources as the numbers of tanks held by both sides, the numbers of ships, and the numbers of aircraft. On the other hand, the cost of maintaining the defense establishment is likewise critically dependent on the mix of capital and labor inputs (and their individual costs).

Yet, despite the well-recognized contribution of both capital and labor, there has been a general tendency to view these individual components separately, particularly in the course of resource allocation decisions. What distinguishes the

[7] This section is based largely on work conducted by the author and Charles Robert Roll, Jr. See, for example, Richard V. L. Cooper and Charles Robert Roll, Jr., "The Allocation of Military Resources: Implications for Capital-Labor Substitution," in W. T. Singleton and P. Spurgeon (eds.), *Measurement of Human Resources*, Taylor and Francis, Ltd., London, 1975; and Charles Robert Roll, Jr., *Capital and Labor Shares in the Department of Defense*, The Rand Corporation (forthcoming).

discussion below from most previous analyses of defense manpower and the removal of the draft is the attempt to put the capital and labor resources used by the DoD into a common analytic framework, again with an emphasis on the implications of the removal of the draft for resource allocation problems.

This examination of capital-labor resource allocation is motivated by several factors. The first and most obvious reason is that the draft artificially depressed the budget costs of military personnel. To the extent that the military (and the Congress) respond to budget incentives, the draft encouraged an overemployment of labor resources relative to the social optimum. The removal of the draft, with its concurrent AVF pay increase, has substantially altered the cost of manpower to the military relative to the costs of other resources. This means that the resource utilization patterns encouraged by the draft are not only inconsistent with the real resource costs of defense inputs, but are also inconsistent with the post-draft budget costs of capital and labor resources.

A second reason is the manpower planning community's historic emphasis on personnel policy, as opposed to manpower requirements. Personnel issues such as pay, recruiting, reenlistment rates, and promotion policy are clearly important, but the costliness of manpower and limited ability to control overall cost growth with these types of management tools motivates us to consider the notion of substituting other, less expensive inputs for manpower if overall savings can be achieved. This suggests that the notion of substituting nonlabor inputs for defense manpower warrants consideration.

Finally, although the above discussion focused on the rising costs of manpower, the considerable attention accorded to military procurement cost overruns attests to the likewise increasing concern for the cost of capital equipment purchased by the DoD.

Capital and Labor Stocks

The production function approach provides us with a tool for examining capital-labor resource allocation. It suggests that the costs of capital and labor must be examined as well as the utilization of capital and labor resources by the DoD. That is, optimal resource allocation depends not just on the cost of manpower, but also on the cost of manpower relative to the cost of capital.

When viewed from this aggregate perspective of defense resource allocation, defense capability can be thought of, in the broadest sense, as being a function of the amounts (i.e., physical quantities) of capital and labor applied to the defense mission. The general formulation of the defense production function given earlier in Eq. (12.1) can be rewritten specifically in terms of the aggregate amounts of capital and labor used by the DoD:

$$Q = f(K,L), \tag{12.6}$$

where K = the physical quantity of capital input, and
L = the physical quantity of labor input used by the DoD.

This equation is important in that it forces us to examine both types of inputs, not just one or the other. As a result, the discussion below is specifically addressed to an examination of the physical quantities of capital and labor inputs used to provide defense capability.

Theoretically, the measure of labor input—i.e., the stock of labor maintained by the DoD—should reflect the full amount of labor input used in the production of current defense capability. This implies first that all types of labor input, including civilians employed by the DoD, should be included in the measure. Second, to the extent that some individuals are more productive than others, the measure of labor input should reflect these differences and not just be a simple count of the numbers of personnel employed by the DoD. Third, the measure should include only those personnel contributing to current defense capability. Thus, even though personnel engaged in training activity (e.g., students and training staff in basic military training, individual skill training, and so forth) are key to the provision of future military capability, they do not contribute to the current defense mission and should be excluded from our measure of labor input. Ideally, then, the measure of defense labor input should be a "quality adjusted" (for productivity differentials) measure of all defense labor input applied to the current defense mission.

Empirical estimates of the DoD labor stock, which are shown in index form in Fig. 12-2, were derived by simply summing the numbers of uniformed, direct-hire, indirect-hire, and contract-hire personnel not engaged in training activity.[8] Though it declined throughout most of the 1950s, following the Korean War, defense labor input as defined above remained relatively constant from 1959 or so through 1966, or until the beginning of the large Vietnam buildup, as shown in Fig. 12-2. After the peak Vietnam years (in terms of labor input) of 1968 and 1969, defense labor input again began to decline, reaching a leveling-off point about 10 percent lower than the average amount of labor input during the pre-Vietnam period of 1959 to 1965.

Figure 12-2 thus provides an overall perspective on how one of the two major inputs to the defense mission, the labor component, has varied over time. The other major input is the amount of capital resources used in the production of defense

[8] Per the discussion above, it would be theoretically more desirable to use a "quality adjusted" measure of labor input. Using a linear aggregation function, such an index could be constructed as

$$L_t = q_{1t}M_t + q_{2t}D_t + q_{nt}I_t + q_{mt}C_t$$

where L_t = index of labor input, M_t = number of military personnel, D_t = number of direct-hires, I_t = number of indirect-hires, and C_t = number of contract-hires, and q_{it} = quality adjustment parameters.

However, it is difficult to obtain estimates of q_{1t}, particularly for the civilian components. Roll, op. cit., does attempt to construct a "quality adjustment" index for military personnel (i.e., obtain an estimate of q_{1t}), using age and education as the basis for quality adjustment, the results of which are shown below:

	Quality Index (1964:100)						
Index Basis	FY56	FY60	FY64	FY68	FY70	FY72	FY74
Age	97	99	100	98	98	99	99
Education	96	97	100	102	103	101	101
Age and Education	97	98	100	100	100	100	100

These data show that quality adjustment results in little or no change in the military side of the DoD labor input. As a practical matter, then, the exclusion of quality adjustment from the measure of DoD labor input shown in Fig. 12-2 probably makes little difference. (Indirect-hire personnel probably represent the only major exception, since the composition of the indirect-hire work force appears to have changed somewhat during the substantial reduction of such personnel that took place during the 1950s—i.e., from less skilled workers in the Pacific to more skilled workers in Europe. The failure to account for the changing composition of the indirect-hire work force should not, however, materially affect the substantive findings implied by Fig. 12-2, especially since 1960, simply because the number of indirect hires is relatively small as compared to the remainder of the DoD work force.)

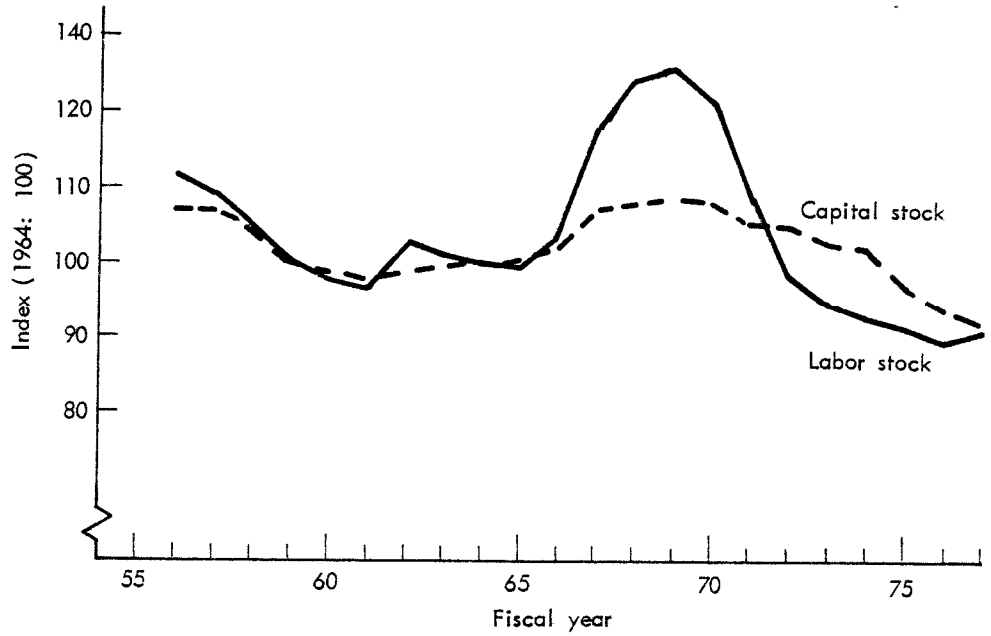

Fig.12-2—Indexes of DoD capital and labor stocks
SOURCE: See App. 13-A.

capability. This factor is seldom given adequate consideration in analyses of defense manpower, primarily because of the historic lack of good measures of the DoD's capital input.

Because the ability to meet defense objectives is also clearly a function of the amount of capital resources available to the DoD, a measure of the DoD's capital stock is needed. Measuring this capital stock would be vastly simplified if all military capital equipment were of one type (e.g., one type of plane or one type of machine). In this case, the physical quantity of capital input could simply be measured as the number of such pieces of equipment. This, however, is certainly not the case, as the military not only has a wide variety of categories of "equipment" (e.g., planes, ships, missiles, trucks, tanks, desks, computers, etc.), but there are also numerous different types of equipment within any of these broad categories. Relying on Roll's innovative work in this area,[9] we will resort instead to measuring the defense capital stock in terms of its (replacement) value, thereby in essence using the dollar as the common denominator.[10]

[9] The basic problem in measuring the DoD capital stock is the so-called vintage problem. That is, records of DoD capital equipment show the specific elements of the DoD capital stock at acquisition cost. For example, a tank bought in 1960 is valued in the accounts at the 1960 purchase price, whereas an identical tank bought in 1970 would be valued at the 1970 purchase price. Roll adjusts this measure of the acquisition cost of capital stock to a constant dollar measure of the capital stock, thus enabling us to compare the size of the capital stock over time. See Roll, op. cit.

[10] This implicitly assumes that a piece of equipment costing $2 is twice as much capital stock as one costing $1, so that, for example, five planes costing $2 million each are viewed as equivalent with one plane costing $10 million. Though the issue of quantity versus quality (e.g., many inexpensive planes versus fewer expensive planes) has been and continues to be a research policy question, it can be shown that the assumption that qualitative differences are reflected fully by the costs does not affect the substance of the analysis here. See Roll, op. cit.

The past trends regarding the size of the defense capital stock, which are measured as the value of "military equipment in use" plus "supply system inventories," shown in Fig. 12-2 along with the DoD labor input,[11] provide a number of interesting insights into the resource allocation problems faced by the DoD. As would be expected, given that the capital stock can be increased only through new military procurement (or, on occasion, recalling "retired" equipment, such as mothballed ships, into active status), Fig. 12-2 shows that the defense capital stock has historically varied much less in size than the DoD labor stock. To illustrate the magnitudes involved, the fiscal 1976 DoD capital stock is estimated to have been about $268 billion (in 1976 constant dollars). Given the estimated depreciation of the DoD capital stock of about $25 billion for that year, military weapons (and support system) procurement would have to have been nearly $50 billion (versus the actual $16.5 billion) just to have increased the capital stock by 10 percent.

In marked contrast, the labor stock can be increased dramatically in the short run by the use of the draft and the call-up of reservists, as illustrated by the more than fourfold increase in military personnel strengths between 1940 and 1941 or the more than doubling of military personnel on active duty between 1950 and 1951, and can similarly be readily decreased. Turning to the Vietnam experience, we see that the DoD's labor input was increased by some 25 percent in the three years between 1965 and 1968, whereas the capital stock increased by only 7.5 percent. In other words, history and logic tell us that changing the capital stock appreciably (certainly upward, but also downward to some extent) is a long-run proposition.

At the same time, Fig. 12-2 shows that the two series have tended to move in the same direction over time: As the labor stock has increased, so has the capital stock, and vice versa, at least over the recent past. Thus, the absence of countercyclical trends indicates that measures of the DoD labor stock alone, though overstating the magnitudes of variations in total DoD input usage, are at least reflective of the directional changes in total input usage.

The above discussion, and Fig. 12-2 in particular, leads to another observation regarding the allocation of defense resources between capital and labor. Since a major purpose of a peacetime military force, in addition to serving as a deterrent against aggression, is to provide the capability to conduct war should the need arise, the military would be expected to maintain a larger capital-labor ratio during peacetime periods than simple economic efficiency criteria might at first seem to suggest. For all practical purposes, the size of the military capital stock at the beginning of a war will be the size of the capital stock through at least the first part of any war. Not only is it difficult to substantially increase the capital stock in the short run, much of military procurement (or investment) ends up going to replace capital equipment that is destroyed during the war. As a result, we would expect to see a relatively capital-intensive military during periods of peacetime, other things being equal.

[11] Military equipment in use includes such items as ships, aircraft, tanks, trucks, repair equipment, and so forth. Supply system inventories tend to include spare parts and other types of supplies. There is some overlap in the definitions of the two, according to the specific Service. That is, one Service may classify a particular item as equipment in use while another will classify the same item as falling into supply system inventories.

The Cost of Labor and the Cost of Capital

The key policy question is not so much how manpower costs have increased, but rather how the costs of defense manpower have changed *relative* to the costs of other defense inputs, and most notably, relative to the cost of capital. Analytically, it is necessary to measure the cost per unit of labor services and the cost per unit of capital services.

In the simplest case, the cost per unit of labor services is simply the wage rate. That is, to purchase a unit of labor services, an employer must pay the prevailing wage rate for labor (which may include such fringes as medical care and retirement). Although the wage rate may be a reasonably good approximation of the marginal cost of labor for most private firms, it is not an adequate representation of the cost of defense labor input, because the cost of defense manpower includes such nonwage items as training costs, payments in kind (e.g., medical benefits and housing), travel costs, and so forth. A better approximation of the average cost of defense manpower is total personnel costs divided by the amount of labor services purchased by the military.

An index of the cost per unit of defense labor input can be derived empirically as all costs incurred on behalf of this input divided by the previously estimated index of defense labor input (shown in Fig. 12-2).[12] By the cost incurred on behalf of the defense labor input, we mean all the costs associated with active duty personnel (i.e., excluding the costs associated with reservists and retired personnel) and those associated with civilian employees of the DoD.[13]

The results of this procedure, which are shown in Fig. 12-3, show that defense manpower costs were clearly rising on a per unit basis long before the removal of the draft. This almost continual pre-AVF increase can be traced to several sources. One is that the wages for defense-employed civilians were clearly increasing over this period, as were the wages for careerists, because the military has always had to compete in the open market for both of these types of labor input. Second, nonwage costs such as travel, food, housing, and so on, were also increasing. Thus, whereas the draft did serve to keep down the wages for first-termers, overall labor costs for the DoD are a function of more than first-term wages alone. The end result is that the average cost of defense labor input increased at about 4.5 percent per year (on the average) between 1956 and 1968.

Beginning in about 1969, and accelerating during the early 1970s, there was a dramatic increase in the cost per unit of defense labor input. Besides the overall effects of inflation, which certainly contributed to these increases, two factors are primarily responsible for the dramatic rise. The first is the so-called "catch-up" pay raise for career military personnel implemented during 1967 to 1969. The second factor is the AVF pay raise implemented during fiscal 1972. Together with the increasing costs of civilian personnel and such nonwage items as travel costs, these factors were responsible for the doubling of the cost of defense labor between 1968 and 1976—an increase of about 9.0 percent per year.

The cost of labor by itself tells us little about resource allocation. We must

[12] Current retirement budget costs are excluded because they represent payments for past labor services. Instead, retirement costs were calculated as the amount implicitly accrued during the year, the methodology for which was described in Chap. 2. See also App. 13-A.

[13] See the discussion in the next chapter for the rationale for measuring the cost of manpower (including training) in this fashion.

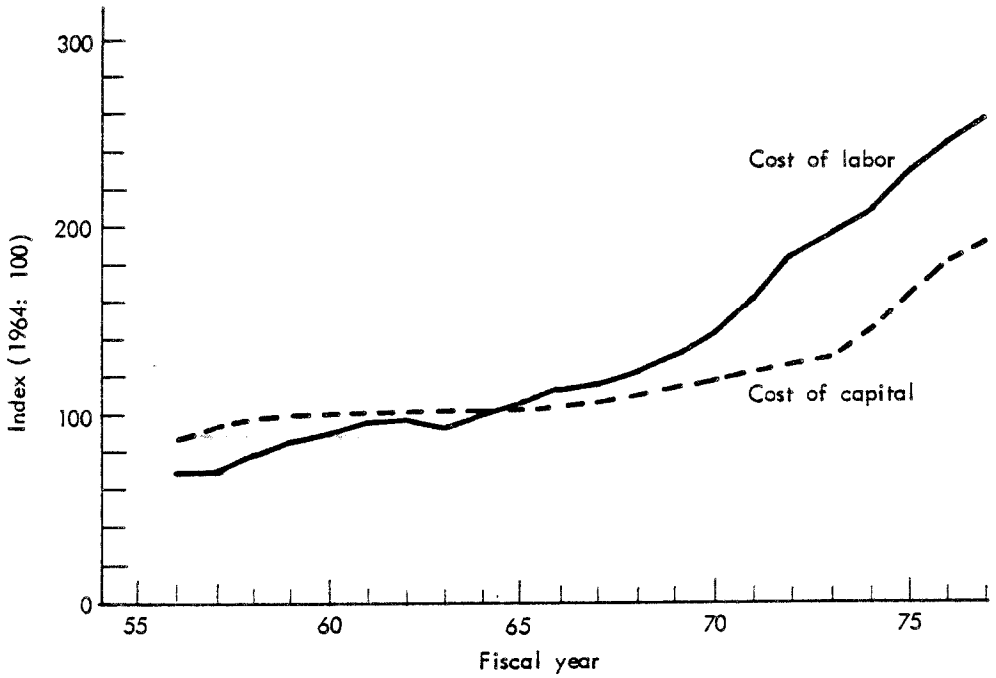

Fig.12-3—Indexes of DoD cost of capital and cost of labor
SOURCE: See App. 13-A.

compare the cost of labor with the cost of capital, where the cost of capital is the amount that would have to be spent to purchase a unit of capital *services*. This distinction between the cost of capital services and the cost of a particular piece of capital equipment is important, since capital generally renders services to its purchaser for many time periods, even though the equipment is usually purchased in one time period.

It is this lack of coincidence between the time periods of use and purchase that causes difficulty in measuring the cost of capital. Since any given piece of capital equipment is not entirely used up during the period in which it is purchased, the cost of using that equipment should reflect the costs of purchasing the services rendered by the capital during the particular period in question, not the total cost of the equipment itself. If the military rented its capital equipment, we could measure the cost of capital simply as the rental price.

Since the military generally buys rather than rents its equipment, it is necessary to impute the cost of capital. From a practical standpoint, the cost of capital can be viewed in terms of a price index for new military equipment.[14] Although

[14] Theoretically, the imputed rental cost should reflect the purchase price of the capital equipment (P_t, relative to the price in some base period P_0); the cost of borrowing funds to purchase the equipment (i_t), since as borrowing costs go up, so does the cost of capital; and the depreciation (d_t), since as more of the equipment is "used up," the rental price is presumably larger. Also, because the military owns its capital stock, the cost of capital will be reduced from the above during periods of inflation, since its remaining equipment becomes more valuable. In particular, if the inflation in period t is p_t

$$(\text{note that } P_t = \sum_{i=1}^{t} (1 + p_i)),$$

there have been some attempts to derive military procurement cost indexes, none really provides a satisfactory representation of the range of capital equipment purchased by the military services. So we instead resort to the Bureau of Labor Statistics (BLS) index of the cost of machinery and equipment in the private sector to empirically represent the cost of capital to the military. Although this may deviate somewhat in the short run from the cost of actual military equipment items, this index is reasonably representative of the overall cost of the broad range of equipment purchased by the DoD.[15]

The results of the machinery and equipment price index are shown in Fig. 12-3. As can be seen, the estimated cost of capital equipment has risen much less rapidly than the cost of defense labor input. Thus, not only has defense manpower become more expensive over time, its cost has also increased significantly relative to the cost of the other major input to the defense mission.

Capital-Labor Substitution

Given the evidence on the historical patterns of capital and labor usage and their relative costs, we can assess the efficiency of defense resource allocation by making some assumptions regarding the opportunities for substituting between capital and labor. This assessment allows us to determine the effects that the removal of the draft has had for allocative efficiency and, hence, whether there are opportunities for making efficiency gains in the future (in the form of reduced defense budgets for a given level of capability or increased defense capability for a given budget level).

We begin by reviewing the evidence with respect to the ratio of the cost of labor to the cost of capital, frequently referred to as the wage-rental ratio (w/r), which is shown in Fig. 12-4. This provides the intuitively obvious result (given the individual cost estimates shown in Fig. 12-3) that the cost of labor has risen substantially relative to the cost of capital during the past 20 years. Between 1956 and 1968, however, the increase in the cost of labor relative to the cost of capital was a relatively small 2.2 percent per annum—which stands in marked contrast to the more than 6 percent per annum increase between 1968 and 1973.

Between 1973 and 1976, however, there was a modest decline in the wage-rental ratio, though this appears to have leveled off by fiscal 1976. This small decline in recent years can be attributed primarily to two sources: (1) the so-called pay "caps" that were imposed on military and civilian employees of the Federal Government during fiscal 1975 and 1976, and (2) the fact that the inflation of the early 1970s showed up initially in the form of increasing wages and then in the consumer's price index but did not really hit the wholesale price index (upon which our measure of

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then the value of the capital stock not used up during the period inflates in value by p_t.

Therefore, the cost of capital (r_t) to the military is given as

$$r_t = P_t(i_t + d_t) - (1 - d_t)p_t.$$

In the short run, this measure is likely to be confounded by a variety of policy decisions that do not necessarily reflect the cost of capital to the military, including Federal Reserve policy toward interest rates and DoD decisions pertaining to the commissioning or decommissioning of particular items of military hardware. As a result, we instead rely on simply P_t (i.e., the index of the purchase price of capital equipment) as our measure for the cost of capital to the military. Because P_t and r_t are highly correlated in the long run, this assumption does not substantially alter the substance of the analysis.

[15] Roll, op. cit., investigates a number of other indexes and finds that they all act in a similar fashion, so the choice of a particular capital-equipment-type index does not markedly affect the results.

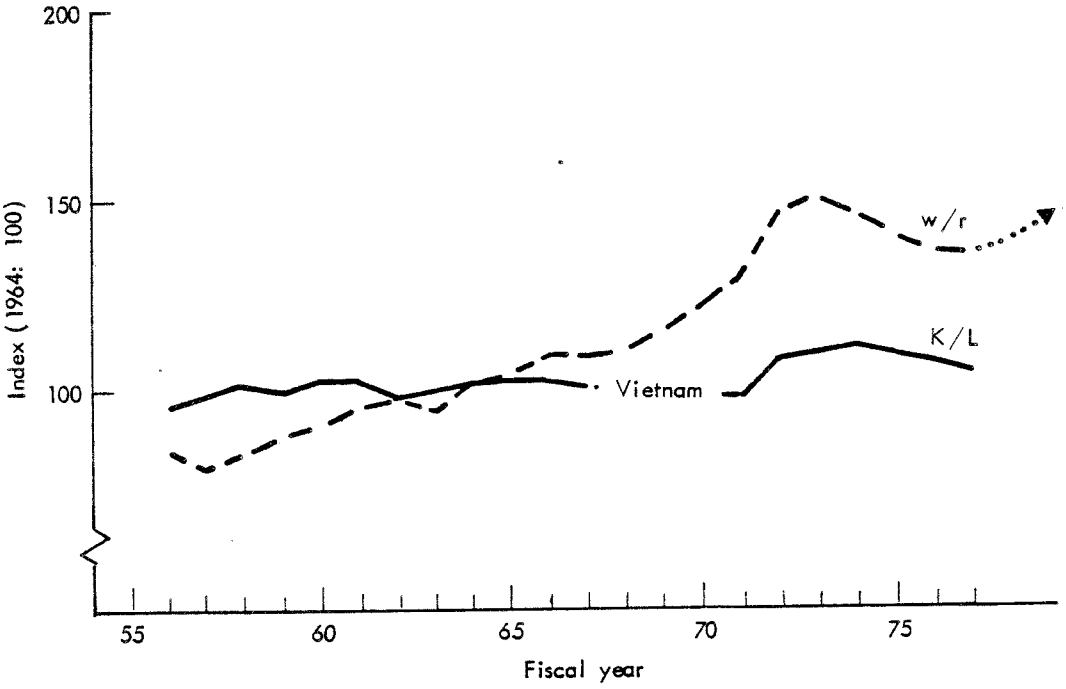

Fig.12-4—Indexes of DoD capital and labor costs and utilization: labor cost/capital cost ratio (w/r) and capital/labor ratio (K/L)

the cost of capital is based) until about 1974. The end result is that by fiscal 1977, the cost of labor was still more than 40 percent above the cost of capital, relative to the pre-Vietnam benchmark years of 1960 to 1964.

The policy question, then, concerns how the DoD and the Congress have responded in terms of the allocation of defense resources between capital and labor. That is, economic theory tells us that as the wage-rental ratio, w/r, increases, the military ought to substitute capital inputs for labor inputs, thereby increasing the capital-labor ratio, K/L. Analytically, the above policy question becomes one of how the capital-labor ratio has responded to the increase in the wage-rental ratio.

Abstracting from the Vietnam War buildup and drawdown, Fig. 12-4 shows the almost incredible result that the capital-labor ratio remained virtually unchanged between the mid-1950s and 1971. During the peacetime years between fiscal 1957 and 1971, this ratio did not vary as much as 4 percent from the average over the period, even though there had been a continual (albeit moderate) rate of increase in the cost of labor relative to the cost of capital.

Since the end of the Vietnam War, there has been a modest increase in the capital-labor ratio, about 10 percent between 1971 and 1974. Yet, as can be seen Fig. in 12-2, shown earlier, this increase was accomplished solely by reducing the labor input, not by substituting capital for labor. In fact, the capital stock was also decreasing during these three years, just not as rapidly as the labor stock.

By fiscal 1975 (and as projected by the U.S. budget through fiscal 1977), the continued decline in the capital stock had overtaken the decline in the labor stock, so that capital was not only not being substituted for labor, the capital-labor ratio was actually declining—ending up in fiscal 1977 at about the same level that it was

in 1964. The end result of this can be seen by comparing the 1976-1977 position with that of 1960 to 1964: The cost of labor had risen about 40 percent relative to the cost of capital, but the capital-labor ratio had risen only about 1 percent.[16] Furthermore, whatever increase there was in the capital-labor ratio came solely through the reduction of the labor stock.

These findings evoke two major policy questions. The first concerns what opportunities there are to substitute capital for labor in the production of defense capability and, hence, whether the actual response to rising defense labor costs has been efficient. If not, the second question concerns why the appropriate substitutions have not been made.

Although the aggregate approach to capital-labor resource allocation in the military provides no certain answers with respect to the first question, there are a number of anecdotal pieces of evidence which suggest that there are considerably more substitution opportunities than have been implemented. At the most aggregate level, we can examine what has transpired in the civilian sector, a comparison that is more appropriate than might at first appear. As stated in Chap. 2, less than 10 percent of all defense personnel are in what would be classified as actual combat jobs. Although there are certainly large numbers of other personnel who would be employed in or near combat zones during hostilities, they are nonetheless involved in support-type activities. In other words, more than 90 percent of all defense personnel are employed in occupations not too dissimilar from those found in the civilian sector (e.g., clerks, administrators, repairmen, computer operators, health care personnel, and so forth). Thus, the comparison of resource allocation in the military with that in the civilian sector provides some useful insights into the substitution opportunities in the military.

Using the results from Christenson and Jorgenson,[17] we find that for every 1 percent change in the wage-rental ratio in the U.S. economy as a whole during the 20 years following World War II, the economy responded with about a 1.4 percent change in the capital-labor ratio, implying an elasticity of substitution between capital and labor for the civilian sector of about 1.4. This happened despite the fact that the U.S. economy was becoming more "service" oriented during this period.[18] By way of contrast, Fig. 12-4 showed that the approximately 40 percent increase in the defense wage-rental ratio between 1960-1964 and 1976 was accompanied by an increase in the capital-labor ratio of only about 1 percent. In other words, for

[16] If the very rough estimates of the numbers of contract-hire personnel are excluded from the calculation of the DoD labor input, then K/L in 1976 would be about 10 percent above K/L in 1960-1964 (as opposed to the approximately 1 percent difference shown in Fig. 12-4, which includes the estimates of contract-hire personnel in the calculation of L). That is, the estimated increase in the number of contract-hire personnel helps to offset some of the decline in other elements of the DoD labor input. At the same time, exclusion of contract-hire personnel would mean that w/r in 1976 would be about 45 percent above w/r in 1960-1964 (as opposed to the 40 percent shown in Fig. 12-4), simply because the costs of contract hires are not estimated to have increased as rapidly as have those for military and direct-hire personnel. Thus, the inclusion or exclusion of contract hires does not materially affect the analysis or conclusions—namely, that there has been little response in K/L as a result of increasing w/r.

[17] L. R. Christenson and D. W. Jorgenson, "Measurement of U.S. Real Capital Input, 1929-1967," *Review of Income and Wealth*, December 1969; and L. R. Christenson and D. W. Jorgenson, "U.S. Real Product and Real Factor Input, 1929-1967," *Review of Income and Wealth*, March 1970. See also K. J. Arrow et al., "Capital-Labor Substitution and Economic Efficiency," *Review of Economics and Statistics*, XLIII, August 1961.

[18] Since "service" industries are intrinsically labor intensive, we would expect, other things being equal, that an increase in the percentage of GNP devoted to service industries would result in a more labor-intensive economy.

every 1 percent increase in the wage-rental ratio, there has been an increase of only about 0.025 percent in the capital-labor ratio.

Thus, the DoD (with the help of the Congress) has been acting as though the military elasticity of substitution of capital for labor is, for all intents and purposes, zero. If the military has substitution opportunities closer to those evidenced in the civilian sector, there may be considerable opportunities for substituting capital for labor that have not yet been utilized.

We can also turn to some more military-oriented analyses of capital-labor substitution. For example, analysis of the Navy's DD-963 destroyer program suggests that the mere implementation of a gas turbine power plant aboard ship resulted in approximately 100 men being "saved"—that is, if a steam power plant had instead been chosen for the DD-963, each ship would have required about 100 more men to man the ship's stations.

In a more recent study, Shishko examines the economic implications of a proposed automation system (using minicomputers, sensors, etc.) for propulsion and communication systems aboard the Navy's DE-1052 class destroyer escort.[19] Although it did not appear to be cost-effective to retrofit the DE-1052s with this automation system (because of the high installation costs and relatively short life span remaining for the ships after retrofitting), Shishko's results show that the automation would have been cost-effective (because 45 to 50 men could have been removed from each ship) if it had been installed initially.

These two examples focus directly on weapons systems. Yet the historic emphasis on weapons systems (as compared with support systems) is probably one of the reasons that so little capital-labor substitution has taken place. That is, most weapons systems are intrinsically capital intensive, so there may be fewer opportunities to increase economic efficiency by making massive capital-labor substitutions in these systems. Instead, the highest payoffs are likely to exist in the relatively labor-intensive military support systems (e.g., base depots, logistical support, and so forth), activities that consume a very large portion of the DoD budget. These types of substitution tend, however, to generate less interest either in the Services or in the Congress, and as a result, the types of capital-labor substitutions that might achieve the greatest cost savings have not been adequately explored.[20]

The notion that capital-labor substitution in the support areas holds the potential for considerable cost savings is buttressed by an examination of the so-called "fast payback" capital investment programs, which were established by the DoD in the early 1970s to encourage cost-saving capital investment.[21] However, to qualify for the funds, projects funded through these programs must be relatively small and must show a payback of two years or less—i.e., proposed projects must be able to pay for themselves (in terms of the savings generated) within two years. This

[19] Robert Shishko, *The Economics of Naval Ship Automation: An Analysis of Proposed Automation of the DE-1052*. The Rand Corporation, R-1790-ARPA, November 1975.

[20] In fact, the Congress frequently impedes such substitutions, since they may result in a loss of civilian jobs.

[21] The purpose of these programs is to provide a relatively easy way (i.e., with a minimum of bureaucratic interference) for local commanders to make better use of their resources. The first such program was started by the Army in July 1973; the Navy followed shortly thereafter, in July 1974. For a discussion of these programs, see Frank Camm, Jr., "DoD's Fast Payback Funds Are Paying Off: Facts and Perspectives on an Investment Program," The Rand Corporation, unpublished paper, July 1977; see also E. Bennewitz, *Productivity in the Department of Defense—Approach and Assessment*, Operations Research, Inc., Technical Report No. 903, Washington, D.C., 1975.

means that projects must show an internal rate of return of 40 to 50 percent to even be considered.[22] Moreover, because of Congressional constraints on the size of the program,[23] not all projects showing an internal rate of return this high can be funded.

For a number of reasons, the experience with the fast payback programs suggests that the DoD has historically underinvested in the support areas. First, the fact that the programs did not exist prior to 1973 means that there were probably many potentially profitable projects in the past that were never funded. This, in turn, means that today's support forces are probably undercapitalized. That is, had those projects been funded, fewer personnel would be needed today to staff the more capital-intensive support forces that would have resulted from those earlier investments. Second, because of limitations on the size of the projects that can be funded through the fast payback programs, many potentially profitable large projects may go unfunded.[24]

Third, whereas 10 percent or so is generally viewed as the appropriate discount rate for Government investment projects, the 40 or 50 percent internal rate of return required by the two-year payback provision means that many projects with internal rates of return greater than 10 percent—and, hence, which should be viewed as cost-effective—will not be funded. Moreover, Congressional restrictions on the size of these programs means not even all those projects that satisfy the two-year payback will be funded. Finally, regulations prohibit or make it difficult to invest in certain projects, such as automatic data processing (ADP).

Together, these results suggest that there is considerable potential for cost-saving capital investments in the support area. Such investments include, for example, forklift trucks in base depots, maintenance equipment, office and ADP equipment, and spare parts. Yet much of this potential seems to have gone unrealized.

It would thus seem that the defense establishment has not taken full advantage of substitution opportunities. Given the dramatic rise in the cost of labor relative to the cost of capital, it appears that substantially more substitution could yield major efficiency gains, as reflected in either reduced defense budgets or increased military capability, or both.[25] The question then becomes, Why have we not observed this type of substitution? Several factors have probably contributed to the lack of substitution, one of which has been alluded to above—i.e., the emphasis on weapons systems, as compared with support systems—but there are other, equally important reasons.

The first reason is the asymmetry of the budget incentives, which derives from

[22] The internal rate of return is defined as the discount rate for which the present value equals zero. For an infinitely-lived project, a two-year payback translates into a 50 percent internal rate of return. Similarly, the two-year payback means a 40 percent internal rate of return for a project that lasts 10 years.

[23] The DoD requested $35 million for fiscal 1977 for these programs, and although the Senate concurred, the House argued for a reduction. The result was $20 million authorized for fiscal 1977. Part of the rationale for the House reduction was that the House did not want to give up the authority to allocate these funds according to the particular line item in the budget.

[24] Of course, there are other avenues for funding such projects, such as through the regular appropriations process. However, these generally involve far more bureaucratic interference. That is, the fast payback programs are desirable because they are relatively easy to administer, they are decentralized, and they rely on persons with knowledge about the local conditions.

[25] For example, assuming (1)that the military's elasticity of substitution of capital for labor equals 1.4 (i.e., the same as in the civilian sector) and (2) that the 1960-1964 allocation of defense resources was "efficient" given the then-prevailing budget costs, it can be shown that about $1 billion a year could be saved in the long run if the DoD were to substitute capital for labor.

the previously mentioned lack of coincidence between the time periods when capital equipment is purchased and when it is used. Whereas labor is generally paid when service is rendered, capital equipment generally provides its services long after the initial period in which it is purchased. Because increasing the capital stock requires substantial outlays during the period of buildup, the pressure to keep down the costs of the *current* defense budget (as compared with the true costs of defense) impedes the substitution of capital for labor and vice versa.

This problem is compounded by the fact that when capital-labor substitutions have been made in the past (generally for reasons other than the desire to increase economic efficiency), there has been an effort to increase technology. The result has frequently been that new capital equipment has resulted in major increases in the amounts of maintenance required, so that the presumed efficiencies have never taken place.[26] As a result, a skepticism has developed about the labor savings that would result from capital-labor substitution. This implies that at least some proposed future capital-labor substitution ought to rely on currently available technology, particularly in the support areas, rather than focusing so heavily on technological advances.[27]

A third reason concerns the historic view of the military production process. There has been a tendency to ignore substitution opportunities and instead to view the defense mission in input-output terms. For example, x number of maintenance man-hours are required for y flying hours. Thus, whereas the production function given conceptually by Eq. (12.4) and Fig. 12-1 implies that there are innumerable combinations of inputs that can achieve the same defense objectives, the tendency has been to view the production process as having fixed factor coefficients. Therefore, a principal objective of defense resource management ought to be to encourage the examination of a number of alternative input mixes, not just one or two.

A fourth reason is the political constraints frequently imposed on the military. The Congress, for example, is seldom supportive of major reductions in civilian manpower at military bases. In addition, whereas many cost-saving capital-labor substitutions are likely to occur at the local level—and hence are likely to require that more discretionary authority be given to the military—the Congress has historically been reluctant to give up much decisionmaking authority to the military, as evidenced by the experience with the fast payback programs.

Finally, though no less important, the Congress and the military leadership tend to be far more concerned with the short run than the long run. Because the savings from capital-labor substitution are very clearly a long-run proposition, the most productive types of substitutions may never be considered.[28]

The evidence strongly suggests that the DoD and the Congress have not fully responded to the relative increase in the cost of defense labor input, a trend that

[26] For example, the use of replaceable "black boxes" for the advanced avionics packages in the F-111s, F-14s, and F-15s was originally intended to improve reliability and decrease maintenance costs, among other factors. However, because of unproven technology, these technological "improvements" have frequently resulted in decreased reliability and substantially larger maintenance costs than those experienced with available avionics packages. See, for example, D. W. McIver et al., *A Proposed Strategy for the Acquisition of Avionics Equipment*, The Rand Corporation, R-1499-PR, December 1974.

[27] This is not to say that improvements in technology ought not to be pursued, but rather to emphasize the importance of also taking advantage of already available technology.

[28] This is evidenced, for example, by the fact that many small but potentially cost-effective capital-labor substitutions (such as the purchase of a forklift truck) cannot be undertaken if they do not satisfy the two-year "payback" period frequently required by DoD regulations and Congressional guidance.

was present before but was accelerated by the removal of the draft. Moreover, now that the military must compete in the open market for all its labor resources, further increases in the cost of labor relative to the cost of capital can be expected. That is, whereas the cost of capital would be expected to just about keep pace with inflation, the cost of labor would be expected to rise somewhat faster than inflation because the military will have to keep pace with the real wage growth in the civilian economy, which has averaged about 2 percent per annum since World War II.

Further capital-labor substitution is likely to be made possible by the types of labor-saving technological change produced by the U.S. economy. The continued rise in the cost of labor relative to the cost of capital, together with labor-saving technological changes, argues for further capital-labor substitution in the future. In the past, the Congress has responded to rising manpower costs largely by cutting force strengths. However, and as noted by the Defense Manpower Commission, further cuts in force strengths without simultaneous increases in the capital stock are likely to leave the military unable to meet current defense objectives—at least under current force structure and organizational policies. By way of contrast, the analysis presented in this chapter suggests that by substituting capital for labor, mission objectives can be maintained at a smaller total budget in the long run. In other words, long-run cost savings can be achieved by reallocating resources, rather than simply cutting force strengths (though it should be noted that such reallocations are likely to lead to budget cost increases in the short run).

Chapter 13

RESOURCE ALLOCATION: MANPOWER REQUIREMENTS

In addition to the broad allocation questions dealing with dissimilar resource inputs, such as capital and labor, there are equally important questions dealing with the allocation of resources *within* these broad categories. This chapter deals with how defense manpower resources should be allocated among the various specific types of manpower inputs. In particular, it is concerned with the questions of military versus civilian manpower and first-term versus career enlisted personnel.

MILITARY OR CIVILIAN?

The resource allocation issue that has received perhaps the most attention during the past 10 years is the substitution of civilian employees for military personnel, better known as "civilianization." In the effort to reduce the spiraling manpower costs of the 1960s, a continuing dialogue centered on civilianization as a possible answer. Proponents of this policy brought considerable pressure to bear on the DoD to substitute civilians for military personnel wherever possible, with the result, for example, that 31,000 military billets were converted to civilian status during fiscal 1974.

However, in the rush to identify potential civilian substitutions, critics of DoD policies have frequently been more concerned with whether civilians *can* be used than with whether they *should* be used. That is, many substitutions have been made on the assumption that civilians are less expensive than military personnel, without anyone determining whether such substitutions were in fact cost-effective.[1]

Once the assumption that civilian personnel are less expensive is accepted, it is easy to see how the policy question turned to potential substitution opportunities, rather than to whether such substitutions would reduce costs. In other words, measuring the cost implications of a civilian substitution effort has as a practical matter become secondary to the concern for how many civilians should replace military personnel.[2]

[1] To illustrate, Albro, in one of the studies conducted for the Gates Commission, used seven criteria to evaluate the desirability of military-civilian substitutions: legal requirements, training, discipline, rotation, combat readiness, military background, and tradition. *Cost was never considered.* Instead, Albro simply *assumed* that civilians were less expensive, citing such casual observations as the supposed lower turnover rates exhibited by civilian personnel. (To illustrate the weakness of this argument, it should be noted that direct-hire civilians have averaged turnover rates of between 20 and 25 percent over the past 15 years, as compared with about 25 percent for military personnel; thus, there appears to be little difference between the two sources (*Selected Manpower Statistics*, op. cit.).

The larger point is that cost has seldom been explicitly included as a criterion. In one of the few exceptions, Smoker explicitly examines the cost-effectiveness of particular military-civilian substitutions in the Air Force and concludes that civilians are not necessarily less expensive than uniformed personnel. See Ames S. Albro, Jr., "Civilian Substitution," in *Studies Prepared for the President's Commission on an All-Volunteer Armed Force;* and Roy E. Smoker, "Economic Cost as a Military Essentiality Criterion," in Richard V. L. Cooper (ed.), *Defense Manpower Policy*, op. cit.

[2] The Gates Commission, using Albro's findings, concluded that a substitution of 100,000 civilians for military personnel would save about $90 million. To begin with, it is not clear how their estimate

The problem of determining what positions could potentially be manned by civilian personnel is not a trivial matter, given the "softness" of the criteria that must be used to make these allocation decisions. Historically, manning decisions have been the result of numerous factors, including military requirements, personnel management constraints, cost-effectiveness, and tradition. By military requirements we mean, for example, that there are some job assignments such as the infantry that are intrinsically "military" in nature, just as there are some (most notably, that of the Secretary of Defense) that are intrinsically civilian. For these types of assignments, then, the basic nature of the job dictates whether it must be manned by someone in or out of uniform. The number of such jobs is relatively small, though, probably no more than 25 percent of the combined present military and civilian personnel strengths.

In addition to those jobs that are intrinsically military, there are a number of other jobs that must be manned by uniformed personnel for mobilization purposes.[3] Estimates as to the magnitude of this mobilization requirement vary, but it is generally assumed to be around 25 percent of the uniformed force (in addition to the approximately 25 percent of the force assignments classified as combat jobs).[4]

The remainder of the jobs could theoretically be manned by either military or civilian personnel on the basis of the job tasks alone; but many of these are in fact "best" manned by uniformed personnel in order to satisfy certain personnel management constraints, such as the maintenance of an adequate rotation base or the provision of sufficient career opportunities. There are laws, for example, that govern the maximum overseas tour length, thus necessitating a home rotation base to provide adequate personnel for future overseas assignments. There are other instances where it is simply good management to provide certain types of rotation flows (such as the Navy's ship-shore rotation problem), as well as other types of personnel flows (e.g., providing an adequate experience base for future general and flag officers). The end result is that what might appear to be a cost-effective substitution in terms of simple man-for-man comparisons may not actually be cost-effective when these broader considerations are taken into account.

At the same time, those military requirements and personnel management constraints that truly limit substitution must be separated from those that are merely part of tradition. For example, it has frequently been argued that activities near combat zones must be manned by uniformed personnel, when in fact, the Vietnam experience showed that civilian contractors can perform quite satisfactorily in certain support activities, even in close proximity to combat.[5] Similarly, the justification of certain positions as military in nature, based on the need to

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was obtained, as mentioned above in footnote 1. Further, in the context of a $50 billion-plus manpower budget, a $90 million savings amounts to less than two-tenths of one percent. And finally, if the administrative and transition costs are included, it is not clear that any savings would be realized, even if the Commission's $90 million estimate is realistic.

[3] At the same time, the mobilization requirement has frequently been overstated by those opposed to civilian substitution. The problem in this regard stems primarily from the timing of mobilization requirements. For example, those positions that must be mobilized within a relatively short time (such as a few months) probably require military personnel. On the other hand, past experience, especially in Vietnam, has shown that civilians can be effectively deployed in positions that do not require overseas mobilization immediately. Thus, care must be taken in interpreting the Services' mobilization requirements.

[4] See Albro, op. cit.

[5] For example, civilian contractors provided key logistical support in Vietnam, including the operation of supply depots and the flying of cargo missions, often very close to actual combat.

maintain promotion opportunities and a rotation base, has sometimes been more a result of tradition than of actual personnel management constraints.

Recognizing the softness of these criteria, several attempts have been made to identify the magnitude of potential civilian substitution opportunities. For example, in one of the studies done for the Gates Commission, Albro estimated that a maximum of about 152,000 enlisted billets and 41,000 officer billets could be civilianized out of a total military force of some 2.25 million, though he recommended that a substitution about half this size would probably be preferred.[6] Taking Albro's recommended substitution, the Commission suggested that the numbers of enlisted and officer billets that could be civilianized were about 84,000 and 23,000, respectively. In response to this general concern for civilianization potential, the Central All-Volunteer Task Force in the DoD requested each military service to estimate the number of its military positions that could be civilianized without loss of force effectiveness. The total estimate of 103,000 enlisted positions was somewhat more than recommended by the Gates Commission.[7]

In addition to the fact that attention has primarily focused on civilianization potential, it is important to recognize that "civilians" have for the most part been viewed as direct-hire government employees. This is perhaps nowhere more evident than in the Congress, where the emphasis has been on urging the DoD to perform various activities "in house" rather than contract out for particular services.

There is, however, another potentially valuable source of military-civilian substitutions: namely, the use of contractors to perform certain activities previously conducted by military personnel (or, for that matter, by direct-hire civilian employees). The use of contractors to provide janitorial or maintenance services is an example. The military has made extensive use of contract hires in the past, including overseas assignments in South Vietnam during the war, as well as in more routine activities at home.

Part of the reason for this focus on direct hires can be traced to management problems in effectively monitoring the use and costs of contractor personnel. Indeed, it is nearly impossible under present reporting systems to identify either the numbers of contract hires or their costs. Thus, even if direct hires are somewhat more expensive than contract hires, the lack of adequate reporting systems for monitoring contract hires provides an incentive to use direct-hire civilian personnel. If more extensive cost-effective use of contract-hire personnel is to be made, it is important to develop management reporting systems for actually tracking the numbers and costs of such personnel substitutions.

Sizing the Civilian Effort

Given these elements of the civilianization issue, what have been the historical patterns of civilian utilization by the DoD? The civilian effort consists of several different elements, including direct-hire civilian employees of the DoD, indirect hires, nonappropriated fund employees, and contract hires. To give some dimensions to the DoD civilian employment picture, we note that in 1974 there were

[6] See Albro, op. cit.

[7] See "Civilian Substitution," Central All-Volunteer Task Force, Office of the Assistant Secretary of Defense (Manpower and Reserve Affairs), 1973.

about 1.1 million direct-hire civilian employees (about 650,000 of whom were "salaried" and 420,000 of whom were wage board) and about 100,000 indirect hires. As noted in Chap. 2, the numbers of contract hires and non-appropriated fund employees are more difficult to identify, but there were probably about 450,000 and 250,000, respectively, in fiscal 1974.[8] The United States thus makes extensive use of civilian personnel, with somewhere around 1.5 to 2.0 million civilians serving in various defense manpower activities—only slightly fewer than the 2.1 million uniformed personnel.

As a practical matter, the lack of historical data pertaining to non-appropriated fund employees forces us to limit our examination of past civilian utilization patterns to direct-hire, indirect-hire, and contract-hire employees of the DoD. The results of this examination, shown in Table 13-1, lead to four important findings.

Table 13-1

Military and Civilian Personnel Strengths
(average yearly strengths, in thousands)

Fiscal Year	Military	Direct-Hire Civilian			Indirect-Hire	Contract-Hire	Total Civilian
		GS	Other	Total			
1952	3504	518	769	1286	425[a]	n.a.	1711[b]
1956	2888	509	674	1183	307	199	1689
1960	2489	492	570	1063	183	266	1512
1964	2693	521	519	1040	152	219	1411
1968	3435	638	671	1310	120	402	1832
1972	2510	608	497	1105	103	394	1602
1974	2207	628	423	1050	98	461	1610
1976 (est)	2087	628	398	1005	87	455	1547

n.a.: not available

[a]Data for FY1953; data for FY1952 were not available.

[b]Excluding contract-hires.

SOURCE: See Table 2-1.

First, there has been a steady decline (except, of course, during the Vietnam War) in the total number of direct- and indirect-hire civilians employed by the DoD. Not only did the numbers of such civilians decline through the 1950s and 1960s, they also declined relative to the numbers of military personnel up to about 1968. This relative decline was one of the principal arguments that the Gates Commission used to support its recommendation of civilian-military substitution. That is, the Commission argued that since the proportion of total positions occupied by civilians had fallen over the years (prior to publication of their report in 1970), the DoD had

[8] A survey conducted by the DoD in 1970 estimated that there were about 500,000 non-appropriated fund employees. More recent estimates place the number of such personnel in the neighborhood of 250,000 to 300,000. See John D. Johnston, "Civilian Personnel," briefing to the Assistant Secretary of Defense, 1975.

demonstrated that it could make more extensive use of civilians and could therefore undertake a civilianization effort without adversely affecting military readiness.

At the same time, we must be careful in interpreting these trends, since most of the decline in the DoD's use of these civilian personnel during the 1950s and 1960s is a result of the fall in the numbers of indirect hires. The numbers of indirect hires fell from more than 300,000 in the early and mid-1950s to about 100,000 by the 1970s. However, since it is not clear to what extent indirect hires represent a viable option with respect to future civilian-military substitution, it is more appropriate to focus on the cost-effectiveness of substituting direct-hire civilians for military personnel.[9]

Third, as shown in Table 13-1, there has been a gradual shift in the employment patterns within the direct-hire employment group, an increase in the numbers of general schedule civilians in favor of wage board employees. The data, though, are not clear with respect to the extent to which this trend is merely a reflection of the "grade creep" problem (or, equivalently, grade enrichment) found elsewhere in both the military and civil service personnel systems,[10] or whether it reflects a genuine move toward a more technically oriented force.[11]

Finally, the data indicate that there has been a further shift in DoD civilian employment patterns, as evidenced by the apparently large increase in the number of contract hires used since the pre-Vietnam period. Although estimates of the numbers of contract hires must be used with caution, given the scarcity of reliable data, those presented in Table 13-1 suggest that the increase in the numbers of contract hires may have been sufficient to entirely offset the decline in the numbers of indirect hires.

Military and Civilian Personnel Costs

One of the problems in evaluating the desirability of military-civilian substitution programs is the lack of good measures for making cost comparisons. Ideally, wage rates would reflect all personnel costs, so that differences in the wage rates of civilian and military personnel could be used to evaluate the cost implications of a substitution policy. The presence of large nonwage costs such as those associated with training and deferred retirement annuities, however, makes it impossible to fully capture the cost implications by the use of simple wage comparisons.

[9] As discussed in Chap. 2, indirect hires are foreign nationals used in support of U.S. overseas bases who are officially employed by the host governments. Since those governments are reimbursed for these employee costs by the United States, these personnel are "indirectly hired" by the U.S. military. As such, the decisions about who pays for these personnel and how many are hired are primarily political—hence, it is probably not appropriate to view these as a viable substitution option.

[10] There has been a gradual shift upward in the grade distributions for both military and general schedule civilian employees over the past 20 years. For example, the proportion of DoD general schedule employees in grades 13 to 18 increased about 30 percent between 1964 and 1976, as compared with a 13 percent increase in the size of the total DoD general schedule work force (William K. Brehm, testimony presented to the Committee on Armed Services, United States Senate, Ninety-Fourth Congress, Second Session, p. 1506).

[11] Bergmann shows that about two-thirds of the increase in the average grade of the general schedule work force between 1964 and 1976 can be "explained" by the changing occupational mix of the force—i.e., toward occupations that require personnel in higher grades. See Walter B. Bergmann and James E. Willoughby, "Analysis of the Causes for the Increasing Trend in DoD General Schedule Average Grade—FY1964 to FY1976," unpublished paper, Department of Defense, April 1977.

Evaluation of potential military-civilian substitutions therefore requires the development of better measures of the costs of military and civilian personnel.

A useful starting point is provided by a comparison of the *average costs* of military and civilian manpower. Average costs do not provide sufficient detail to assess the effects of specific substitutions, such as whether a particular billet ought to be civilianized. However, they are useful, first, for establishing a benchmark for determining the cost implications of a large-scale substitution of one type of personnel for another and, second, for comparing the trends over time in the costs of these different types of personnel.

The problem thus becomes one of measuring the average costs of military and civilian personnel. The most obvious way of measuring average costs is simply to divide the total budget costs by the numbers of personnel, thereby obtaining an estimate of the average current budget cost per individual employed by the DoD. For reasons that are discussed later, this is not an ideal procedure for estimating the comparative costs of filling particular manpower billets, but the results of this method, shown in columns (1) through (5) in Table 13-2, nevertheless provide some interesting insights into the costs of military and civilian personnel.

The most notable result in Table 13-2 is that military personnel are, and have been historically, less expensive on a per-man basis than direct-hire civilian employees. This is not unexpected, though, since the military relies on a basically much more junior force to fill its uniformed positions than it does to fill civilian slots.[12] Thus, if military-civilian substitutions were structured so that a large number of military personnel were to be replaced by an equal number of civilian employees, we would generally expect to see total personnel costs increase. Such a comparison is not very helpful, however, since military and civilian personnel are not likely to be replaced on a one-for-one basis; rather, substitutions are likely to revolve around particular positions or billets.[13]

The second result to emerge from this simple comparison of costs per man is that military and civilian personnel costs have increased similarly over the long haul, although the draft enabled the military (and the taxpaying public) to postpone some of the military cost increases until the early 1970s. Thus, whereas the average costs of civilian personnel have increased steadily through the past 20 years or so, the increases for military personnel were much slower during the 1950s and 1960s. Between the late 1960s and early 1970s, though, military personnel costs rose much more rapidly as a result of both the catch-up pay raises for career personnel in the late 1960s and the AVF pay raise in 1971. So by the mid-1970s, the ratio of military average costs to direct-hire civilian personnel costs was approximately equal to what it was during the late 1950s. The point is that the large AVF pay increase did not serve to distort the basic long-run comparative positions of military and civilian personnel costs—they were just returned to about the same relative positions that they occupied during the mid-1950s.

Third, the estimates shown in Table 13-2, in columns (3) and (4) in particular, reveal that the cost increase exhibited by direct-hire civilian employees is not due

[12] The military pays for this junior experience mix in other ways, including large training costs and lower productivity. The cost-effectiveness of this junior mix is analyzed more extensively later in this chapter.

[13] To illustrate, if 100,000 billets are civilianized, military personnel strengths could be reduced by more than 100,000, because of reductions in training and other support activities. Albro, for example, assumed that the substitution could take place on a 1-to-1.1 basis; the 1966 DoD draft study assumed that a ratio of 0.85 to 1.0 (i.e., 1 to 1.17) characterized the substitution potential.

Table 13-2

Average Costs of Military and Civilian Personnel
($ thousands/year)

Fiscal Year	Average Current Budget Cost Per Man					Average Cost Per Billet		U.S. Private Sector[g]
		Direct-Hire			Indirect Hire[d]			
	Military[a]	All[b]	GS[c]	Other[c]		Military[e]	Direct-Hire[f]	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
56	$ 3.76	$ 4.35	$ 4.60	$ 4.16	$ 0.60	$ 5.97	$ 5.30	$ 4.03
60	4.44	5.72	5.97	5.50	1.58	7.19	6.97	4.79
64	4.57	7.02	7.65	6.40	2.17	7.65	8.47	5.71
68	5.53	7.85	8.96	6.79	2.78	9.29	9.52	7.04
70	6.67	9.37	10.86	7.82	3.21	11.19	11.34	7.89
72	8.75	11.56	12.54	10.60	5.17	14.65	14.05	8.94
74	9.16	12.81	n.a.	n.a.	7.84	16.57	15.63	10.42
76	11.81	15.06	n.a.	n.a.	11.46	19.42	18.44	12.15
77[h]	12.31	15.83	n.a.	n.a.	n.a.	20.29	19.46	13.12

n.a.: data for estimates not available.

[a]Equals column (1) of Table 13-A-2 divided by column (1) of Table 13-A-1.

[b]Equals column (7) of Table 13-A-2 divided by column (6) of Table 13-A-1.

[c]Unpublished calculations provided by Charles Robert Roll of The Rand Corporation.

[d]Equals column (12) of Table 13-A-2 divided by column (8) of Table 13-A-1.

[e]Equals column (6) of Table 13-A-2 divided by column (3) of Table 13-A-1.

[f]Equals column (11) of Table 13-A-2 divided by the amount of the sum of columns (5) and (7) of Table 13-A-1.

[g]Average "compensation-per-worker" in private sector (including wages and salaries, overtime and bonus, contribution to social security and retirement, and health care benefits). Annual compensation-per-worker estimates derived by multiplying hourly compensation-per-worker estimates (source: Bureau of Labor Statistics) for all private sector employees times the average number of hours per weeks worked by production and non-agricultural workers in non-agricultural employment, times 52. Figures for fiscal 1976 and 1977 estimated from 1975 data, assuming 8 percent increases per year.

[h]Estimates from *1978 Budget of the U.S. Government*.

to the previously cited shift from wage board to general schedule employees, since both categories of civilian personnel have become similarly more expensive over time. Finally, the estimates of average costs for indirect hires help to explain the substantial reduction in the employment of these individuals discussed earlier; i.e., their costs have increased nearly twentyfold in the 20 years between 1956 and 1976.

For three important reasons, measuring average costs as current budget costs divided by average personnel strengths, illustrated in columns (1) and (2) of Table 13-2, does not reflect the "true" average cost of manning particular positions with military and civilian personnel, respectively. First, these estimates do not capture the large training costs associated with military personnel (or the smaller training costs associated with training direct-hire civilian employees).[14] Second, they do not

[14] For example, the Army reported in 1968 that of its 380,000 direct-hire employees, over 133,000 received formal schooling that year, accounting for some 14,445,512 man-hours (equivalent to 7,223 man-years) spent in formal training.

measure the large unfunded liability accrued each year for the future retirement benefits for both military and civilian personnel, since retirement costs are paid out of the current budget rather than when the liability for these future costs is incurred. Third, they do not include such personnel support costs as advertising, medical support, and so forth;[15] nor do they include expenditures for defense family housing.

Beginning with retirement costs, the budget costs for retired military personnel measure the expenditures incurred for those already on the retired rolls, but from the standpoint of defense resource allocation, we need a measure of the retirement cost liability accrued on behalf of those *currently* in the force. Similarly, for civilian personnel, although the budget costs shown for direct-hire civilians include the 7 percent contribution toward retirement that each employing agency makes on behalf of its personnel, this plus the 7 percent contributed by the employee is insufficient to fund the actual retirement benefits that civilian personnel eventually receive (see Table 2-7). Therefore, to accurately measure all the costs associated with civilian personnel, we need to include an estimate of the additional retirement liability (beyond that already recorded in the current budget) accrued on behalf of those currently in the DoD civilian work force, just as we do for military personnel.

To measure the impact of military training on the average cost of military personnel, we add the costs of training to the total other costs of military personnel (including the accrued retirement liability) and then divide this total by the number of military personnel not engaged in training.[16] In essence, this amortizes the personnel costs associated with those engaged in training activity across those currently serving in nontraining functions.[17] However, with the exception of civilian personnel engaged in the support of military training, most of these costs are already included in the total budget costs of military personnel, since about 75 percent of the total costs of military training are the pay and allowances for students and training staffs.[18] By adding the costs of civilians used in support of

[15] That is, whereas the manpower costs of recruiting (e.g., recruiters), medical support (e.g., physicians, nurses, etc.), and so forth are included in the estimates shown in columns (1) through (5) of Table 13-2, the nonpersonnel costs such as advertising, materials and supplies, and base operating support are not.

[16] Ideally, we would also subtract the number of personnel engaged in recruiting, since these personnel are also not contributing to current mission capability. In other words, total costs would be divided by the number of personnel not engaged in training or recruiting activity. Although a lack of historical data preclude this approach, rough calculations suggest that the failure to subtract the number of personnel engaged in recruiting activity results in estimates that understate the average cost of military personnel by less than 1 percent, so that the conclusions regarding the average cost of military personnel should not be substantively affected by this omission.

[17] An alternative procedure—one that is theoretically more appealing but practically more difficult to implement—would be to estimate the actual training costs when they were incurred for those currently serving in the military. Because of the difficulties in determining when the training for those currently in the force was received, however, this approach is very impractical. It should be noted that the estimates from the procedure shown in column (6) of Table 13-2 will, in general, overstate the true training costs derived from the more theoretically appealing procedure. This is because the approach used in Table 13-2 implicitly bases its estimate of the past training costs for the current force on current pay and allowances, which are larger than the actual past pay and allowances used in the theoretically preferred procedure. Thus, the estimated average cost per billet for military personnel tends to overestimate the true average cost of uniformed personnel.

Assuming that the average length of time since the completion of training for those currently in the force is three years and that pay raises average 6 percent per year, the method of dividing total current personnel costs (military personnel, retirement, and civilian personnel costs in support of military training) by the number of military personnel not engaged in training activity overstates the true average cost of trained military personnel by about 3 percent.

[18] See *Military Manpower Training Report for FY 1976*, Department of Defense, March 1975.

military training to the total budget costs of military personnel, we have a rough approximation of the total personnel costs associated with the training of military personnel.

To capture the nonpersonnel costs associated with military training, as well as those resulting from medical support, recruiting (e.g., advertising), base operating support, defense family housing, and so forth, we add an estimate of the personnel support costs and family housing costs shown earlier in Table 2-5 that are associated with military personnel to the other costs of military personnel.[19]

The above thus provides a methodology for estimating, albeit approximately, the average costs of filling the average billet with military and direct-hire civilian personnel. The average costs of military personnel are estimated as the sum of (1) the costs of active duty military personnel as reported in the budget (which include pay, allowances, travel, recruiting, etc.), (2) the accrued retirement liability for those currently in the force, (3) the costs of civilian personnel used in support of military training,[20] (4) the personnel support costs associated with military personnel, and (5) family housing costs, all divided by the number of military personnel not engaged in training activity (i.e., total military personnel less the numbers of students and training staffs).

For direct-hire civilian personnel, we follow a similar procedure, taking the sum of (1) civilian personnel costs as reported in the budget, (2) the accrued civilian retirement liability, (3) the personnel support costs associated with civilian personnel, and (4) the costs of training support associated with the training of civilian personnel,[21] and dividing this total by the number of civilian personnel not receiving training (i.e., the total number of civilians less those receiving training).[22]

Perhaps the most interesting feature of the estimates obtained from this procedure, which are shown in columns (6) and (7) of Table 13-2, is the similarity between the costs of military and direct-hire civilian personnel.[23] Indeed, there has historically been less than $1000 difference between the average costs of these two sources of labor input. If we further take into account the fact that the figures in column (6) probably overestimate the average cost of filling billets with uniformed personnel for positions that are likely to be candidates for substitution,[24] then military

[19] The distribution of personnel support costs between military and civilian personnel were estimated based on the admittedly arbitrary assumption that the per-man personnel support costs are twice as much for military personnel as for civilian personnel. This assumption may not be too far off the mark, however, since base operating support costs represent a sizable fraction of total personnel support costs (about 35 percent in fiscal 1978). Defense family housing costs, however, were assumed to be incurred solely by uniformed personnel. See App. 13-A.

[20] Lacking actual cost figures for those civilians used in support of military training, estimates were derived as the number of such personnel times the average cost of direct-hire civilian personnel shown in column (2) of Table 13-2.

[21] See App. 13-A for the method of estimation.

[22] Albro estimated that the training given to civilian personnel involves about 2.5 percent of the direct-hire civilian work force. See footnote 14.

[23] Obviously, the estimates given in columns (6) and (7) only approximate the average costs of military and direct-hire civilian personnel. The basic problem in getting "good" estimates of these average costs is that many of the specific cost elements such as the accrued retirement liability, training, and personnel support that enter the calculations are not known with much precision. Although estimates of these costs have been included in columns (6) and (7) of Table 13-2, determination of the full cost implications of military-civilian substitutions depends critically upon obtaining better estimates of these three cost elements for military and direct-hire civilian personnel.

[24] For two main reasons, the estimates shown in columns (6) and (7) of Table 13-2 probably overestimate the average cost of military personnel relative to the average cost of direct-hire civilians. The first concerns the way the costs of military training have been incorporated into the estimates shown in

personnel may actually be no more expensive on the average than direct-hire civilians.

Given the similarities between military and direct-hire civilians shown in columns (6) and (7) of Table 13-2, why are direct hires commonly assumed to be less expensive? There are probably two main reasons. First, whereas the training and retirement costs associated with military personnel are generally well recognized, less well recognized are the unfunded retirement liability and training costs associated with direct hires. Second, there are certain costs commonly associated with military personnel—most notably base operating support—that would be incurred regardless of whether the personnel are uniformed or not.

The larger point, of course, is that a wholesale substitution of direct-hire civilians for uniformed personnel is unlikely to yield significant cost savings—especially given the inflexibility of the Civil Service System—and might even lead to cost increases.[25] As shown in Table 13-2, this is because both military personnel and direct hires are very expensive.

This takes us back to another important source of potential substitution, contract hires. Although we cannot determine the exact costs of contract hires, we can gain some insight into their costs by examining those of employees in the private sector. Assuming that civilian firms contracting with the DoD have to pay the average compensation paid to workers in the private sector, we can estimate the average cost of contract hires for the DoD. Using this approach, the average com-

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column (6), as discussed in footnote 17. The second concerns the fact that the military figures include certain personnel—most notably, pilots—whose positions are unlikely candidates for substitution but who are very costly because of expensive training. As a result, the estimates in columns (6) and (7) probably overstate the average costs of uniformed personnel, relative to those for direct hires, for jobs that are likely candidates for substitution. Some rough calculations suggest that the magnitude of the overestimate from these two factors is probably in the neighborhood of 5 percent.

A third reason, probably less important, is that the military personnel budget account includes the costs of permanent-change-of-station (PCS) and temporary-duty (TDY) moves for military personnel, while the corresponding costs for civilian employees of the DoD are excluded. Although the amount of PCS and TDY for direct-hire civilians is certainly less than that for uniformed members, the exclusion serves to further overestimate the costs of uniformed members relative to those of civilians.

[25] This conclusion is subject to two important caveats. First, it assumes that the mix of individuals in the entire direct-hire civilian work force is representative of the mix of civilians that would be used to fill those positions designated to be civilianized and, similarly, that the mix of individuals in the entire military work force is representative of the mix of those military personnel who would be replaced. Obviously, the conclusions regarding the cost-effectiveness of a substitution of direct hires for military personnel would be significantly altered to the extent that these assumptions do not hold. For example, if the military personnel replaced are more expensive than average, and if the civilian replacements are less expensive than average, then civilian substitution might be very cost-effective. Although such an outcome is possible, it is unlikely, particularly in a large-scale substitution effort, since the larger the substitutions, the more likely it is that the costs of the replacements and those who are replaced will be similar to the populationwide averages.

Second, the comparisons thus far have focused on *average* costs, when from economic theory we know that *marginal* cost provides the appropriate decision criterion. Given the size of the DoD direct-hire work force relative to the total U.S. working population, however, average and marginal costs are not likely to be very different for direct-hire civilians (except in the case of local labor market constraints where the DoD is the major employer—in which case, the marginal cost for direct hires would exceed the average cost).

In the case of military personnel, there are two possibly offsetting factors. On the one hand, to the extent that there are certain fixed training or personnel support costs, then the average cost of military personnel exceeds the marginal cost. On the other hand, the military clearly faces an upward-sloping supply curve for recruits from such a small age group, so that the marginal cost for new recruits exceeds their wages. The effects of the upward-sloping supply curve are probably less than might at first appear, since a reduction of 100,000 military personnel, for instance, is equivalent to a reduction in combined officer and enlisted accession requirements of only about 20,000—less than 5 percent of the DoD's fiscal 1976 accession requirements. Overall, then, the average costs shown in Table 13-2 probably do not differ very much from the marginal costs for positions that might be civilianized, except for the 5 percent or so overestimation of military average costs (see footnote 24).

pensation per employee in the U.S. private sector shown in Table 13-2 suggests that contract hires are potentially much less expensive than either military personnel or direct-hire civilians.

Whereas the average costs for military and direct-hire civilian personnel are within a few hundred dollars of one another, contract hires may be several thousand dollars less expensive than either of these sources of labor input—even if the civilian contractor earns a 10 percent profit on the contract services. Thus, to the extent that civilianization is likely to be cost-effective, it is likely to be so through making more extensive use of contract hires. Perhaps the greatest cost savings are those to be realized from substituting contract hires for direct hires.[26] To illustrate, the estimates in Table 13-2 suggest that the substitution of 250,000 contract hires for 250,000 direct hires could save about $1 billion per year.[27]

Military-Civilian Resource Allocation

The preceding discussion provides the basis for evaluating past military-civilian manpower resource allocation in the DoD and for determining the implications of these trends for future allocation policies. It was shown in Table 13-2 that while military personnel became relatively less expensive than direct-hire civilians during the 1950s and 1960s, by the 1970s military personnel were once again about as expensive as direct hires.

Figure 13-1 shows that the DoD has in fact demonstrated a substantial response to these changes. As the cost of military personnel fell relative to the cost of direct hires during the 1950s and early 1960s, the DoD responded by decreasing the use of direct hires relative to uniformed personnel. Then, as the cost of military personnel began to rise relative to the cost of direct hires during the late 1960s and early 1970s, the Services again responded—this time, by increasing the use of direct hires relative to military personnel.

Furthermore, the data presented earlier in Table 13-1 show that the Services also seem to have responded to some of the cost-saving potential offered by contract hires; rough estimates indicate that they have substantially increased the use of such personnel over the past 10 or 15 years. At the same time, since most of the substitution appears to have been contract hires for military personnel, the poten-

[26] One of the benefits of using contract hires is that civilian contractors can take advantage of local labor market conditions. For instance, in areas where the cost of living and the prevailing wage rates are less than the national average, civilian contractors may be able to offer services for substantially less than it would cost to employ Federally compensated civilian personnel. In contrast, there is far less flexibility with direct-hire civilians (even in the case of wage board employees, for whom there is modest wage variation across the country), and as a result, the DoD may be paying substantially more than required for some of its direct-hire employees. In fact, the Congressional Budget Office (see *The Costs of Defense Manpower: Issues for 1977*, op. cit.) shows that existing Federal legislation may actually inhibit taking advantage of wage differentials across the country. Note also that the use of contract hires avoids the rotation, mobilization, and other problems associated with the replacement of military personnel.

[27] This conclusion is given additional support by two recent studies, where the costs of providing base operating support (BOS) were compared for two Air Force bases: standard BOS operations at Reese Air Force Base versus contractor-supplied BOS at Vance Air Force Base. The results of both studies show that contractor-supplied BOS is about 30 percent less expensive than the standard mix of military and direct-hire personnel. Interestingly, the estimates presented in Table 13-2 also show that contract hires were about 30 percent less expensive than military or direct-hire personnel in fiscal 1976. (Robert Paulson and Arnold Zimmer, *An Analysis of Methods of Base Operating Support: Contractor Operations Versus Standard Operations at Two Undergraduate Pilot Training Bases*, The Rand Corporation, R-1563-PR, February 1975; and Robert Shishko, Robert Paulson, and Wayne Perry, "Alternatives for Base Operating Support at Undergraduate Pilot Training Bases: An Update," The Rand Corporation, unpublished paper, April 1977).

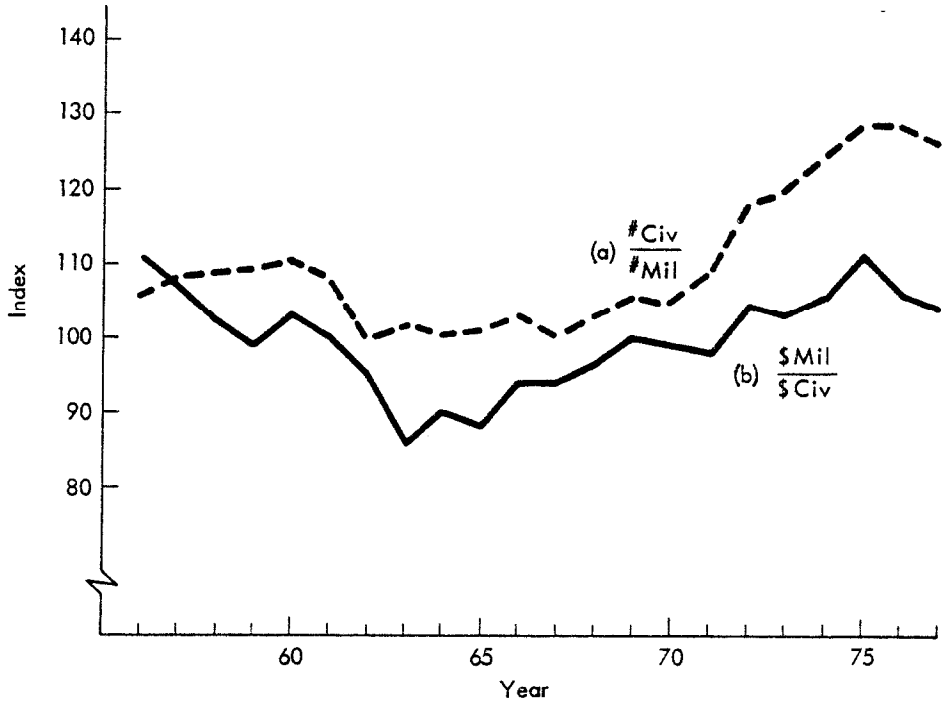

Fig.13-1—Military and direct-hire civilian personnel utilization and costs: (a) ratio of number of civilians not in training to number of military personnel not engaged in training (index, 1964: 100) and (b) ratio of average cost of military personnel not engaged in training to average cost of civilians not in training (index, average cost: 100)

SOURCE: See App. 13-A.

tially large savings that could result from substituting contract hires for direct hires remain virtually untapped.

For the most part, though, the data show that the DoD has responded correctly to the (budget) cost incentives. This is in marked contrast to the allocation of defense resources between capital and labor, where almost no response appeared in the capital-labor ratio as a result of the increased cost of labor relative to capital.

The question, then, is why the military responded to the changes in the costs of military relative to civilian personnel but not to the changes in the cost of manpower relative to the cost of capital. Perhaps most important, the budget incentives discussed earlier encourage the type of labor-labor substitution represented by the military-civilian personnel mix but tend to discourage capital-labor substitutions. That is, the costs for military and civilian personnel both tend to occur in the periods during which their labor services are rendered, whereas in the case of capital-labor substitutions, capital must be purchased in the current period although it yields services over many years and generally only realizes savings in the long run.

Another reason for the disparity is undoubtedly the visibility accorded the civilianization issue, which has encouraged the military to search for ways of

substituting civilians for military personnel. Capital-labor resource allocation, on the other hand, has received relatively little attention, either in the Congress or from the research community. Finally, it is conceptually simpler to think of substituting one type of labor for another than to think of capital-labor types of substitutions. Capital-labor substitution specifically requires new types of equipment that utilize smaller amounts of labor inputs, whereas military-civilian labor substitution merely requires one individual to be replaced by another.

Thus, the Services have in fact adjusted their mix of uniformed and civilian employees as the budget costs of these two sources of labor input have changed, so it is not clear that further substitutions would yield substantial cost savings. Before further large-scale substitutions are implemented, it is necessary to develop a more complete understanding of the cost implications of such substitutions, including all cost elements (e.g., pay, training, travel, fringe benefits) as well as the effects on readiness, the rotation base, and so on. Also, the focus on civilianization may have served to divert attention from potentially more profitable substitutions, such as the capital-labor substitutions described in the last chapter, the contract-hire for direct-hire substitutions described in this section, and the experience mix of the force described in the next section.

THE FIRST-TERM/CAREER MIX

The distribution of military personnel by length of service—which, because the military maintains a "closed" personnel system, is equivalent to the experience mix of the force—has long been recognized as one of the major manpower planning issues confronting the DoD. The historical concern for the years-of-service distribution of the force, though, has been largely based on "personnel" factors, as opposed to requirements factors, and derives principally from two particular aspects of the military personnel system: its closed nature, and the strong link between promotion and length of service. As discussed in Chap. 2, the closed nature of the military personnel system means that the military draws its experienced personnel from within the system. Therefore, to maintain an adequate stock of experienced employees, the Services must also maintain an adequate stock of junior personnel.

Because of the "up-or-out" nature of military promotion policy and the strong correlation between promotion opportunities and length of service, promotion policy has also played a key role in determining the experience mix of the force. The Services have been reluctant to have too many junior personnel, lest there be a glut of personnel eligible for promotion to the higher grades (with a corresponding reduction in promotion opportunities); but they also have been reluctant to have too few junior personnel, lest there be inadequate selection opportunities.

As a result of these concerns, the individual Services and the OSD have devoted considerable effort to the development of management policies for assuring the "proper" experience mix of the force.[28] However, because factors such as the

[28] The Air Force was the first to attempt to explicitly model the desirable experience mix of the force, including officer and enlisted personnel, with the TOPLINE and TOPCAP personnel planning models. The Navy also became actively involved in similar planning efforts, with the ADSTAP planning program for enlisted personnel. The driving concern behind these efforts, particularly in the Air Force, was the historic unevenness in the years-of-service distribution. The Services had experienced the problems of large personnel "humps" (a disproportionate number of personnel with the same amount of service)

maintenance of adequate promotion opportunities for military personnel have been a point of emphasis, decisions regarding the experience mix of the force have frequently been based more on personnel management concerns than upon requirements or cost issues.

With the advent of the AVF, the issue of the experience mix assumes a new and somewhat different importance. Although the basic problem remains the same—i.e., choosing the appropriate experience mix—the removal of the draft makes the experience mix as much a resource allocation (or requirements) issue as a personnel management issue. Specifically, by underpricing junior personnel, the draft encouraged the military services to develop and maintain manpower utilization patterns that unduly emphasized the use of junior personnel, especially in the enlisted forces. The removal of the draft and the concurrent large AVF pay raise for junior personnel therefore argue for a reexamination of the experience mix.

From a resource allocation perspective, the problem of choosing the experience mix can be simplified by viewing it in terms of first-term and career proportions.[29] It was shown in Chap. 2 that to the extent that individual inputs are similar with respect to their supply (i.e., cost) and demand (i.e., productivity) conditions, they can be grouped together for analytic purposes. A corollary to this, then, is that if groups of inputs differ significantly in their supply and demand characteristics, they should be viewed as separate input types. Since first-termers and careerists differ significantly with respect to both supply and demand, the first-term/career mix is clearly a resource allocation issue.[30]

Because the major impact of the draft was upon the enlisted ranks, the remainder of this section focuses on the first-term/career mix of the enlisted force, specifically as it has been affected by the removal of the draft. The implications of the Services' historic emphasis on first-termers as the primary source of enlisted manpower and the increased cost of first-termers that resulted from the decision to end the draft raises a number of key issues with respect to military resource allocation as well as the future of the volunteer force. These include the cost of maintaining

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stemming from accession policy during the Korean War and large "valleys" (a dearth of personnel in similar experience groupings) deriving from post-Korean accession policies. These humps and valleys played havoc with promotion opportunities (for the Service members) and selection opportunities (for the Services). Recognizing that similar situations could arise as a result of the Vietnam War, the Services began to anticipate the problem and focused on developing ways of structuring what they wanted in the way of experience mixes. The second factor leading to the development of these personnel planning efforts was the technological advances in computers, particularly the software packages that made practical the development of mathematical models for examining the implications of alternative experience mixes.

More recently, the OSD became actively involved in similar planning efforts. The concern in this case, however, derived from two different sources. First, the OSD had the responsibility for monitoring the Services' bonus requests for enlisted personnel and therefore needed a capability to determine the desired experience mix and, hence, the bonus awards required to alleviate career shortages. Second, as part of the effort to formulate officer career development guidelines, the OSD developed its own capability to establish procedures for evaluating the experience mix of the officer corps, and this effort resulted in the submission of the Defense Officer Personnel Management Act to Congress. Thus, after years of neglect, a substantial effort was devoted to the development of methods for determining the desired mix of the force.

[29] Although the Services differ in the length of their enlistment obligations, it is an empirical convenience to view those with less than four years of completed service as first-termers and those with four or more years of completed service as careerists.

[30] On the supply side, first-termers are drawn from the entire pool of eligible applicants, while careerists are drawn solely from those already in the military. On the demand side, first-termers spend a substantial amount of time in training and are less productive on the job than careerists and, as a result, fill different requirements than careerists.

the force, the capability of the force, accession requirements, training requirements, and the way the force is managed.

Historical Patterns in Cost and Utilization

From the theoretical framework presented at the outset of Chap. 12, we know that the optimal allocation of defense resources depends on the costs and productivities of the various resources in the defense mission.[31] Assuming that there has been no substantial change in the relative productivities of first-term and career enlisted labor input,[32] we can examine how the patterns of first-term and career labor utilization have varied (or not varied) in response to changes in the relative costs of these inputs.

Beginning with the cost side, one of the principal effects of the AVF pay increase was to increase the costs of first-termers substantially relative to careerists, as shown in Table 13-3. Whereas the increases in basic military pay for first-termers and careerists were nearly parallel between the late 1950s and 1968, first-term pay increases began to outstrip those for the career force between 1968 and the large AVF pay increase of 1971—about 40 percent for first-termers as compared with about 30 percent for the career force.

The AVF pay increase for first-termers had an even more dramatic effect on the relative costs of these two sources of enlisted manpower. Between 1971 (before the AVF pay increase) and 1973, first-term basic pay increased by nearly 50 percent, as compared with a less than 15 percent increase for careerists. Together, then, first-term basic pay increased by some 110 percent between 1968 and 1973, versus a 50 percent increase in the average basic pay for career enlisted personnel. Put another way, although career personnel were about 100 percent more expensive than first-termers during most of the 1960s (in terms of basic pay), they are only about 55 percent more expensive since the removal of the draft.

Economic theory tells us that as long as first-term and career labor are to some extent substitutable for one another, this rise in the cost of first-termers relative to the cost of careerists ought to be accompanied by a reallocation of military labor resources—i.e., by substituting careerists for first-termers. In other words, the military should reevaluate their manning requirements in light of the changing cost structure brought about by the AVF and, specifically, should consider making more extensive use of career personnel.

The evidence given in Table 13-4, however, shows that there has been essentially no adjustment in the use of first-term and career labor in response to the increased cost of first-termers. Prior to the Vietnam War, 59 percent of all enlisted personnel had less than four years of military service, the same as in 1974. Moreover, the Services' stated AVF objectives, derived from their personnel plans, show that there are no long-run plans to reduce reliance on first-term labor input. In fact, the stated objectives of the Air Force and Marine Corps actually call for larger

[31] In particular, a condition necessary for optimal resource allocation between first-term and career labor is that the ratio of the marginal product to the marginal cost of first-termers should equal the ratio of the marginal product to the marginal cost of careerists.

[32] There is some reason to suspect that with the increased technology of military weapons and support systems and the correspondingly more difficult jobs that have resulted (particularly in maintenance), the value of experienced personnel relative to junior personnel has actually increased over time. Thus, even if costs had not changed, it may be that the Services should have moved toward a more career-intensive force over time.

Table 13-3

Comparisons of Monthly Basic Pay for First-Termers and Careerists[a]

	Average Monthly Basic Pay		
	First-Term	Career	Career/First-Term Pay Ratio
1958	$118	$247	2.09
1964	141	288	2.04
1968	175	373	2.13
1971[b]	246	490	1.99
1973	365	563	1.54

[a]Weighted average of basic pay for first-termers (<4 years) and careerists (≥4 years); calculations based on (1) FY1972 pay grade distribution for each year of service, and (2) Service objective plans for year-of-service distributions (furnished by OASD (M&RA)).

[b]Before the AVF pay raise.

Table 13-4

Percentage of the Enlisted Force in the First Term
(Less than Four Years of Service)

Fiscal Year	Army	Navy	USMC	USAF	DoD
1962	66	61	66	46	59
1964	66	61	66	46	59
1966	74	64	74	50	65
1968	81	67	82	55	72
1970	80	67	80	50	69
1972	65	62	75	50	61
1974	64	57	73	51	59
Stated Service Objectives[a]	63	57	73	57	61

SOURCE: Data furnished by OASD (M&RA).

[a]OASD(M&RA) memorandum dated June 1, 1976.

proportions of their enlisted forces to be first-termers than during the pre-Vietnam draft. Thus, there is good reason to believe that current Service plans rely too heavily upon very junior enlisted personnel.[33]

Productivity and Cost-Effectiveness

The estimates given in Table 13-3 show that the average basic pay for first-termers has increased *relative* to that for careerists but that career basic pay remains more than that for first-termers in an *absolute* sense. Therefore, implicit in the notion that careerists ought to be substituted for first-term personnel is the assumption that careerists are more productive on the job (and, hence, can be substituted for first-termers on a less than one-for-one basis) and/or that there are non-basic pay personnel costs that impact more heavily upon first-term personnel than upon career personnel.

Not only are both of these aspects true, the substantial attrition of first-term military personnel also makes career personnel more cost-effective. That is, the nature of the timing of personnel costs, the productivity on the job, and first-term enlisted attrition all serve to make career personnel more cost-effective, so that the substitution of careerists for first-termers can decrease costs and/or increase overall force capability.

To begin with, personnel costs include more than basic pay, so determination of the cost-effective experience mix must include these other costs. Second, because of their inexperience and the time spent in training and transit, first-termers are considerably less productive. Third, substantial first-term attrition means that much of the initial accession and training investment is never recouped. Each of these factors is examined in some detail below.

Costs. As mentioned above, military personnel costs include a number of specific items, among which are regular military compensation (e.g., basic pay, allowances, tax advantage), accession costs (e.g., recruiting, enlistment processing, and enlistment bonuses, if any), training costs (both recruit and specialized skill training), reenlistment bonuses, and the accrued liability for future retirement costs. Accession, training, and enlistment bonus costs tend to be incurred in disproportionate amounts by first-term personnel, whereas RMC, retirement, and reenlistment bonus costs are larger for career personnel. The net effect of all these costs, as shown in the appendix to this chapter, is that first-term personnel are about 20 percent less expensive *per man* than careerists, not the 35 percent implied by the simple basic comparisons shown in Table 13-3.[34]

[33] There is another, more subtle reason to suspect that the draft relied too heavily upon first-termers relative to careerists, even given the actual first-term and career wage rates. Specifically, the draft not only depressed the wage rate for first-term labor, it also guaranteed a nearly infinite supply at that wage, so that the marginal cost of first-term labor was approximately equal to the average cost. In marked contrast, the supply curve for careerists was clearly upward-sloping, as evidenced by the fact that reenlistment bonuses were needed even during the draft. Since the marginal cost curve lies above the average cost curve if the supply curve is upward sloping, this means that the marginal cost of careerists was more than the average cost. In fact, it can be shown that whereas the average cost of careerists was about twice that of first-termers under the draft, the marginal cost of careerists was about 3½ times that of first-termers.

Since marginal costs are the relevant measure with respect to resource allocation, this means that the draft encouraged an even more first-term intensive force than simple comparisons of average costs (i.e., pay rates) would suggest.

[34] The commonly held notion that first-termers are less expensive than careerists derives from this inappropriate comparison of costs per man. From a resource allocation viewpoint, however, the question is not one of costs per man, but rather cost per unit of productivity.

Productivity. There is a growing body of defense and nondefense literature which demonstrates that career personnel are considerably more "productive" than first-termers. First of all, the large amount of time spent in training and transit means that first-termers are unavailable for job assignments during a substantial portion of their first tour of enlistment—and, hence, have zero productivity during this period. A new enlistee undergoes enlistment processing, then recruit training, and probably specialized skill training. Moreover, a recruit is likely to spend some time traveling between each of these steps, all before reaching his or her first job assignment. Altogether, the time that passes between the date of enlistment and the first job assignment can run anywhere from a couple of months to two years, with the average time being about six months.[35]

Second, the evidence also indicates that first-termers are less productive in actual job assignments than are more experienced personnel.[36] Because the first-term force consists of individuals with little or no prior military or civilian job experience, the training and experience that these individuals bring to their military job duties are largely limited to their military training and experience. As a result, a substantial amount of learning takes place on the job. Of course, the extent to which junior personnel on the job are less productive than more senior personnel depends upon the nature of the job. In low-skill jobs, for example, there may be little, if any, productivity differential between individuals with only a modest amount of military job experience and those with substantial experience, whereas in high-skill jobs there is likely to be a substantial productivity differential between such individuals.[37]

The problem is not that junior personnel are not fully capable of performing many job tasks, but that the military's heavy reliance on first-term personnel means that first-termers man many jobs that would be filled by more experienced personnel in the civilian sector. When first-term personnel man jobs that would be better manned by more experienced personnel, there is a resultant loss of productivity.

Estimates of the relationship between the amount of experience on the job and productivity on the job are, at best, sketchy. However, the estimates obtained by Gay and described earlier in Chap. 8 provide a useful starting point. As shown in Fig. 13-2, Gay's estimates of productivity on the job for the average of all jobs in his sample indicate that there is a substantial difference between the productivity

[35] For fiscal 1977-78, the average length of basic military training is projected to be about 8 weeks (Army, 7 weeks; Navy, 9 weeks; Marine Corps, 11 weeks; and Air Force, 6 weeks). Similarly, the average length of time in initial enlisted skill training is projected to be about 14 weeks for fiscal 1977-78 (Army, 13 weeks; Navy, 9 weeks; Marine Corps, 16 weeks; and Air Force, 20 weeks) (*Military Manpower Training Report for FY 1977*, Department of Defense, March 1976). Including the amount of time required for enlistment processing and travel between training assignments, the average length of time before the typical recruit is available for job assignments is about six months. This conclusion is supported further by Gay's survey data (described earlier), in that the average time between initial accession and arrival at the first duty station for individuals in the sample was about 185 days (tabulations provided by Robert M. Gay, The Rand Corporation, 1976).

[36] See, for example, Rodney Weiher and Stanley A. Herowitz, *Formal and On-the-Job Training for Navy Enlisted Occupations*, Center for Naval Analysis, No. 173-71.10, Arlington, Virginia, November 1971; Jacob Mincer, "On-the-Job Training: Costs, Returns, and Some Implications," *Journal of Political Economy*, Supplement, October 1962; and Dave M. O'Neill, "Determinants of Labor Turnover Costs in the Military," in *Studies Prepared for the President's Commission on an All-Volunteer Armed Force*, U.S. Government Printing Office, Washington D.C., November 1970.

[37] To illustrate, Gay's estimates cited earlier suggest that an individual with one year of experience on the job is about 40 percent as productive as the four-year specialist in the average high-skill specialty; in the average low-skill specialty, he is about 60 percent as productive. Unpublished tabulations provided by Robert M. Gay, The Rand Corporation, 1976.

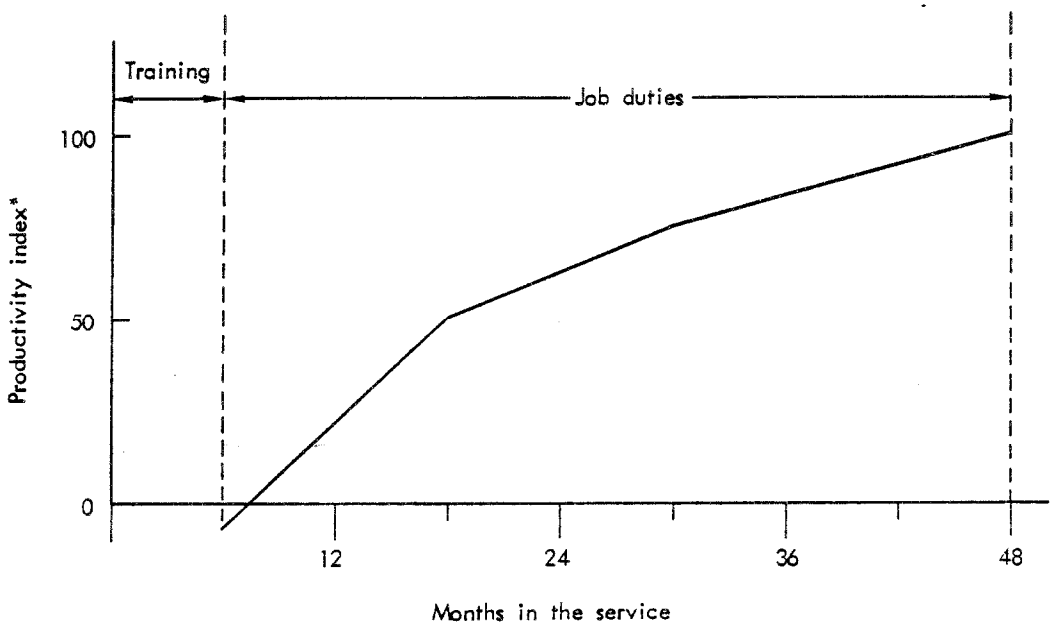

Fig.13-2—Productivity of first-term enlisted personnel on the job
SOURCE: Unpublished tabulations provided by Robert M. Gay, The Rand Corporation, 1976.

of experienced personnel and that of very inexperienced first-term personnel. For example, the average individual with 18 months of service (12 months on the job, assuming 6 months spent in training and transit) is estimated to be only half as productive as the average individual with four years of military service. In fact, during the first few months on the job, individuals are estimated to actually have negative productivity, in the sense that the amounts of supervisory time that they require exceed their own productive contribution. Overall, Gay's estimates show that individuals during the entirety of their first four years of military service are on the average about 55 percent as productive as the typical serviceman with four years of service.[38]

This means that careerists can be substituted for first-termers on less than a one-for-one basis without decreasing military capability. For example, Gay's estimates imply that for every 100 individuals with four years of service that are added to the force, about 180 first-termers could be removed without reducing the capability of the force. Alternatively, if first-termers are replaced by careerists on a one-for-one basis, total force capability will increase.

Attrition. The Services incur large costs for every new recruit, including those of accession and training, whether or not the individual ever serves in an actual job. When an individual leaves before the completion of his enlistment obligation, much of this investment is never recaptured. Since attrition is much worse among

[38] That is, the area under the curve in Fig. 13-2 divided by four (because of the four years in the first term) equals about 0.55.

first-term personnel, particularly during their first year,[39] attrition acts to favor the use of career personnel.

The Cost-Effective First-Term/Career Mix. From the theoretical framework presented in Chap. 12, the optimal experience mix of the force is a function of the marginal costs and productivities of personnel in different experience categories. Ideally, a system of equations describing these marginal cost and productivity relationships would be set up to determine optimal experience mix, using an approach such as that developed by Jaquette and Nelson.[40] In the absence of precise information about marginal costs and productivities, however, we are forced to rely on more approximate methods and assumptions regarding the costs and productivities of personnel according to experience. These assumptions nevertheless provide useful insights into the effects that different first-term/career mixes might have on total costs and capabilities of the force.

To begin with, Gay's estimates shown in Fig. 13-2 provide a useful starting point for measuring the productivity of first-term personnel during their period of time spent on the job. Combined with the assumption that new recruits spend about six months initially in training and transit, these estimates then allow us to identify the relative productivity of the average new recruit during his entire first term of duty. There is less evidence regarding the productivity of career personnel, but for the sake of illustration, we make the conservative assumption that careerists' performance on the job progresses at half the rate of productivity increases for comparably aged white high-school graduates in civilian employment.[41]

The above assumptions allow us to identify the relative productivity for the average *individual* in the first term and the average *individual* in the career force. To measure the average productivity of the entire first-term and career forces, however, we must take into account attrition and retention. For example, because first-term attrition takes place before first-termers become productive on the job, the average productivity of the first-term force as a whole is less than the average productivity for the average first-termer. Together, these assumptions about individual productivity and attrition/retention behavior (which are described in detail in the appendix to this chapter) mean that first-termers are on average 40 percent as productive as careerists for the current 60/40 experience mix, as shown in Table 13-5.[42] In other words, total force capability could be maintained by substituting about 100 careerists for 250 first-termers.

[39] To illustrate, about 15 percent of all new recruits entering the military between January and June 1973 failed to complete their first year of service, and another 15 percent failed to complete the second year (unpublished tabulations provided by MARDAC, 1976).

[40] Jaquette and Nelson offer one of the first attempts to incorporate supply (cost) and demand (productivity) conditions systematically into a framework for setting the optimal experience mix of the force. See David L. Jaquette and Gary R. Nelson, *The Implications of Manpower Supply and Productivity for the Pay and Composition of the Military Force: An Optimization Model*, The Rand Corporation, R-1451-ARPA, July 1974.

[41] Assuming that individuals in the private sector are paid according to their productivity, an age-earnings profile of white high-school graduates is equivalent to the productivity curve in civilian employment for these individuals. Since the occupations in the enlisted force probably correspond reasonably well with the types of occupations that high-school graduates in the civilian sector enter, the assumption that the productivity increases for careerists equal one-half the productivity increases for white high-school graduates in the civilian sector should provide a conservative estimate of the actual productivity increases for career personnel in the enlisted ranks.

[42] That is, whereas the average first-termer was estimated earlier to be about 55 percent as productive as the average four-year specialist, the productivity of the first-term force per man in the first term is estimated to be about 40 percent as much as that of the career force per man because of (1) the substantial attrition during the early part of the first term, and (2) the productivity increases that continue (though at a slower rate) beyond four years of service.

Table 13-5

Productivity and Cost Implications of Different Force Mixes[a]

Force Structure[b]		First-Term Force	Career Force	Total
60/40	Number (000s)	1080	720	1800
	Productivity Index[c]	507	825	1332
	Cost ($ bil.)	$11.8	$9.5	$21.4
50/50	Number (000s)	802	802	1604
	Productivity Index	414	920	1334
	Cost ($ bil.)	$8.6	$11.2	$19.8

[a]Based on cost and productivity assumptions shown in Appendix 13-A (see Tables 13-A-4 and 13-A-6).

[b]Percentages of first-termers (<4 years) and careerists (≥4 years).

[c]Productivity defined as equal to 1.0 for individuals with four years of service.

Table 13-5 also shows that first-termers are about twice as expensive per unit of productivity as careerists, even though careerists are more expensive per man. Therefore, and consistent with the evidence on the historical trends in costs and utilization of first-term personnel presented earlier, the productivity and cost data presented for the 60/40 experience mix in Table 13-5 suggest that career personnel can be substituted for first-termers at a rate of about four careerists for every ten first-termers—thereby reducing costs and maintaining force capability.

To illustrate the possible effects of such a substitution, Table 13-5 also shows the productivity and costs for a 50/50 experience mix. Even taking into account the higher rates of pay, the higher retirement costs, and the larger reenlistment bonuses that would be required to sustain a larger career force, we find that a total enlisted force of about 1.6 million, split evenly between first-termers and careerists, would provide the same overall force capability as the current 1.8 million member force with a 60/40 experience mix.[43] Under these assumptions, moving from the current (and projected) 60/40 mix to a 50/50 mix would save about $1.6 billion per year.[44,45]

Looking ahead to the mid-1980s, the potential savings resulting from a 50/50 mix could be even larger. That is, we recall from Chap. 9 that the Services are projected to face significant recruiting shortfalls unless they reduce the demand for

[43] It is important to note that 60,000 man-year equivalents (out of this 200,000 reduction in enlisted force size) is simply a reduction in training loads.

[44] Alternatively, for the same budget cost (i.e., $21 billion), moving from the current 60/40 mix to a 50/50 mix would increase productivity by approximately 8 percent (i.e., $1.6 billion/$21.1 billion).

[45] Note, however, that all of these costs do not show up in the DoD or Service budgets. For example, the estimates shown in Table 13-5 are based on RMC, which includes the tax advantage which, in turn, is not in the DoD budget but rather represents revenue not collected by the Treasury. Alternatively, these estimates include the economic cost of military retirement, which do not show up in the Service budgets (indeed, if the costs were (incorrectly) excluded, careerists would appear to be even more cost-effective, as the savings from going to a 50/50 mix would add up to about $2.0 billion).

new recruits to more cost-effective levels (or unless the Services significantly relax their quality standards). Assuming an enlistment supply elasticity of 1.25, the 20 percent shortfall projected for the mid- to late 1980s (based on the Services' projected 60/40 experience mix) could be eliminated by an enlistment bonus of about $3,000 (in 1976 constant dollars). Assuming that this would have to be paid to all 400,000 or so new recruits required under the 60/40 experience mix, switching from the current 60/40 experience mix to a 50/50 mix could actually result in cost savings of some $2.8 billion per year by the mid- to late 1980s.[46]

The considerable potential cost savings from this substitution derive first from the fact that the costs per man in the first-term and career forces are much more nearly the same than a simple examination of wages implies. Together, these cost and productivity factors combine to make careerists much less costly *per unit of productive output* than first-term personnel.[47]

Second, by reducing the demand for enlisted accessions, the 50/50 experience mix would enable the Services to reduce the numbers of non-high-school graduates entering the service and, in general, to screen applicants more carefully. This would reduce attrition rates during the first term, since high-school graduates exhibit much lower attrition rates than do non-high-school graduates. Similarly, the Services would have to accept fewer three-year enlistments, meaning that more productive man-years could be gained from each new recruit. This reduction in attrition rates and in the numbers of three-year enlistments translates into reduced rates of training and accession and, as a result, into better recoupment of the training and accession investment.

Third, by reducing the demands placed on first-term personnel, first-termers can be better utilized in jobs for which they are more suited, thus raising the productivity of the average first-termer.

The above three factors combine to produce potentially large cost savings and/or capability increases.[48] The payoff from particular substitutions in terms of cost savings or increases in force capability depends on the nature of the job and the size of the work unit. For example, it may not be wise to reduce the size of a four-man tank crew, but a move to a more experienced crew might be justified on the basis of the resulting increased proficiency. Alternatively, for a large maintenance squadron, it may be preferable to realize the benefits of this type of substitution in the form of cost savings.

Whether viewed in terms of cost savings or in terms of productivity increases, the evidence presented here strongly suggests that the military should consider

[46] That is, $1.6 billion shown in Table 13-5 plus 400,000 times $3,000 equals $2.8 billion.

[47] Although careerists are more cost-effective than first-termers, given the current 60/40 experience mix, as careerists are substituted for first-termers, the economics of production theory tells us that (1) first-termers become relatively more productive and careerists relatively less productive, and (2) the costs of first-termers decline while the costs of careerists increase (due, for example, to the larger reenlistment bonuses required to retain careerists). Thus, for example, whereas careerists may be more cost-effective under the present 60/40 mix, first-termers might be more cost-effective if the mix was 30/70.

[48] Note, furthermore, that whereas the earlier discussion implied that force capability could be maintained by substituting 100 careerists for 250 first-termers, the results shown in Table 13-5 imply that force capability can be maintained by substituting 100 careerists for about 340 first-termers. This perhaps surprising result derives from the way the above factors combine with one another. Specifically, since reducing accession requirements reduces attrition, more productivity per man will be realized from the first-term force. Together, these factors result in greater substitution opportunities than would at first appear to exist.

substituting some career personnel for first-termers. These calculations are based on measures of first-term and career personnel costs and capabilities that are only approximate, but the size of the potential cost savings and productivity increases clearly warrants more careful examination of first-term/career substitutions.

Implications for the Volunteer Force

In addition to its effects on costs and capabilities, the experience mix of the force has several special implications for the volunteer force, particularly concerning the relationship between the proportion of the force in the first-term and annual listed accession requirements. Since, as discussed in Chap. 9, enlisted accession requirements pose perhaps the single most important policy issue with respect to the future of the AVF, the relationship between the first-term/career mix and accession requirements warrants closer scrutiny.

The number of new recruits generally required to support strength objectives is a function of the size of the force, the proportion of the force in the first term, and the amount and timing of first-term enlisted attrition. Larger force sizes require larger recruit inputs; a larger proportion in the first term likewise requires more recruits; and more first-term attrition means that more recruits are needed initially to maintain a given first-term force size. Equally important are the relationships among these individual factors. For example, when larger numbers of recruits are required, we would expect first-term attrition to increase, since the military will have to lower its quality standards to obtain the required numbers. "Lower-quality" recruits (e.g., non-high-school graduates and Category IVs) exhibit higher attrition rates, so that increasing accession requirements are also likely to increase first-term attrition, thus leading to even larger accession requirements.

Given some assumptions regarding first-term attrition (which are specified in detail in the appendix to this chapter), Table 13-6 illustrates the dramatic effect that the first-term/career mix has upon annual accession requirements. For example, holding force size constant (which, because careerists are more productive per man, means that predominantly junior force mixes are less productive), we see that moving from the current 60/40 experience mix to a 50/50 mix results in a nearly 20 percent reduction in annual accession requirements, from 400,000 to 325,000. Holding force capability constant, the effects are even more dramatic, as illustrated by the fact that the 50/50 experience mix only requires about 65 percent as many recruits each year as would be required to support the present 60/40 experience mix.

The importance of these results for the volunteer force is considerable, since accession demand (expressed as a percentage of total force size) has remained about the same or, in some cases, has actually increased since the removal of the draft (see Chap. 9). The evidence presented in Table 13-6, combined with the historical and projected patterns of first-term personnel utilization shown in Table 13-4, indicates that the failure to reduce accession demand to the levels consistent with the volunteer environment is directly attributable to the Services' continued insistence on maintaining a very junior mix of enlisted personnel.

The impact of the first-term/career mix upon accession requirements and the failure to adjust to the increased costliness of first-termers is perhaps most pronounced in the case of the Marine Corps. Table 13-4 shows that Marines relied on a 66/34 experience mix before Vietnam, but have turned to a much more junior

Table 13-6

Annual Enlisted Accession Requirements Under Alternative Mixes of First-Term and Career Personnel[a]
(thousands)

	Experience Mix[b]					
	65/35	60/40	55/45	50/50	45/55	40/60
Force size Constant[c] (Force Capability)	442 (94)	400 (100)	365 (106)	325 (111)	279 (117)	240 (122)
Capability Constant[c] (Force Size)	505 (1944)	400 (1800)	335 (1690)	263 (1604)	222 (1550)	188 (1520)

[a]Based on linear interpolations of productivity, attrition, and retention assumptions shown in Tables 13-A-4 and 13-A-6.

[b]Percentages of first-termers and careerists.

[c]Assuming a total enlisted force of 1.8 million. Numbers in parentheses show an index of force capability, with the 60/40 mix set equal to 100.

[d]Assuming the same capability as a 1.8 million man enlisted force with a 60/40 experience mix. Numbers in parentheses show the force size required to provide this same capability.

73/27 experience mix since the removal of the draft. Thus, the difficulties that the Marines are projected to have in meeting their future accession requirements are directly traceable to the fact that their plans call for a substantial increase in the use of first-term personnel relative to the pre-Vietnam period.

The Air Force, like the Marines, also projects its use of first-termers to increase, from 46 percent in the early 1960s to about 57 percent by the mid-1980s. Given its attractive supply position, however, the Air Force may not experience major recruiting problems as a result of this shift toward a more first-term-intensive force (although it may have to relax its quality standards somewhat to meet its stated quantitative recruiting requirements). But the Air Force's move toward a more junior personnel mix is likely to reduce the other Services' supply and, hence, their ability to attract the "required" numbers of volunteers.

The Army, though it has exhibited a very modest shift toward a more career-intensive force, from the pre-Vietnam 66/34 mix to the post-draft 63/37 mix, nevertheless continues to rely heavily upon first-term personnel. Again, this translates into large annual accession requirements. In fact, the Navy is the only Service that is projected to make any substantial reduction in its use of junior personnel, and even there, the reduction is only from 61 percent to 57 percent.

Thus, it would seem that the future of the volunteer force, viewed in the narrow terms of whether the Services can attract enough young men to fill the enlisted ranks, depends in large part on whether the military begins to adjust to a more cost-effective experience mix by placing a much greater emphasis on career personnel.

Three very important by-products would result from these reduced accession requirements. The first concerns the length of the enlistment obligation. During the

first few years of the volunteer force, the Army and Marine Corps had to accept large numbers of two- and three-year enlistments because their enlisted accession requirements were so large. Given the relatively low productivity of individuals during their initial period of service, particularly their first year, and the large training and accession costs associated with new recruits, these short-term enlistments had the effect of driving up costs and reducing the capability of the force. Although both Services ceased accepting two-year enlistments in fiscal 1974, they both continue to rely heavily on three-year enlistments to fill their accession requirements,[49] even though the cost-effectiveness of such a short enlistment tour is questionable for many jobs.

Another by-product of reducing accession requirements would be that the military services could better maintain their quality standards and could screen applicants more carefully. In particular, by shifting to a more senior mix of enlisted personnel, the Services could reduce the numbers of non-high-school graduates accessed. Such individuals exhibit much higher attrition rates and appear to be substantially less productive on the job than high-school graduates.

Finally, with respect to U.S. defense posture in the larger sense, the first-term/career mix has a very important effect on mobilization—that is, a more experienced force is better equipped to meet the immediate threat. This is nowhere better illustrated than in the maintenance of the highly complex weaponry that makes up the U.S. arsenal. Some of the more technologically complex aircraft are down as much as 90 percent of the time because of equipment malfunctions.[50] Though this is partially attributable to the unreliability of some of the equipment, much of the downtime can be traced to the fact that the very junior mix of personnel used to maintain these systems is simply not capable, given their lack of experience, of providing adequate maintenance support.[51] Thus, increasing the experience mix would have the direct, though hard-to-quantify, result of keeping a larger percentage of the weapon systems combat ready.

Moreover, mobilization almost always requires an increase, usually a significant one, in manpower strengths. Whether the additional manpower that would be used to meet mobilization needs would come from a surge of new voluntary recruits, through activation of reservists, or through a reactivation of the draft, a more experienced standing force would provide a more experienced cadre of personnel to ease into a full-scale mobilization.

Implications for the Reserve Forces

The first-term/career mix question also has important implications for the manning of the reserve forces. As we saw earlier, the reserves have had some difficulty in attracting the desired numbers of non-prior-service (NPS) male recruits since the removal of the draft. Moreover, some recent analyses suggest that this problem will worsen over time.[52]

[49] Official Service policies call for a 75/25 mix of three- and four-year enlistments in the Army and a 25/75 mix in the Marine Corps.

[50] See, for example, McIver et al., op. cit.

[51] Discussed in Polly Carpenter-Huffman and Bernard D. Rostker, "Personnel and Training Support for Advanced Avionics Systems: Formal Training 1975," The Rand Corporation, unpublished paper, October 1976.

[52] See, for example, Bernard D. Rostker, *Air Reserve Personnel Study: Volume III. Total Force Planning, Personnel Costs, and the Supply of New Reservists*, The Rand Corporation, R-1430-PR, October 1974.

The relevance of the experience-mix issue for the reserves in the absence of the draft centers on the productivity of NPS reservists. To see the implications of this, it is important to recognize the basic concept of the NPS reserve enlistment tour. After enlisting, the average NPS reservist spends his first four months on active duty attending basic military training and then individual specialty training. After completing individual specialty training, the reservist generally returns to his civilian occupation but spends one weekend per month and two weeks in the summer with his reserve unit for the remainder of his enlistment obligation, which usually totals six years.

As indicated in the discussion about productivity, it takes considerable time before the average enlisted member becomes a productive member of his unit. The problem is even worse for NPS reservists because they spend such a relatively small amount of time actually on the job. In other words, there is some question as to the value of NPS reservists, at least for many medium- to high-skill jobs. For example, Morgan et al. estimated that one PS reservist was worth about two NPS reservists on the job, so that the substitution of PS reservists for NPS reservists would seem to be a preferred way of manning the reserves in the absence of the draft.[53,54] Indeed, it is results such as these which led to the tentative conclusion presented in Chap.8 that the smaller reserves under the AVF may be as capable as the larger reserves under the draft.

An alternative approach to solving the reserve manning problem, at least in part, is suggested by the way the Navy has historically manned its reserves. Recognizing the time it takes to develop useful job skills, the Navy has followed a program in which the individual spends the first two or three years of his reserve tour on active duty and only then returns to his reserve unit to fulfill the remainder of his six-year obligation. These so-called 2x6 and 3x6 reservists thus have had considerable job experience before they actually join their reserve units and as a result are more productive reservists.

The substitution of PS personnel for NPS recruits does not, of course, provide the sole answer for manning the reserves in a volunteer environment. Rather, the optimal solution, as hinted in Chap.8, is likely to involve a number of specific policy changes. Such changes might include modest reorganization of the reserves, enlistment bonuses for the combat arms, and modified 2x6 or 3x6 enlistment programs (such as those used by the Navy), in addition to the continued use of larger numbers of PS personnel.

The First-Term/Career Mix as a Resource Allocation Question

Because of the closed nature of the military personnel system, a more senior enlisted force cannot be achieved overnight. It must be developed gradually by increasing the numbers of first-termers who enter the career force. Thus, rather than denying many first-termers the opportunity to reenlist, the Services ought to encourage more of them to do so, both by opening up the reenlistment option to

[53] F. J. Morgan, L. V. Scifers, and D. K. Shelton, *Air Reserve Forces Personnel Study: Volume IV. Personnel Shortages and Combat Capability*, The Rand Corporation, R-1459-PR, August 1974.

[54] As shown in Chap. 8, the reserve components have in fact altered the mix of NPS and PS accessions from about 70/30 in 1970 to about 35/65 under the AVF (simply because they were not able to attract more NPS recruits). However, the results presented in Chap. 8 also show that the reserves intend to try to reverse this trend somewhat and instead rely on a 45/55 mix beginning in the late 1970s.

some who are now declared ineligible to reenlist and through more extensive use of the reenlistment bonus, which recent research has shown to be a cost-effective way of achieving long-run changes in the first-term/career mix.

Given the importance of the first-term/career mix allocation problem, the question then becomes one of why the Services have not adjusted more to the relative increase in the cost of first-termers that accompanied the removal of the draft.

There would seem to be three primary reasons for this lack of adjustment: First, the military has traditionally viewed the experience mix of the force as a personnel issue rather than as a manpower requirements or resource allocation issue. Second, the Services have traditionally viewed senior personnel as supervisors rather than as senior technicians. Since the payoff from a more senior personnel mix obviously does not come from adding more supervisors, the extent to which the military can make more extensive use of senior personnel depends upon the willingness to reconsider the traditional uses of senior enlisted members.

The third factor, and one that is key to the development of the optimal experience mix of the force, is the constraints that Congress has historically placed on the numbers of personnel in the senior pay grades—known as the "top-six" grade controls. Because the Congress exerts considerable pressure to reduce the numbers of enlisted personnel above pay grade E-3, the transition to a more senior personnel mix is hindered by Congressional constraints. Analysis, however, indicates that the proportion of the force in the higher pay grades can be increased while simultaneously reducing costs.[55] Thus, the problem is not necessarily one of too many personnel in the higher pay grades, but rather one of too many personnel in unproductive activities such as training.

To summarize, whereas increasing the number of volunteer enlistments was the only feasible way of achieving a volunteer force in the short run, the increases in the costs of junior military personnel suggest that increasing the number of reenlistments will be the most cost-effective way of sustaining a volunteer force in the long run.

The implementation of a more career-intensive force cannot, of course, be achieved overnight, but must instead be approached gradually. The Services have three major options for doing this. First, they can encourage and accept more longer-term enlistees, such as is currently done with the six-year obligor program in the Navy. This increases the experience mix of the force in two ways: (1) having more longer-serving enlistees leads to a more experienced first-term force, and (2) longer-serving enlistees tend to have a higher probability of reenlisting.

Second, reenlistment bonuses can be used to increase reenlistment rates. There is a problem in that the Services (and the Congress) have historically viewed reenlistment bonuses almost exclusively as a means of alleviating "shortages" in the career force—namely, shortages in what is seen as the required number of supervisory personnel. Yet, the above analysis suggests that bonuses can and should be used to effect more fundamental changes in the experience mix of the force—not just to alleviate near-term shortages.

[55] The reason for this perhaps curious result is that a more senior officer force (with more personnel in higher grades) reduces training and accession costs. Thus, even though a richer grade mix means that those in the force are paid more on the average, the larger nonpay costs associated with the more junior force make the force with the richer grade mix less expensive. See Bernard D. Rostker and Glenn Gotz, *Officer Personnel Management Systems: The Up-or-Out Promotion and Tenure Policy*, The Rand Corporation, R-2182-AF, forthcoming.

Third, and perhaps most important, the Services should review their criteria for determining "eligibility to reenlist." Although complete data are not available on the proportion of those reaching the reenlistment point who are declared eligible to reenlist, the evidence presented in Table 13-7 provides some insight into the magnitude of the problem. Specifically, it is shown that only 57 percent of all Air Force first-term personnel reaching the reenlistment point in fiscal 1976 were declared eligible to reenlist—i.e., *43 percent were declared ineligible.*[56]

The problem here is twofold: (1) "eligibility," in fact, serves more as a flow regulator than as a quality screen, and (2) to the extent that eligibility is designed to be a quality screen, it is probably based on the wrong criteria. That is, whereas performance on the job would seem to be the appropriate metric for judging an individual's acceptability for reenlistment, actual eligibility is frequently based more on the results of paper-and-pencil tests than on job performance.

A more serious problem, though, is the use of the eligibility criterion for limiting the flow into the career force. Eligibility tends to be used simply as a mechanism for reducing the number of personnel who can enter the career force, basically because there are only a limited number of supervisory slots available. If more senior technicians were allowed to fill more slots in the career force, however, this impediment to reenlistment of qualified candidates could be reduced.

Thus, by simply allowing more candidates to become eligible for reenlistment, the flow into the career force could be increased—perhaps substantially—and quality (in terms of ability to perform the job) could be maintained. The importance of this for the Air Force is clearly demonstrated by Table 13-7. Although the other Services do not appear to have quite the excess supply that the Air Force has, it can nevertheless be conjectured that similar results would be found in the Army, Navy, and Marine Corps.

SUMMARY

In general, the volunteer force tends to be viewed in terms of manpower procurement, but the analysis presented in the last two chapters suggests that some of the most important issues raised by the removal of the draft concern the way the DoD allocates its resources. In particular, the draft introduced and maintained an artificial pricing structure of the resources used in support of the defense mission, thereby making manpower appear relatively less expensive than capital, military manpower relatively less expensive than civilian, and first-term personnel relatively less expensive than career personnel. As a result, the draft encouraged the military to use too much manpower, too many military personnel, and too many first-termers.

The ability of the armed services to deal effectively with the volunteer environment therefore depends in large part on how well they adjust to the changing cost parameters that they face in the absence of the draft. Recognizing that the cost and productivity implications of any given substitution problem depend critically on the

[56] Also shown in Table 13-7 are the proportions of second-termers and beyond found "eligible" to reenlist. The proportion of those beyond the second term found ineligible is large, basically because many of those who have served for 20 years or more are not allowed to serve longer (many, for example, fail to satisfy the "up-or-out" rules discussed in Chap. 14 and thus are *forced* to retire).

Table 13-7

Air Force Enlisted Personnel Eligible to Reenlist: Fiscal 1976

	ETS[a]	Eligible to Reenlist	Percent of ETS Eligible to Reenlist
First-term	84,634	48,059	56.8
Second-term	25,305	23,077	91.2
Other	57,737	36,097	62.5

[a]End of Term of Service (ETS), i.e., eligible to separate.

SOURCE: Department of the Air Force.

particular aspects of the proposed substitution, the analysis presented here nevertheless suggests that broad policy guidelines calling for the substitution of capital for labor, contract hires for direct hires, and enlisted careerists for first-termers alone could save in the neighborhood of $3 to $6 billion annually in the long run, while maintaining military capability at its present level.[57]

Besides the substantial cost savings, the substitution of career for first-term personnel is perhaps the single most important issue with respect to the future of the AVF. As discussed at length in Chap. 9, the adequacy of supply is not the key issue for the volunteer force; the issue is, rather, what the Services set as their annual accession requirements. A major reason for the failure of accession requirements to adjust to the volunteer environment is that the Services continue to rely extensively on a very junior mix of enlisted personnel, even more so than they did during the pre-Vietnam draft. Therefore, the Services' ability to attract "enough" volunteers will depend on whether or not they begin to move toward a more career-intensive force. By doing so, the Services could maintain their quality standards while at the same time meeting their quantitative recruiting objectives.

[57] Somewhere between $1.0 to $1.5 billion could be saved by substituting capital for labor; substituting 250,000 contract hires for an equivalent number of direct-hire civilians could save possibly another $1 billion annually; and shifting from a 60/40 to a 50/50 experience mix could save about $1.6 billion. Together, these changes could result in savings of $3.5 to $4.0 billion. The discussion in the next two chapters suggests that combining the shift to a 50/50 experience mix with changes in training policy and retirement policy could lead to another $2.5 billion annual savings (see Table 13-A-7). Thus, the changes discussed here alone could lead to long-run annual budget savings (or increases in capability) amounting to between $3.5 and $6.5 billion.

Appendix 13-A

RESOURCE ALLOCATION: SUPPORTING DATA

This appendix presents the data and assumptions used in the examination of capital-labor, military-civilian, and experience-mix resource allocation issues explored in Chaps. 12 and 13.

CAPITAL-LABOR AND MILITARY-CIVILIAN RESOURCE ALLOCATION

Table 13-A-1: DoD Labor Input

Table 13-A-1 presents a measure of the amount of the DoD labor input, including military personnel not engaged in training, direct-hire civilian personnel not engaged in training (i.e., excluding those supporting military training and those receiving training), indirect-hire civilian personnel, and contract-hire personnel. Theoretically, the measure of DoD labor input should also include non-appropriated fund employees and should be quality adjusted. Data limitations preclude the inclusion of non-appropriated fund employees, and the evidence from Roll, op. cit., suggests that "quality adjustment" does not significantly alter the results, so no quality adjustment was made (see footnote 8 in Chap. 12). Column (11) thus shows the amount of military, direct-hire, indirect-hire, and contract-hire labor not engaged in training activity. Column (11) presents this in index form, with the index for 1964 set equal to 100.

Table 13-A-2: DoD Manpower Costs

DoD military personnel costs, shown in Table 13-A-2, were defined as the sum of budget costs reported in the military budget account, the cost of civilian personnel used in support of military training (see column (5) of Table 13-A-1), the imputed cost of the accrued liability for future retirement benefits, the estimated costs of personnel support for military personnel, and the costs of defense family housing. (See notes a, b, c, and d to Table 13-A-2.) The costs of direct-hire civilians were defined as the sum of civilian budget costs, the unfunded liability for retirement incurred on behalf of civilian employees of the DoD, the costs of personnel engaged in the support of civilian personnel training, and the estimated costs of personnel support for civilian personnel. (See notes g, h, and i to Table 13-A-2.)

Table 13-A-3: DoD Capital Stock

Table 13-A-3 reports the size of the DoD capital stock, defined as military equipment in use plus supply system inventories, given in 1976 constant dollars. The source of these estimates is Roll, op. cit. Roll's estimates (given in 1967 constant dollars) were recalculated in 1976 constant dollars according to the price index for machinery and equipment (column (6) in Table 13-A-3).

Table 13-A-1

DoD Labor Input
(thousands)

Fiscal Year	Active-Duty Military			Direct-Hire Civilian				Indirect-Hire Civilian[a]	Contract-Hire[d]	Total		
	Total[a]	Engaged in Training[b]	Not Engaged in Training	Total[a]	Supporting Mil. Training[b]	In Training[c]	Other			All[e]	Not Engaged in Training	
											Number	Index
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
56	2888	433	2455	1183	34	30	1119	307	199	4567	4080	111.8
57	2794	420	2374	1170	33	29	1108	280	216	4460	3978	109.0
58	2674	401	2273	1129	33	28	1068	242	232	4277	3815	104.6
59	2656	385	2180	1088	32	27	1029	203	249	4105	3661	100.4
60	2489	374	2115	1063	32	27	1004	183	266	4001	3568	97.8
61	2490	374	2116	1045	32	26	987	174	254	3963	3531	96.8
62	2725	409	2316	1056	33	26	997	171	242	4194	3726	102.1
63	2702	403	2299	1060	26	26	1008	167	231	4160	3705	101.6
64	2693	404	2289	1040	26	26	988	152	219	4104	3648	100.0
65	2668	405	2263	1032	26	26	980	135	242	4077	3620	99.2
66	2854	518	2336	1086	31	27	1028	130	285	4355	3779	103.6
67	3297	712	2685	1220	37	30	1153	124	360	5101	4322	118.5
68	3435	646	2789	1310	40	33	1237	120	402	5267	4548	124.7
69	3465	689	2776	1329	39	33	1257	117	437	5348	4587	125.7
70	3293	620	2673	1268	36	32	1200	109	439	5109	4421	121.2
71	2891	536	2355	1161	33	29	1099	100	415	4567	3969	108.8
72	2510	462	2048	1105	35	28	1042	103	394	4112	3587	98.3
73	2323	386	1937	1056	33	26	998	106	422	3908	3463	94.9
74	2207	360	1847	1051	37	26	988	102	451	3811	3388	92.9
75	2145	351	1794	1056	39	26	991	92	453	3746	3330	91.3
76	2100	313	1787	1026	38	26	962	86	461	3573	3296	90.4
77	2104	315	1789	1000	33	25	942	86	496	3686	3313	90.8

[a]Source: *Selected Manpower Statistics*, op. cit.

[b]Source: Data for 1962 through 1977 furnished by OASD(M&RA); data for 1956 through 1961 estimated based on the average percentages experienced during the years 1962 through 1964. (Original data for civilians in support of military training included civilians used in the training of reserve personnel. The estimates shown in column (5) were adjusted to exclude these civilians. The method of adjustment was simply to multiply the total number of civilians supporting military training--active and reserve--by the ratio of the FY76 active military personnel training load to the total training load.)

[c]Estimated to be 2.5 percent of total direct-hire civilian strengths. See text for explanation.

[d]Source: Cooper, *Contract-Hire Personnel . . .*, op. cit.

[e]Equals sum of columns (1), (4), (8), and (9).

[f]Equals sum of columns (3), (7), (8), and (9).

[g]Index representation of column (11). 1964 equals 100.

Table 13-A-2

DoD Manpower Costs
($ billions)

Fiscal Year	Active Military						Direct-Hire							
	Personnel[a] (1)	Retirement[b] (2)	Civ. Tr. Support[c] (3)	Personnel Support[d] (4)	Family Housing[e] (5)	Total (6)	Personnel[g] (7)	Retirement[h] (8)	Training Support[i] (9)	Personnel Support[d] (10)	Total[j] (11)	Indirect Hire (12)	Contract Hire[l] (13)	Total Manpower[m] (14)
56	10.9	2.4	0.2	1.3	nil	14.7	5.1	0.6	0.1	0.3	6.1	0.2	0.9	21.7
57	10.6	2.2	0.2	1.3	nil	14.2	5.4	0.7	0.1	0.3	6.4	0.2	1.0	21.6
58	10.6	2.4	0.2	1.3	nil	14.3	5.7	0.7	0.1	0.3	6.8	0.3	1.2	22.4
59	10.8	2.4	0.2	1.3	0.1	14.8	6.2	0.8	0.1	0.3	7.3	0.3	1.3	23.4
60	11.0	2.5	0.2	1.3	0.2	15.2	6.1	0.8	0.1	0.3	7.2	0.3	1.4	23.9
61	11.4	2.6	0.2	1.3	0.2	15.8	6.4	0.8	0.1	0.3	7.6	0.3	1.4	24.8
62	12.4	2.9	0.2	1.4	0.3	17.2	6.8	0.9	0.1	0.3	8.1	0.3	1.4	26.7
63	11.4	2.8	0.2	1.4	0.4	16.1	7.1	0.9	0.1	0.3	8.4	0.3	1.4	26.0
64	12.3	3.1	0.2	1.4	0.5	17.5	7.3	0.9	0.1	0.3	8.6	0.3	1.4	27.5
65	12.7	3.0	0.2	1.7	0.5	18.0	7.7	1.0	0.1	0.3	9.1	0.3	1.6	28.7
66	14.4	3.3	0.2	1.9	0.6	20.4	8.3	1.0	0.1	0.4	9.8	0.3	2.0	32.2
67	17.0	3.7	0.3	2.1	0.4	23.6	9.4	1.2	0.1	0.4	11.1	0.3	2.7	37.2
68	19.0	3.9	0.3	2.4	0.4	25.9	10.3	1.3	0.2	0.5	12.2	0.3	3.1	41.1
69	20.5	4.2	0.3	2.4	0.5	27.9	11.0	1.4	0.2	0.5	13.0	0.4	3.4	44.3
70	22.0	4.6	0.3	2.5	0.5	29.9	11.9	1.5	0.2	0.5	14.0	0.4	3.5	47.2
71	21.4	4.5	0.3	2.5	0.5	29.3	12.1	1.5	0.2	0.5	14.4	0.5	3.7	47.3
72	22.0	4.6	0.4	2.5	0.5	30.0	12.8	1.6	0.2	0.6	15.1	0.5	3.9	48.9
73	21.7	4.6	0.4	2.6	0.6	29.9	13.0	1.6	0.2	0.6	15.4	0.7	4.6	50.0
74	22.2	4.7	0.5	2.6	0.7	30.6	13.5	1.7	0.2	0.6	16.0	0.8	5.3	52.1
75	24.1	5.2	0.5	2.8	0.9	33.5	14.6	1.8	0.2	0.7	17.4	0.9	5.7	56.5
76	24.8	5.3	0.6	3.1	1.0	34.7	15.5	1.9	0.3	0.8	18.4	1.1	6.1	59.6
77	25.9	5.5	0.5	3.2	1.2	36.3	16.0	2.0	0.3	0.8	19.0	1.3	7.2	63.3

[a] Military personnel costs for active duty personnel. Source: *Budget of the U.S. Government*.

[b] Implicit retirement costs accrued each year. See Richard V.L. Cooper "Imputing the Economic Cost of Military Retirement," unpublished paper, The Rand Corporation, 1975.

[c] The cost of civilians used in support of individual military training estimated as the number of such civilians (from column (5) in Table 13-A-1) times the average cost of direct-hire personnel.

[d] Military and direct-hire civilian personnel support costs estimated under the assumption that the per-man support costs for military personnel are twice as much as for direct-hire civilians. Source of the aggregated data: see Table 2-6 (estimates for years not shown in Table 2-6 based on linear interpolations).

[e] Source: OASD(M&RA).

[f] Equals the sum of columns (1), (2), (3), (4), and (5).

[g] Source: OASD(M&RA).

[h] Implicit unfunded liability for civilian retirement estimated as 12.5 percent of budget cost for civilian personnel (from column [7]). See Chapter 2.

[i] Costs of training support for civilian personnel receiving training. Estimated under the assumption of 0.75 training support man-years for each training man-year and that the cost of training support man-years equals the average cost per man of military and direct-hire civilian personnel.

[j] Equals the sum of columns (7), (8), (9), and (10).

[k] Source: OASD(M&RA).

[l] Source: Cooper, *Contract-Hire Personnel*, op. cit.

[m] Equals the sum of columns (1), (2), (4), (5), (7), (8), (10), (12), and (13).

Table 13-A-3

DoD Capital Stock: 1976 Constant Dollars[a]

Fiscal Year	Procurement ($bil) (1)	Depreciation[b] ($bil) (2)	Capital Stock ($bil) (3)	Capital Stock Index (4)	Depreciation Rate[c] (Percent) (5)	Price Index[d] (6)
55	28.6	—	314.0	109.9	—	—
56	25.8	33.6	306.2	107.2	10.7	85.2
57	26.4	26.6	306.0	107.1	8.7	91.7
58	26.4	31.3	301.1	105.4	10.2	95.5
59	26.5	43.0	284.6	99.6	14.3	97.7
60	24.2	25.5	283.3	99.2	8.9	99.1
61	23.7	28.6	278.4	97.5	10.1	99.4
62	26.3	23.0	281.7	98.6	8.3	99.4
63	29.8	26.6	284.9	99.8	9.5	99.6
64	27.6	26.9	285.6	100.0	9.4	100.0
65	21.1	19.6	287.1	100.5	6.8	101.0
66	25.0	20.1	292.0	102.2	7.0	103.1
67	32.1	19.0	305.1	106.8	6.5	106.5
68	38.1	34.4	308.8	108.1	11.3	109.9
69	38.0	36.8	310.0	108.5	11.9	113.4
70	32.9	34.6	308.3	107.9	11.2	117.8
71	27.6	35.7	300.2	105.1	11.6	122.7
72	24.4	24.7	299.9	105.0	8.2	126.2
73	21.7	28.1	293.5	102.8	9.4	129.6
74	19.4	22.3	290.6	101.8	7.6	141.2
75	17.7	31.2	277.1	97.0	10.8	162.6
76	16.5[e]	25.8[f]	267.8	93.8	9.3[f]	179.0
77	19.2[e]	24.9[f]	262.1	91.8	9.3[f]	189.1[g]

[a]Capital stock, procurement, and depreciation given in 1976 constant dollars (using the price index shown in column [6]).

[b]Depreciation calculated as D_t(column [2] = K_{t-1}(column [3] + P_t(column [1]).

[c]Depreciation rate calculated as d_t(column [5] = $D_t \div K_{t-1}$.

[d]BLS price index of machinery and equipment (1964:100).

[e]Estimates from the 1977 *Budget of the U.S. Government*, op. cit.

[f]Based on average peacetime depreciation rate of 9.3 percent. See Charles Robert Roll, Jr., *Capital-Labor Shares in the DoD*, The Rand Corporation, forthcoming.

[g]Assuming a 5 percent increase for FY77.

Figure 12-2: Indexes of DoD Capital and Labor Stocks

The measure of DoD capital stock, shown in Fig. 12-2, is simply an index-form representation of military equipment in use and supply system inventories, as calculated in column (4) of Table 13-A-3. The measure of DoD input shown in Fig. 12-2, is an index-form representation of the number of military, direct-hire civilian, indirect-hire civilian, and contract-hire civilian personnel not engaged in training, as given in column (12) of Table 13-A-1.

Figure 12-3: Indexes of DoD Cost of Capital and Cost of Labor

The cost of capital, shown in Fig. 12-3, is simply an index (1964 equals 100) of the BLS wholesale price index for machinery and equipment given in column (6)

of Table 13-A-3. The cost of labor in Fig. 12-3 was calculated as an index (1964 equals 100) of the average cost of DoD labor, where this average cost is calculated as total manpower costs (column (14) of Table 13-A-2) divided by the number of DoD personnel not engaged in training (column (12) of Table 13-A-1). See Chap. 12 for the rationale for this approach.

Figure 12-4: Indexes of DoD Capital and Labor Costs and Utilization

The ratio of the cost of labor to the cost of capital (index with 1964 equaling 100), shown in Fig. 12-4, was calculated from the cost indexes in Fig. 12-3. The ratio of the stock of capital to the stock of labor (index with 1964 equaling 100) was calculated from the input indexes shown in Fig. 12-2.

Figure 13-1: Military and Direct-Hire Civilian Personnel Costs and Utilization

The ratio of the number of civilians not receiving training (the sum of columns (5) and (7) in Table 13-A-1) to the number of military personnel not engaged in training (column (3) in Table 13-A-1) is given in index form in Fig. 13-1, with 1964 equaling 100. The ratio of the average costs of military and direct-hire civilian personnel is calculated as in columns (6) and (7) of Table 13-2.

FIRST-TERM/CAREER MIX

As described in the text, the implications of alternative experience mixes depend critically upon the particular cost and productivity assumptions adopted. By using currently available cost data and some recent productivity estimates, however, we can sketch out approximately what the implications would be for alternative experience mixes.

The basic approach used in Chap. 13, and as described in detail below, is one of comparing the costs of two steady-state forces: one with a 60/40 first-term/career mix and the other with a 50/50 mix.[58] To do so, we need to know the number of personnel in each experience grouping, their productivities, and their costs. The discussion below describes how the numbers, productivities, and costs for the two different forces were estimated. Also shown (see Table 13-A-7) are the effects of a 45/55 first-term/career mix under the assumption that retirement and training policies also change.

Table 13-A-4: The 60/40 First-Term/Career Mix

Length of Service. Because of the importance of training and attrition during

[58] Actually, the appropriate criterion to use is present discounted value, since the two steady-state forces cannot be achieved immediately, but instead could be achieved only after 20 years or more. However, because the costs for a more first-term-intensive force tend to be "front loaded"—i.e., the costs of accession, training, and attrition occur earlier—while those for a more career-intensive force tend to be "back loaded"—i.e., the larger retirement costs of a more career-intensive force occur later—the analysis presented here will tend to be biased in favor of a more first-term-oriented force. Thus, if anything, this analysis understates the potential benefits of a more career-intensive force.

the first year of service, length of service during the first year (column (1)) is subcategorized into (1) 0–3 months, (2) 4–6 months, and (3) 6–12 months.

Table 13-A-4

Costs and Productivity: 60/40 First-Term/Career Mix

Length of Service (yrs) (1)	Number (000s) (2)	Cost						Productivity	
		RMC (3)	Retirement (4)	Acc/Ret (5)	Training (6)	Total/ Man (7)	Total ($mil) (8)	Per Man (9)	Total (10)
1/4	400	$1725	$ 235	$1500	$1450	$ 4910	$1964	0	--
1/2	360	1725	235	--	3150	5110	1840	0	--
1	320	3458	471	--	--	3929	1257	0.05	16
2	280	7374	1003	--	--	8377	2346	0.45	126
3	265	8604	1103	--	--	9707	2572	0.75	199
4	185	8906	1167	--	--	10073	1864	0.90	166
0-4	*1080*						*11842*		*507*
5	83	9840	1293	750	--	11883	986	1.00	83
6	70	9840	1293	750	--	11883	832	1.04	73
7	61	10240	1377	750	--	12367	754	1.07	65
8	52	10240	1377	750	--	12367	643	1.10	57
9-12	162	11311	1561	--	--	12872	2085	1.15	186
13-16	124	12349	1743	--	--	14092	1747	1.20	149
17-20	114	12872	1840	--	--	14712	1677	1.25	142
21-30	54	13264	1941	--	--	15205	821	1.30	70
5-30	*720*						*9545*		*825*
Total	*1800*						*21053*		*1323*

Number Column (2) shows the number of personnel in each experience grouping. For a 60/40 mix and for a 1.8 million member enlisted force (about what is projected for the AVF), this translates into 1.08 million first-termers and 0.72 million careerists. For the first-term force, the distribution by length of service depends on the length of the enlistment obligation (i.e., how many two-, three-, and four-or-more year enlistment contracts) and the amount and distribution of attrition during the first term. The distribution shown in column (2) was calculated according to the percentage distribution of losses experienced from the cohort of enlistees (i.e., excluding inductees) accessed during fiscal 1974.[59]

For the career force (i.e., 5 to 30 years of service), the distribution by length of service was calculated by allocating the 720,000 careerists according to the percentage distribution shown in the "target enlisted force" currently being used by the OSD for planning purposes.[60]

RMC. Column (3) shows the RMC (i.e., basic pay, allowances, and tax advantage) earned during each year of service, assuming more-or-less standard promo-

[59] Data were furnished by MARDAC.

[60] Data were furnished by OASD(M&RA).

tion patterns. For 0–3 months, 4–6 months, and 7–12 months, the RMC figures show the amount that would be earned during each period (i.e., not the annual amount). For experience groupings with more than one year at service, RMC is shown in annual terms.

Retirement. Column (4) shows the amount that would have to be set aside for each cohort in order to fund future military retirement costs on an actuarially sound basis. The estimates were calculated according to the so-called "normal cost" or "cohort" costing approach.[61] Under this approach, an equal percentage of each cohort's pay is put into the supposed retirement fund. Using the computer model developed elsewhere by the author,[62] the amount required to fund the future retirement benefits for the force distribution shown in column (2) was calculated to be 20 percent of the basic military pay (which equals about 14 percent of RMC) paid to each cohort.[63]

Accession and Retention. Column (5) shows recruiting costs and initial recruit processing costs for first-termers. Lacking better estimates, these costs were assumed somewhat arbitrarily (though conservatively) to be about $1500 per accession.[64] For careerists, it was assumed that a $3000 bonus is paid at the completion of the first term, paid in four equal installments of $750.

Training Costs. Column (6) shows the nonstudent portion of training costs during the first term (note that the student portion is captured by RMC and retirement paid to those in their first six months of service). These costs were estimated according to the following approach. From the DoD's *Military Manpower Training Report for FY 1976*, it was estimated that about 0.41 man-years of training support is spent for each man-year of recruit training and that about 0.9 man-years of training support is spent for each year of individual specialty training. Recognizing that the RMC and retirement costs for the career force are on the average about 1.75 as much as those for new recruits (during their first few months of service),[65] the cost per individual in recruit training was estimated as $(1725 + 235) \times 0.41 \times 1.75$, or about $1450. Similarly, the cost for individual specialty training was estimated as $(1725 + 235) \times 0.9 \times 1.75$, or about $3150.[66]

[61] For a description of this approach, as compared to alternative possibilities, see Cooper, "Imputing the Economic Cost of Military Retirement," op. cit.

[62] Ibid., App. F.

[63] These calculations were based on a real interest rate of 3 percent, a real rate of growth in military pay of 2 percent per year, 19 years as the age of entry, and mortality tables used by the Third Quadrennial Review of Military Compensation, 1976.

[64] In fiscal 1974, the DoD planned on spending $365 million for recruiting (see the testimony of General Robert M. Martague, Special Assistant to the Assistant Secretary of Defense for Manpower and Reserve Affairs, DoD Appropriations Hearings, Subcommittee of the Committee on Appropriations, House of Representatives, Ninety-Third Congress, First Session). Together with the costs of recruit processing, enlistment bonuses, travel costs for new recruits, and inflation since 1974, it is thus reasonable to estimate $500 million as the minimum recruiting costs. Although we would prefer to have an estimate of the marginal cost, the above figures suggest that $1500 per recruit is at least a reasonable lower bound on the average cost. (The CBO estimates the marginal cost of attracting Category I-III high-school graduates to be about $5500. See Congressional Budget Office, op. cit.)

[65] This can be seen by comparing the average cost per man of careerists—i.e., $13,250 (equals $9.545 billion/720,000)—with the annualized cost of those in their first six months—i.e., $7840 (equals 4 $\times$ $1960).

[66] It is shown in Chap. 14 that first-term enlisted training costs about $3.9 billion, of which $3.5 billion is for active duty enlisted first-termers. Taking out the $1000 per accession costs shown in column (5), the approach shown in Table 13-A-4 results in a total first-term training cost (counting the trainee and trainer) of about $3.1 billion—i.e., (375,000 $\times$ $3410) + (350,000 $\times$ $5110). Thus, the approach shown in Table 13-A-4 yields results that would appear to be reasonable.

Total Costs. The total cost per man for each experience category (column (7)) was found by simply summing columns (3) through (6). The total cost for each experience cohort (column (8)) was then found by multiplying the number of individuals in column (2) by the cost per man in column (7).

Productivity. The per-man productivity estimates shown in column (9) were estimated according to the following methodology, taking the productivity of the average individual with four years of completed services as equaling unity. During the first six months, the individual is assumed to be in training or transit and thus contributes nothing to current capability. His productivity on the job, from his arrival at the unit at the end of the six months through the remainder of the first term, was estimated using Gay's estimates shown in Fig. 13-2. Specifically, it is assumed that the individual has a zero net productivity (his productivity less the forgone productivity of those supervising him) when he initially arrives, but by the end of his first year of service (i.e., the end of his first six months on the job), he is assumed to be 20 percent as productive as the average four-year specialist. Using a linear interpolation, his productivity thus averages 10 percent that of the average four-year specialist during this period. Recognizing that this 10 percent productivity is only for half a year, the amount of productive output realized from those in their second six months of service (i.e., first six months on the job) equals about 5 percent of the productive output of the average specialist during his fifth year of service (i.e., four years of completed service). In a similar fashion, the productivities for those in the remainder of the first term were estimated from Fig. 13-2 to be about 45 percent (relative to the average four-year specialist) for the second year of service, 75 percent for the third year, and 90 percent for the fourth year.

Given the lack of data, estimates of the relative productivities of careerists are less obvious. As described in the text, however, if we assume that the wages and salaries paid in the civilian sector reflect relative productivities, then estimates of wages and salaries as shown in Table 13-A-5 provide us with a benchmark for gauging the relative productivities of career enlisted personnel. The productivity figures shown in column (9) of Table 13-A-4 were based on the conservative assumption that career enlisted productivity increases about one-half as fast as the median wages and salary earnings for white high-school graduates in the civilian sector (except for the more senior personnel, i.e., those with more than 16 years of service, where military personnel productivities are projected to increase at a somewhat faster rate, as shown).

Total productivity in column (10) is simply the number of personnel from column (2) times the individual productivities in column (9).

Table 13-A-6: The 50/50 First-Term/Career Mix

Except as noted below, the estimates in Table 13-A-6 were derived as previously described.

Number of Personnel. In column (2), the 802,000 personnel in the first term[67] were distributed across particular experience groupings, in a fashion similar to that used in Table 13-A-6. However, because of the fewer accessions required, it was

[67] Basically, the number of personnel required was solved backwards. That is, given the 50/50 assumed distribution and the assumed productivities shown in column (9), the number of personnel needed to yield the same productivity as with the 60/40 mix can be computed.

Table 13-A-5

Index of Earnings from Civilian Employment

Age	Years-of-Service Equivalent	Earnings Index[a]	
		High School Graduate	Non-High School Graduate
23	5	1.00	1.00
24	6	1.07	1.06
25	7	1.14	1.11
26	8	1.20	1.16
27-30	9-12	1.30	1.24
31-34	13-16	1.38	1.30
35-38	17-20	1.45	1.33
39-48	21-30	1.50	1.35

[a]Represents indexes of median wage and salary income for white high school graduates and non-high school graduates (with each equal to 100 at 23 years old).

Source: Cooper, Haggstrom, and Gowen, op. cit.

Table 13-A-6

Costs and Productivity: 50/50 First-Term/Career Mix

Length of Service (1)	Number (000s) (2)	Cost						Productivity	
		RMC (3)	Retirement (4)	Acc/Ret (5)	Training (6)	Total/ Man (7)	Total ($mil) (8)	Per Man (9)	Total (10)
1/4	263	$1725	$ 294	$1000	$1450	$4469	$1175	0	--
1/2	249	1725	294	--	3150	5169	1287	0	--
1	236	3458	589	--	--	4047	955	0.75	24
2	229	7374	1254	--	--	8628	1976	0.50	114
3	183	8604	1379	--	--	9983	1727	0.80	146
4	144	8906	1459	--	--	10365	1493	0.90	130
0-4	*802*						*8613*		*414*
5	93	9840	1616	1500	--	12956	1205	1.00	93
6	78	9840	1616	1500	--	12956	1011	1.04	81
7	68	10240	1721	1500	--	13461	915	1.07	73
8	58	10240	1721	1500	--	13461	781	1.10	64
9-12	180	11311	1951	--	--	13262	2387	1.15	207
13-16	138	12349	2179	--	--	14528	2005	1.20	166
17-20	127	12872	2300	--	--	15172	1927	1.25	159
21-30	60	13264	2426	--	--	15690	941	1.30	78
5-30	*802*						*11172*		*920*
Total	*1604*						*19785*		*1324*

estimated that the Services would have to accept fewer non-high-school graduates and three-year enlistees. The actual distributions shown here were based on the assumptions that the percentage of non-high-school graduates would decline from 35 percent (used in Table 13-A-4) to 15 percent and that three-year enlistments (as opposed to four- or six-year) would decline from 33 percent to 15 percent. The experience from the 1971 cohort was used as the basis for distributing personnel across the first term, with the appropriate adjustments being made to reflect the above changes in the composition of incoming recruits. Career personnel were allocated across years of service according to the same percentages used in Table 13-A-4.

Retirement. Because of the more senior mix of personnel, more personnel will remain until retirement, and hence the amount required to fund the retirement system, given in column (4), will increase. Using the same approach as described previously, it was estimated that the amount required to be set aside would have to increase from 20 percent of basic military pay (used in Table 13-A-4) to 25 percent.

Accession and Retention. To increase first-term reenlistments, it was assumed that the average cost per accession would decline to $1000 (because of the smaller number needed) but that the reenlistment bonus would have to double, to $6000 (column (57)).

Productivity. Because of the reduced reliance on first-termers, it was assumed that first-term personnel could be used in jobs in which they would, on the average, be more productive. The increase in productivity is unknown, and the estimates shown in column (9) are admittedly arbitrary, but they are probably not unreasonable. Career productivities were assumed to be unchanged.[68]

Alternative Manpower Policies

Determining the full effects of major changes in manpower policy, such as in training and retirement, is at best problematical without more precise information regarding what the specific implications for the demand and supply of enlisted personnel would be under such circumstances. Table 13-A-7 nevertheless approximates what some of the possible cost and productivity effects might be under the more extensive changes in personnel policy that would be required in shifting to a more career-intensive force, as shown in Table 13-A-6. Some of the changes shown here are not discussed in the text until Chaps. 14 and 15, but because the methodology used to explore their effects is similar to that used in Tables 13-A-4 and 13-A-6, these changes are explained below.

First, as with the force shown in Table 13-A-6, it is assumed in Table 13-A-7 that there would be a more career-intensive enlisted force. In this case, the force is assumed to comprise 45 percent first-termers and 55 percent careerists. It is further assumed that the retirement system would be changed (1) to introduce some partial vesting before the 20-year point, (2) to decrease the benefits substantially for 20- to 30-year careers, and (3) to maintain or increase the benefits for careers of 30 or more years. As a result, it is assumed that more extensive use is made of personnel with

[68] If enough first-termers are replaced by careerists, career productivity should theoretically fall. It was therefore assumed that shifting from the 60/40 mix to a 50/50 mix was not sufficient to cause such a decline.

Table 13-A-7

Costs and Productivity: 45/55 First-Term/Career Mix
and Revised Training and Retirement Policies

Length of Service (1)	Number (000s) (2)	Cost						Productivity	
		RMC (3)	Retirement (4)	Acc/Ret (5)	Training (6)	Total/ Man (7)	Total ($mil) (8)	Per Man (9)	Total (10)
1/4	197	1725	86	1000	1500	4311	849	--	--
1/2	187	1725	86	--	1100	2911	544		
1	177	3458	173	--	--	3631	643	0.100	18
2	172	7374	369	--	--	7743	1332	0.550	95
3	167	8604	430	--	--	9034	1509	0.775	129
4	157	8906	445	--	--	9351	1468	0.850	133
0-4	*681*						*6345*		*375*
5	85	9840	984	2000	3275	16099	1368	0.75	64
6	72	9840	984	2000	--	12824	923	1.04	75
7	62	10240	1024	2000	--	13264	822	1.07	66
8	53	10240	1024	2000	--	13264	703	1.10	58
9-12	165	11311	1131	--	--	12442	2053	1.15	190
13-16	126	12349	1852	--	--	14201	1789	1.20	151
17-20	116	12872	1931	--	--	14803	1717	1.25	145
21-35	153	13264	2653	--	--	15917	2435	1.30	199
	832						*11810*		*948*
Total	*1513*						*18155*		*1323*

20 to 35 years of service. Finally, it is assumed that much of first-term enlisted specialty training is deferred until after reenlistment, so that first-termers receive training more oriented to the narrower range of tasks that they are expected to perform under the more career-intensive force.

Except as described below, the results shown in Table 13-A-7 were derived in a similar fashion to those shown previously in Tables 13-A-4 and 13-A-6.

Number of Personnel. The distribution of first-term personnel shown in column (2) was based on the assumption that neither non-high-school graduates nor three-year enlistees will make up more than 10 percent of enlisted accessions. Otherwise, the distributions shown are as previously described. With the exception of the more extensive use of personnel with more than 20 years of service, the career percentage distribution is as used before.

Retirement. By modifying the retirement system, the arbitrary assumption was made that retirement "contributions" would decrease to 5 percent for those in the first term, to 10 percent for those with 5 to 12 years of service, and to 20 percent for those with more than 20 years of service (see column (4)).

Accession and Retention. To offset some of the effects of the less generous retirement system, it was assumed that the reenlistment bonus would have to increase to $8000, paid in equal installments (see column (5)).

Training. It was assumed in column (6) that first-term enlisted specialty training would be reduced by two-thirds. It was further assumed that upon reenlistment, individuals would receive three months of advanced enlisted specialty training.

Productivity. Because of the reduced time in training and because two months would be spent on the job during the individual's second three months in the service, it was assumed that individuals enter the second six months of service at a higher rate of productivity—hence, the higher productivity rates in column (9) for those with less than three years of completed service. Because of this reduced amount of training, however, it was assumed that individuals in the fourth year of service are somewhat less productive than shown in the earlier tables. Finally, because of the three months spent in training during the fifth year, productivity for that year as a whole is reduced to 0.75. Otherwise, career productivity was assumed unchanged from earlier assumptions.

Chapter 14

MANPOWER MANAGEMENT IN A VOLUNTEER ENVIRONMENT

Whereas the analysis thus far has centered on the utilization of defense manpower resources, this chapter and the next focus on the management of these resources—specifically, the management and compensation of military personnel during their service careers in a volunteer environment.

Because a comprehensive review of all manpower management is well beyond the scope of these two chapters, the intention is to highlight some of the effects that the draft has had on the system of managing military personnel. This chapter begins with an examination of some of the underlying management philosophies that characterized much of the draft era. It then examines some of the specific effects that the removal of the draft has had on the system of manpower management. The problem is attacked chronologically, from the individual serviceman's point of view, and begins with recruiting and selection. Military training is then considered, and finally, career management. Chapter 15 examines military compensation and retirement pay.

MANAGEMENT PRINCIPLES UNDER THE DRAFT

Manpower management policy during the nearly three decades of postwar conscription was shaped in large part by three underlying principles. The first was the concern for *equity*, as opposed to efficiency, which frequently resulted in a "second-best" approach to manpower management. The second was the orientation toward maintaining a *youthful* force, and the corresponding emphasis on first-termers. Even though the combat arms make up only about 10 percent of total manpower strengths, this emphasis on youth derives in part from manpower policies based on the needs of the combat soldier. And third was the importance of *administrative simplicity* as a criterion for setting manpower policy.

Equity versus Efficiency

Given that the military was at least partially isolated from the forces of the marketplace during the draft, efficiency in manpower management did not have the priority that it has assumed with the advent of the AVF. In the absence of overt pressure on the military to adopt efficiency as a prime criterion of force management, the policies used to manage military personnel seemed to evolve out of a driving concern for equity.

Because the equitable, or fair, treatment of employees is generally a sensible management policy to follow, what we mean by a "driving concern" for equity is that equity came to occupy a position of undue emphasis in the overall scheme of setting manpower policy. Thus, rather than being viewed as merely one of the inputs to the choice of particular policies, equity came to be viewed as an objective in its own right.

Perhaps the major reason that equity became such an important concern in overall management philosophy centers on the widely held perception that military pay was substantially lower than civilian wages. As a result, the adoption of policies designed to treat everybody "fairly" became a way of compensating military personnel for the income that they supposedly could have earned in the civilian sector.

As a basic tenet of management policy, the equity principle came to mean that management policies were frequently chosen more according to what seemed to be "fair" than to what would be cost-effective. This emphasis had at least four important effects on the actual management decisions adopted by the military services, the DoD, and the Congress.

The first was the view that personnel with the same rank and years of service in the military ought to be paid the same amount, irrespective of their actual job duties and responsibilities or external supply and demand conditions.[1] For example, a base commander in charge of several thousand personnel might have the same rank and years of service as another officer with only relatively minor responsibilities, yet both would be paid the same. Similarly, while computer technicians might be in scarce supply and mechanics might be in excess supply, the equity ethic meant that individuals with equal rank and years of service in these different occupations would be paid the same.

The end result was a pay structure dominated largely by rank and length of service, rather than by the supply and demand conditions that govern pay policy in most of the private sector. It was with considerable reluctance, and only after the retention problems in some occupational areas reached nearly crisis proportions during the 1960s, that the military began to accept the notion of differential pay through the introduction of proficiency pay and bonuses for retention. Yet, the military pay structure remains basically unchanged, with the consequence that some personnel are probably paid too much, while others are probably paid too little.

The concern for equity has also had an important impact on the composition of military pay. Because basic military pay was substantially below the wages and salaries that individuals could earn from civilian employment, military personnel came to be compensated in other ways, some pecuniary and some not. For example, in addition to basic military pay, military personnel receive cash allowances that are not taxable, liberal health benefits, a generous retirement system (for those who reach retirement eligibility), and numerous other fringe benefits such as Post Exchange privileges. This is not to say that it is inappropriate to provide such fringe benefits, but rather that the military compensation package has evolved more out of what is regarded as fair and equitable than what is cost-effective.

The emphasis on equity has also led to a management system that uses the equitable distribution of the hardships of military service as one of its prime objectives.[2] Instead of relying on pay incentives or other devices to encourage

[1] Recognizing the problems caused by the equal pay for equal rank and years of service, the Services were frequently forced to alter their promotion policies to deal with excess supply and demand problems. To illustrate, during the peak of the Vietnam War, it was not uncommon for some Army enlisted personnel to reach pay grade E-6 during their third year of service in order to counteract unfavorable supply conditions, while the Air Force with its excess supply did not promote its personnel to E-6 until they had attained 6 to 10 years of service.

[2] There is some circularity in this reasoning, since part of the rationale for frequent moves, undesirable assignments, and the like centers on distributing the hardships of military service "equitably" across those in the force. Thus, as these burdens are shared more equally, there is more burden to share. For

individuals to accept otherwise undesirable job assignments, for instance, the peacetime military has tended to rely on short tours in such assignments, distributed equitably across most or all personnel.[3] A certain amount of forced rotation is probably sensible in the military context to ensure an adequate breadth and range of experience, but considerable evidence suggests that it would be more cost-effective in the long run to use a better balanced combination of pay and rotation policy to meet the various military objectives.

Finally, this historical emphasis on equity has encouraged a rigidity in the management structures used by the military services. This rigidity can be seen in a number of ways, including the standard promotion points used by the Services, standard or fixed tour lengths in particular job assignments, and standard career patterns. Although rigidity provides for a certain ease in administering Service policies and has also been easy to justify to Service personnel, it tends to stifle innovation and imagination.

In the broadest terms, the emphasis on equity, as opposed to efficiency, has led to what we might refer to as a "second-best" management philosophy. Since military personnel could not in many instances be compensated with cash, for example, this second-best management approach led the Services to seek alternative ways of compensating their personnel, such as increased job security, hidden fringe benefits, and a variety of other devices that are not necessarily as cost-effective as more direct forms of compensation and remuneration. In other words, by not having the tools to make efficient management decisions (e.g., greater flexibility in pay, assignment policy, etc.), the military services were forced to rely on less desirable ways of achieving the objectives required to fill the defense mission.

The Emphasis on Youth

The emphasis on a youthful force evidences itself in two different ways: the very junior mix of personnel in the enlisted forces, and, for those personnel serving in the military until retirement, the relatively short careers (by civilian standards) for both officers and enlisted members. This emphasis has been most pronounced in the enlisted ranks, where about 60 percent of all enlisted personnel have less than four years of military experience. The orientation toward youth is further illustrated in terms of career length. In particular, more than 90 percent of all "full career" enlisted personnel (i.e., those serving at least 20 years and hence becoming eligible for retirement) serve 25 years or less. For officers, the emphasis on youth is less obvious, as only 30 percent have less than four years of service, but it nonetheless exists. For example, more than 60 percent of all full career officers serve 25 years or less.

The draft, both directly and indirectly, provided the impetus for much of the orientation toward youth. It encouraged the Services to rely on the plentiful and inexpensive first-termers wherever possible and to use more experienced personnel

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example, the problem of undesirable assignments has traditionally been "solved" through the use of short tours, which has the effect of increasing the number of personnel sharing the burden. However, as the tour length is shortened, the frequency of moves increases, which means that there is more burden.

[3] There are certain incentive pays to compensate personnel for undesirable, hardship, and hazardous assignments, such as sea duty, paratroop jumping, and location in combat zones, but the pays for such activities are relatively small in the overall scheme of compensation policy. For example, sea pay for a first-term seaman amounted to only $8 or $9 per month in fiscal 1976.

only for those assignments where military experience was absolutely essential, such as supervisory roles. In other types of assignments, even though first-termers were less productive, the fact that they could perform the job and were less expensive than careerists provided the military with substantial incentives to rely on them for all but supervisory positions.

The number of supervisory positions required is relatively small, however, and concern for maintaining adequate promotion opportunities led the Services to encourage shorter "full careers" for both officers and enlisted personnel, since longer full careers mean fewer vacancies created and therefore fewer promotions. The emphasis on shorter careers (i.e., 20 to 25 years) originally derived from policies adopted following World War II to help the Services meet their markedly reduced postwar force strengths.[4] Yet, it is clear from the legislative history that retirements after less than 30 years of service were originally intended to be the exception and not the rule.[5] The draft thus perpetuated the less-than-30-year career, since it provided the military services with the incentives to retire personnel early.

The results of this emphasis on youth are vividly illustrated by Table 14-1, which shows that 55 percent of all male military personnel are less than 25 years

Table 14-1

Age Distributions of Male Military Personnel and the Male Civilian Work Force
(percent)

	16-19	20-24	25-34	35-44	45-54	55+
Military[a]						
Distribution	17.0	38.1	27.8	14.9	2.2	nil
Cumulative	17.0	55.1	82.9	97.8	99.9+	100.0
U.S. Civilian[b]						
Distribution	8.6	13.3	24.9	18.5	18.7	16.0
Cumulative	8.6	21.9	46.8	65.3	84.0	100.0

[a]FY 1974 age distribution for male military personnel.
Source: *Selected Manpower Statistics*, 1976.

[b]1975 age distribution for the U.S. male civilian work force.
Source: *Employment and Training Report of the President, 1976.*

old, as compared with only about 20 percent of the civilian male U.S. work force. Moreover, the emphasis on youth is not limited to first-termers, for among those Service personnel more than 24 years old, we find that 95 percent are also less than

[4] Between July 1945 and March 1948, uniformed personnel strengths decreased from 12.1 million to less than 1.4 million.

[5] See, for example, *Hearings on the Defense Officer Personnel Act of 1947*, pp. 5-6. In the original hearings, Senator Guy Gordon argued, "I have noted certain proposals which, in my opinion, would be very detrimental to the best interests of the country as they would . . . force the retirement of officers at the height of their usefulness. . . . This seems to me to be a most wasteful and illogical requirement . . . ."

45 years old, versus 55 percent for the civilian work force. In other words, in addition to the emphasis on first-termers, the military also relies much less on experienced personnel than is generally the case in the civilian work force. The result is that nearly 98 percent of all uniformed personnel are younger than 45 years old, as compared with about 65 percent in the male civilian work force. These figures should not be interpreted to mean that the age distributions should be the same in the military and civilian work forces, but they do indicate how the military emphasizes youth. Given the value of experience in many jobs, it is legitimate to ask whether this emphasis is as appropriate for a volunteer force.

Management Approach

Besides its impact on actual management decisions pertaining to military personnel, the draft also had a subtle, but nonetheless marked, impact on the way decisions were made. That is, the draft was responsible not only for many of the decisions themselves, but also for the management style, or approach. In many ways, this style was the stepchild of an environment that served to deemphasize the role of manpower as a management problem and instead to focus on other aspects of the defense effort. By providing a nearly unlimited supply of manpower, virtually irrespective of the policies used to procure, train, and manage military personnel, the draft fostered a general approach to management in which manpower considerations became of almost secondary importance.

One consequence of the deemphasis on manpower as a management problem was that the Services were encouraged to take what might be called a "course of least resistance" approach to the management of military personnel. In a draft environment, the ease with which particular decisions and policies could be implemented and administered became an important criterion for choosing among the available policy options. The end result was a decisionmaking framework in which the selection of particular manpower policies was often guided as much by concern for administrative convenience as by concern for other, more important factors.

This concern for administrative simplicity came into play particularly in the areas of setting quality standards for potential recruits and of establishing promotional policies for military personnel. The sheer volume of the manpower flow and the size of the eligible manpower pool dictated a strategy that minimized the administrative costs of setting quality standards, since no matter what quality standards were imposed, there would be more than a sufficient supply of personnel. In addition, the complexity of a mammoth military work force, larger than that of any other single employer in the nation, encouraged the development of an approach to promotion policy that would be easy to monitor and administer.

In retrospect, it is easy to see how the concern for administrative simplicity became one of the most important underlying principles of manpower management philosophy, for the costs of implementing more complex decision rules may have outweighed the limited gains that would result. To illustrate, even if relaxing quality standards would have produced significant additional numbers of qualified recruits, the value of such relaxation is questionable if there is already a large excess supply of recruits, such as was the case under the draft. Furthermore, if additional costs (no matter how small) would result from such a relaxation, then not only would there be little to gain from relaxing quality standards, there would actually be something to lose.

However, what was sensible under the draft is not necessarily sensible in its absence. Faced with the projected scarce supply of qualified manpower, particularly in the mid-1980s, policies that can increase enlistment supply may have a high payoff. Specifically, a carefully considered relaxation of some screening standards could be a cost-effective policy in the absence of the draft.

A second aspect of the management approach that developed and flourished under the draft was the style of making management decisions—specifically, the concern for "taking action." Recognizing that one of the primary missions of the military is to fight a war if necessary, the military decisionmaking approach is one that has historically been geared to battlefield situations. In such circumstances, the ability to make and follow through on decisions is of paramount importance, since indecision or postponement of decisions can be disastrous.

This decisionmaking style, although it has served the American military well during wartime, is not the best approach for dealing with the peacetime military.[6] In fact, the emphasis on "taking action" may actually work to the disadvantage of managing a peacetime military force, since finding cost-effective solutions to defense management problems frequently requires data and evidence that may not be immediately available. In these cases, making decisions before such information becomes available may only exacerbate the basic problem.

The emphasis on "taking action" has evidenced itself in many ways. During the spring and summer of 1971, for example, the Army conducted an intensive $80 million advertising campaign for three months to determine whether advertising was an effective means for attracting new recruits. Rather than develop a carefully monitored experiment to measure the effects of advertising on enlistment rates, the Army conducted this intensive advertising campaign on an across-the-board, one-time basis. Even to this day, the effectiveness of that advertising campaign cannot be determined, simply because no effective mechanism for monitoring the results had been established beforehand.[7]

In a similar vein, the non-prior-service (NPS) recruiting deficits led the reserve forces to propose a shortening of the reserve enlistment obligation as an incentive to attract more reserve recruits.[8] The problem is that shortening the enlistment obligation means that fewer man-years are obtained for each new recruit. This results in the need for more recruits just to maintain reserve manpower strength, let alone to eliminate strength deficits.[9] Therefore, the shortened reserve enlistment might actually worsen the deficit problem.

[6] This problem is, of course, not entirely unique to the military; it is probably present to some extent throughout the policymaking community. At the same time, it can be argued that the military decisionmaking style makes the Services more susceptible to this problem.

[7] Epps, under a contract to the Army, attempted to evaluate the effects through a simple regression model. Although he concluded that the advertising campaign contributed significantly to the Army's recruiting success during the summer of 1971, Epps' methodological approach is fraught with so many statistical shortcomings that his results become nearly meaningless. The more general point is that it can be very difficult to determine the effectiveness of something like this advertising campaign after the fact, if careful consideration is not given to the test setup beforehand. See Thomas W. Epps, "Prime-Time Broadcast-Media Advertising as an Inducement to Enlist in the United States Army," unpublished manuscript prepared for the Chief of Information, Department of the Army. See also Thomas W. Epps, "An Econometric Analysis of the Effectiveness of the U.S. Army's 1971 Paid Advertising Campaign," *Applied Economics*, V, 1973.

[8] As compared with the six-year obligation (6x0) in the Selected Reserves, the suggestions for a shorter tour included a period of time, three or four years, in the Selected Reserves with the remainder of the six-year obligation to be served in the inactive Individual Ready Reserve (the 3x3 and the 4x2 enlistment options).

[9] Haggstrom estimated that the three-year option would require 45 percent more enlistments and the four-year option 25 percent more enlistments than the standard six-year obligation, just to maintain

Despite these pitfalls, the Army Reserve components urged a one- to two-year across-the-board "test" to determine the desirability of shortening the reserve commitment, when a more studied approach would have been preferable. Cognizant of the potential problems associated with a shorter enlistment tour and of the difficulties in evaluating the success of an across-the-board test, the OSD and the Air Reserve Forces instead recommended a more limited experimental design to evaluate several alternative enlistment plans. The results of these experiments, which were conducted for the Army and Air Force reserve components, showed that the increase in the numbers of enlistments under the shortened enlistment tour were not sufficient to offset the man-year loss described above. As a result, future manning problems were avoided by taking a more systematic approach to the reserve recruiting problem.

Philosophies, Principles, and Policies

The above discussion has sketched out some of the underlying principles and philosophies that helped to shape the course of defense manpower management policies during the nearly three decades of postwar conscription. It is not intended to imply that each (or any) of the particulars discussed was a formal part of manpower policy. To do so would be to vastly oversimplify the management process. Rather, the so-called philosophies and principles helped to set the *tone* for the particular manpower policies that emerged during this period of conscription and, in many cases, have remained into the volunteer era. Although the military services have in fact made substantial progress in adjusting to the volunteer environment, it will be nearly impossible to realize the full potential of the AVF unless many of these basic tenets of manpower management are revised—as discussed in the remainder of this chapter and in Chap. 15.

RECRUITING

No single area of the manpower system has been more directly or more immediately affected by the removal of the draft than recruiting. The recruiter played a relatively passive role during the draft environment, acting primarily to regulate the flow of enlisted accessions into the Armed Forces. This stands in marked contrast to the activist role that the recruiter must now take in searching for prospective new enlistees.

Two issues regarding the recruiting function are of particular concern. The first centers on the impact of the draft's removal on the organizational structure of the recruiting effort. The second relates to the actual selection strategies that should be employed during the recruiting process in the absence of the draft. This section examines these two aspects of the recruiting process in a volunteer environment and concludes with a specific example of how the draft and its removal have affected selection strategies.

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reserve force strengths at their then-current levels. In other words, if the three-year enlistment plan did not attract at least 1.45 times as many enlistees as the standard six-year tour, reserve force strengths would decline in the long run. See Gus W. Haggstrom, *The Variable Tour Experiment in the Army Reserve Components*, The Rand Corporation, R-1568-ARPA, May 1975.

The Recruiting Function

Analysis of the recruiting function must begin with a consideration of what is the basic objective of recruiting activities. Although this objective would seem to be simply one of attracting potential recruits, this is a great oversimplification. Rather, the objective is to attract the desired numbers of *qualified* recruits, since the ultimate problem is that of providing the military services with the personnel they require to carry out their stated missions.

The practical implication of this seemingly minor distinction is that recruiting cannot be examined in the narrow sense of attracting individuals into the service without simultaneously considering the impact on classification, selection, and assignment.[10] That is, the recruiting system in this broader sense is responsible for (1) attracting individuals to seek employment in the military, (2) classifying enlistment applicants as to their aptitude for military service, (3) selecting from among these applicants, and (4) determining where the enlistees ought to be assigned in the military. Failure to examine the first item—attracting applicants—in the broader context of the other three may therefore lead to the use of manpower policies that are at best suboptimal and at worst detrimental.

Whereas these various components of the recruiting, classification, and assignment (RCA) system operated more or less independently of one another during the draft, the advent of the AVF has substantially increased the interdependence among them. The function most dramatically affected by the increased interdependence has clearly been that of the recruiter. Through such vehicles as enlistment options, where the recruiter can offer a recruit the choice of location or job assignment, the recruiter has come to act in all four roles: as recruiter, classifier, selector, and assigner.

Thus, the RCA system, which was neatly compartmentalized during the draft, has become a complex of interrelationships in the volunteer force. This is not necessarily a problem; indeed, it is probably both essential and desirable when viewed from a longer-run perspective. But the system has grown so quickly that there is no clear framework for evaluating the effect of various policy options available to the Services and the OSD with respect to the management of the RCA system, or for evaluating the effectiveness of specific tools for attracting new recruits. Although the DoD has made significant progress toward developing a more cohesive approach to recruiting,[11] the emphasis for the immediate future should be much more on how the components of the system can be effectively managed and coordinated than on the choice of specific tools and methods for attracting new recruits.

Selection Strategies

The process of selecting acceptable enlistment applicants is of prime impor-

[10] For a discussion of the nature of the recruiting system viewed in this broader sense, see Fred Morgan and Darien Roseen, *Recruiting, Classification, and Assignment in the All-Volunteer Force: Underlying Influences and Emerging Issues*, The Rand Corporation, R-1357-ARPA, June 1974.

[11] During 1976, for example, the OSD revamped the management of the AFEES (Armed Forces Examining and Entrance Stations) to facilitate management control. See, for example, *Final Report on the Task Force to Consolidate and Standardize Armed Forces Examining and Entrance Station Enlistment Forms*, Office of the Assistant Secretary of Defense (Manpower and Reserve Affairs), March 1, 1975.

tance to the AVF. The issues of selection, or quality, standards have historically centered on determining what specific standards should be employed to screen out unacceptable candidates. The analytic framework presented in the previous section, however, suggests that alternative *strategies* for structuring the standards should also be considered.

To illustrate the potential importance of these criteria, only 69 percent of all enlistment applicants during fiscal 1973 met all of the enlistment criteria. Of these, another 53 percent were either non-high-school graduates or classified as Category IV, or both, and were thus viewed as only marginally acceptable. In other words, only 32 percent of those applicants for enlistment would be categorized as "prime" candidates under current screening criteria. But this may be at least partially a result of inadequate screening criteria. Thus, to the extent that there are truly "prime" candidates who are not currently classified as such, a reduction in the numbers of applicants who are found to be not qualified or only marginally qualified could have a potentially high payoff.

As discussed in Chap. 8, the Services employ a variety of screening devices to select qualified candidates from the applicants for enlistment, including mental tests, medical examinations, psychological tests, and record checks, among other things. These screens are intended to weed out those applicants who are not acceptable for the military. Also, and equally important, these screens should not be so strict as to eliminate individuals who would be more than satisfactory Service members.

This suggests that the process of setting and administering quality standards can be viewed as a statistical decision theory problem. For the sake of illustration, suppose that there are two "states of the world": The individual applicant will either be a satisfactory or an unsatisfactory employee for the military. Similarly, suppose that the selection criteria are such that the individual is either accepted or not accepted for military service. As illustrated in Fig. 14-1, there are four possible combinations of the state-of-the-world and the selection criteria under this simplified decision framework:[12] (1) the individual may be a satisfactory performer and accepted by the screening criteria; (2) he may be satisfactory but be rejected as unacceptable; (3) he may be unsatisfactory and rejected; and (4) he may be unsatisfactory but be accepted by the selection standards. The screening criteria thus lead to correct decisions in the first and third cases and to incorrect decisions in the second and fourth cases.

The second case, rejecting an individual who is satisfactory, is known in the statistical jargon as a Type I error; the fourth case, accepting an individual who is not satisfactory, is referred to as a Type II error. Since no criteria can predict perfectly, assume that the Type I error occurs a_1 percent of the time when the

[12] This simplifies the actual problem, since with remedial instruction, for example, an otherwise unacceptable candidate may become acceptable. Obviously, the individual who is useful after this remedial instruction is not as desirable as the one who requires no such special attention, but he is likewise more desirable than the one who is not useful even with such instruction. In the real world, then, there are many "states of the world." One of the problems raised by the removal of the draft, however, is that the military has traditionally viewed the selection problem with this simple "two-states-of-the-world" approach—individuals either are or are not qualified for military service. Since this approach was adopted largely for reasons of administrative simplicity, the removal of the draft raises questions not only about what the right level for qualification standards are, but also how many tiers there should be—i.e., how many "states of the world."

Similarly, the actual selection standards could be multi-tiered, as the medical waiver process indicates that they in fact are.

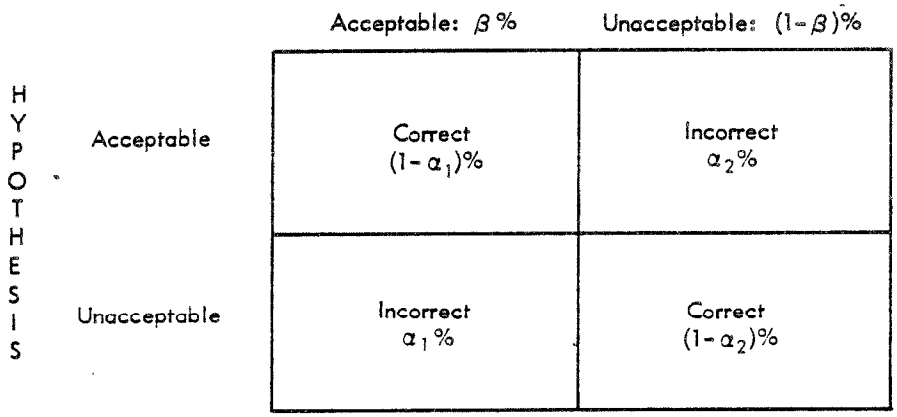

Fig.14-1—Statistical decision framework for establishing selection criteria

individual is in fact satisfactory and that the Type II error occurs a_2 percent of the time when the individual is not satisfactory, as illustrated in Fig. 14-1. Other things being equal, a_1 and a_2 are related such that as a_2 is decreased, a_1 generally increases.[13]

To identify the appropriate selection strategy, we must put the selection approach into a cost framework. Specifically, there are costs associated with making the wrong decision, as well as with simply administering the screening process. The cost associated with a Type I error is the opportunity cost associated with failing to accept an individual who would have been a productive member of the military. The costs of making a Type II error include, among others, those resources invested in accession and training which are never recouped, since the individual turns out to be unsatisfactory for the military. The total cost associated with any given system of selection standards is therefore a function of (1) the cost of making an incorrect decision regarding an applicant's acceptability, (2) the probability of making an incorrect decision, and (3) the cost of administering the screening process.

Assuming the cost of a Type I error is given as C_1, and that of a Type II error is given as C_2, that the cost of administration (with respect to the selection process) is given as A, and that b percent of all applicants would be satisfactory performers (so that 1 − b percent will not be satisfactory), the total cost associated with a given set of selection criteria can be calculated as:

$$\text{Cost} = [b \cdot a_1 \cdot C_1] + [(1 - b)a_2 C_2] + A \qquad (14.1)$$

This general framework helps to explain the particular approach to setting selection standards that the draft encouraged. On the one hand, the opportunity cost associated with a Type I error was negligible during the draft environment, because for every individual turned away, there was another qualified applicant waiting in line. The excess accession and training costs resulting from a Type II error, however, were far from negligible. Thus, the draft encouraged the military

[13] That is, the more stringent the selection criteria (i.e., fewer "mistakes" are admitted into the military), the larger will be the number of satisfactory individuals who are rejected. Of course, as better predictors are developed, both a_1 and a_2 can be reduced, but it is generally not costless either to develop or to administer these better predictors.

to develop selection standards that were easy to administer (to reduce the administration costs A) and that minimized the incidence of the costly Type II error.

The removal of the draft makes the once almost costless Type I error potentially very costly, in that every satisfactory applicant who is rejected means a reduction in an already scarce supply. That is, b percent of the eligible population would be satisfactory performers in the military if they could be identified, so reducing this by a_1 percent means that the military will have to incur larger costs to attract a given number of enlistees from this smaller acceptable applicant pool (whether these costs result from increased bonuses, larger recruiting and advertising costs, or some other incentive).

In general, then, we would expect the removal of the draft to be accompanied by a relaxation, not a tightening, of the standards used to screen applicants for enlistment. It is important to recognize that this does not imply a reduction in quality, for the mechanisms used to screen potential recruits are, at most, approximate indicators of true quality (as discussed in Chap. 8). That is, the standard "quality" measures—e.g., mental tests, high-school diploma, and medical examinations—are not perfect predictors. Thus, the presence of the draft, through its emphasis on reducing the Type II error (at the expense of an increase in Type I errors), probably resulted in screening standards that were too restrictive. The removal of the draft, then, would seem to argue for less restrictive standards—not to reduce the quality of the force, but to decrease the number of truly qualified applicants who are rejected.

Physical Standards: An Example of Selection Strategies

The impact of the AVF on the strategies used to set selection criteria is amply illustrated by the physical (i.e., medical) standards for enlistment. As discussed in Chap. 8, the failure to meet minimum medical criteria accounts for a substantial proportion of the total number of rejections—between 15 and 20 out of every 100 applicants for military service.

Chu and Norrblom estimate that U.S. physical standards for enlistment could be modestly relaxed in nine different areas without adversely affecting force capabilities or manpower costs.[14] This relaxation would increase the number of qualified enlistment applicants by 5 to 10 percent, which would help eliminate the mid-1980s projected recruiting deficit, even if accession requirements are not reduced. The real payoff to such a relaxation, however, would come from the 5 to 10 percent increase in the supply of Category I-III high-school graduate enlistments estimated by Chu and Norrblom.

Putting Chu and Norrblom's results into the analytic framework derived earlier illustrates the potential importance both of this relaxation and also of the analytic approach suggested earlier. In particular, although they estimate that there would be a modest increase in the number of Type II selection errors (i.e, individuals who would later turn out not to be satisfactory), Chu and Norrblom estimate that the total cost associated with the additional Type II errors (e.g., lost training investment) would be in the neighborhood of $5 to $7 million per year. On the other hand, achieving the 5 percent increase in enlistment supply (or in the supply of Category I-III high-school graduates) through pay incentives would re-

[14] Chu and Norrblom, op. cit.

quire an estimated $300 million per year. In other words, relative to the current set of enlistment medical standards, the term $[(1 - b) \cdot a_2 \cdot C_2]$ in Eq. (14.1) would increase by $5 to $7 million per year, but the $[b \cdot Ra_1 \cdot C_1]$ would decrease by about $300 million per year.

It is important to recognize that such a relaxation would not be costless in terms of the administrative effort required to implement revised standards. The increased administrative difficulty stems primarily from the fact that revised sets of physical standards would have to be applied selectively, for while relaxed standards would probably be appropriate for some military occupations, the current standards are more appropriate for others, particularly those that are more physically demanding. Yet the success enjoyed by other countries with their generally less stringent medical standards derives from the fact that they apply different standards for different occupational assignments, in contrast to the current U.S. approach of using basically the same standards for almost all jobs.[15] Given the difference between the $300 million that would be "saved" by relaxing some of the physical standards and the $5 to $7 million cost that would result from additional Type II selection errors, however, it would seem worth it to incur the additional, and probably minor, administrative costs.

To summarize, whereas the volunteer force would be expected to result in a relaxation of screening standards, the reverse has actually happened. Medical standards are about the same as they have been throughout the postwar period, but mental standards have been significantly tightened (as evidenced by the substantial reduction in the numbers of Category IV applicants actually accepted). Together, this probably means that too many truly qualified applicants are being turned away.

MILITARY TRAINING

With formally recognized training costs running in the neighborhood of $6 to $8 billion per year—about one-quarter of the total cost for active duty military personnel—military training has become one of the most important issues in defense manpower. The importance of training has been heightened by the fact that the Congress, once only a passive observer of Service training policies, is now involved in the monitoring and authorization of military training. The result is that the Services must now seek Congressional authorization in order to conduct military training. Yet there has been a tendency to dwell on the symptoms, such as student-staff ratios, rather than on the more important underlying causes of the large cost of military training. In particular, there has been a failure to recognize the impact the removal of the draft has had on the nature and conduct of military training.

Part of the difficulty in coming to grips with the training problem centers on the nature of the issues themselves, which can be broadly categorized into two groups: training strategies and training methods. Training strategies refer to the broad policies that set the amount, type, nature, and timing of military training. Training methods, on the other hand, refer to such particulars as actual course design, the method of instruction, and course content.

[15] Ibid.

Whereas military training has traditionally been viewed in terms of training methods, it is on training *strategies* that the removal of the draft has had its most pronounced effects. Specifically, the first-term orientation encouraged by the draft largely dictated the training strategies that the Service had to adopt, so that significant reductions in training costs may depend on the policies that the Services implement with respect to the first-term/career mix of the force.

The Size and Nature of Military Training

Not only has military training become enormously expensive, the burden of the training establishment is also seen by the fact that between 15 and 20 percent of all military personnel have historically been involved in training activities, either as students or as staff. In addition, there are another 30,000 to 40,000 civilians employed in military training support activities.

The enormity of the military training establishment can be traced to three different factors: the breadth and scope of military training, the numbers of personnel trained each year, and the size of the training support establishment. As can be seen in Table 14-2, the DoD is engaged in a vast array of training activities, including advanced academic training for the officer corps, flight training, officer acquisition training, initial and advanced occupational or vocational training for enlisted personnel, basic military training for recruits, and many others. The breadth and scope of military training are thus driven largely by the military's extensive requirements for trained manpower in thousands of different jobs and the fact that the military generally trains in-house rather than procuring trained manpower directly from the civilian sector.

Table 14-2

Fiscal 1976 Military Training by Type: Manpower and Costs

Type	Training Loads (000s)			Training Support (000s)[a]			Total Manpower (000s)	Cost ($mil)
	Active	Reserve	Total	Mil.	Civ.	Total		
Recruit	66.1	9.6	75.7	21.5	12.5	31.0	106.7	$1290
Officer Acquisition	17.5	0.6	18.1	6.7	7.5	13.7	31.8	358
Specialized Skill	126.9	13.6	140.5	83.8	42.5	126.3	166.8	3552
Flight	5.7	0.2	5.8	32.8	11.6	44.4	50.2	1154
Professional Development	14.2	0.3	14.5	4.8	5.1	9.9	24.4	520
TOTAL	230.3	24.3	254.7	149.5	78.8	228.4	483.1	$6874

[a]Includes base operating support.

Source: *Military Manpower Training Report for FY1976*, Department of Defense, March 1975.

The magnitude of the second factor, the numbers of trainees and students moving through the training system each year, is indicated by the fact that the man-year equivalent (i.e., the training "load") of students and trainees amounted to more than 12 percent of total force strength in fiscal 1976. Large as this number is, it understates the flow of students substantially, since most courses are less than a year in length. To illustrate, Table 14-2 shows a training load of about 140,500 for specialized skill training. Making up this total, however, were more than 1.25 million students attending more than 6,000 different courses.[16]

The third factor is the large training support establishment. In fiscal 1976, for example, the number of man-years devoted to training support was nearly as large as the number of student man-years. Indeed, the ratio of personnel in support of training to the size of the training load has become perhaps the most visible issue in military training, as evidenced by the substantial amount of attention it has received in recent Congressional hearings.[17] At least partially as a result of this focus on training support, the ratio of the size of the support establishment to the size of training loads has declined considerably during the past several years, from about 1.0 in 1974, to 0.9 in 1976, and to a programmed 0.75 for 1977.

Besides identifying the manpower and costs devoted to training, Table 14-2 also helps to pinpoint the important components of the military training effort. The largest single component, in terms of both the personnel involved and the dollars invested, is specialized skill training, which includes initial skill and skill progression training for both officer and enlisted personnel. The largest element of specialized skill training, accounting for almost two-thirds of the total, is initial skill training for enlisted personnel. From this functional perspective of military training, specialized skill training in general and initial training for enlisted personnel in particular are the main elements of the military training system.

Part of the difficulty in identifying the training problem is that most past analyses have viewed training from this narrow functional perspective, rather than according to the broader context of the objectives of the training investment. For example, the objective of first-term enlisted training is to transform raw recruits into trained manpower who can be assigned to actual job responsibilities. The focus on *objectives*, then, means that first-term enlisted training should be viewed *in total*—including recruit training, initial specialized skill training, skill progression training, and on-the-job training—rather than in terms of its component parts.

To illustrate the importance of taking this broader perspective, total formal training for first-term personnel—including recruit training, initial specialized skill training, and skill progression training—accounts for a total training load of about 178,000 for fiscal 1976, with a training support complement of about 126,000, yielding a total manpower engaged in first-term enlisted training of about 304,000.[18] First-term enlisted training amounts to almost $3.9 billion—$2.6 billion for specialized skill training and $1.3 billion for recruit training—well over half the total military training budget. From a policy perspective, the important training issue thus concerns the amount, type, nature, and timing of this training for first-term

[16] This of course involves some double counting, since the same individual may attend several courses during the year, some of which (especially for Navy personnel) may be only a few days in length.

[17] See, for example, *Hearings Before the Committee on Armed Services*, United States Senate, Ninety-Third Congress, Second Session (1974), and Ninety-Fourth Congress, First Session (1975).

[18] Estimates derived from *Military Manpower Training Report for FY1976*, Department of Defense, March 1975.

enlisted personnel, rather than the more debated topics of course design and student-staff ratios.

Draft versus Volunteer: Implications for Enlisted Training

The extent and cost of first-term enlisted personnel training depend on two obvious factors: the numbers of personnel receiving such training and the amount that each individual receives. The number of first-termers moving through the training system is a function of the proportion of the force in the first term, since a smaller proportion in the first term means a smaller number of enlisted accessions. To put the amount of training given to a particular first-term individual into the larger context of force management requires an analytic framework such as that illustrated by Fig. 14-2.[19] In particular, first-term enlisted training needs to be evaluated in the joint context of enlisted personnel costs and performance on the job.

The individual's period of service begins with recruit training, the costs of which are represented in Fig. 14-2 by the slashed area (where the portion above the horizontal line reflects the recruit's own pay and allowances, while that below the horizontal line represents the direct costs of supplying that training, including the cost of instructors and staff, materials, and so forth). After recruit training comes initial specialized skill training, which may in some cases be immediately followed by skill progression training. The costs of initial skill training (and skill progression training if the individual also receives it) are shown as the dotted area.

Upon completion of this training, the individual reports to his or her first duty assignment, which is presumably related to the training that was received.[20] The individual's net contribution to productivity may initially be negative, in the sense that the value of the resources used to supervise the newly arrived recruit may exceed the value of his own productive contribution. Even if the newly arrived recruit's productivity on the job is not negative, it almost certainly is less than his pay. When the recruit's costs exceed the value of his productivity on the job, the difference between the two can be thought of as the cost of on-the-job training (OJT), whether these costs are the result of a formal OJT program in the field or simply the result of the informal acquisition of skills on the job. In either case, they represent a real cost to the military and are shown by the shaded area in Fig. 14-2.

Together, these three components of the total training investment—recruit training, individual skill training, and OJT, whether formal or informal—suggest that the recorded budget costs shown earlier in Table 14-2 may have underestimated, perhaps seriously, the total cost of training. Gay, for example, estimates that the costs associated with the informal acquisition of skills on the job may add as much as another $1.5 to $3.0 billion for enlisted specialized skill training alone.[21]

[19] This framework is based on the approach developed by Gay and others. See, for example, Gay, op. cit; Weiher and Horowitz, op. cit.; Mincer, op. cit; and Gary S. Becker, *Human Capital*, National Bureau of Economic Research, New York, 1964.

[20] Indeed, one of the problems that the Service training and assignment systems have had is that of mismatching, where an individual who is assigned to one job was trained for another. In fiscal 1975, for example, about 15 percent of all Army enlisted personnel were in job specialties other than that for which they were supposedly trained (data were provided by MARDAC). The seriousness of this mismatching of course depends on the type of mismatch—i.e., whether this individual is in a closely related job or not.

[21] See Gay, op. cit.

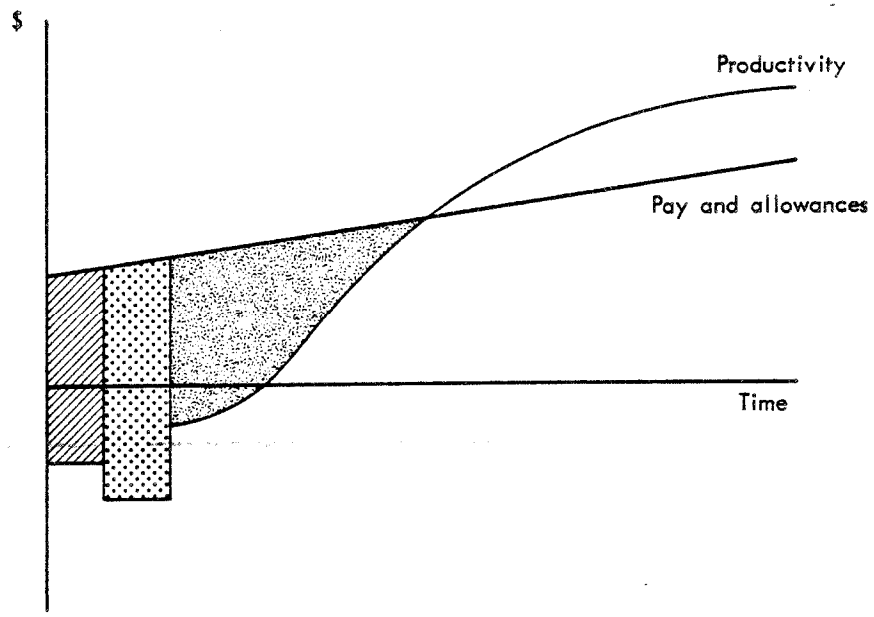

Fig.14-2—First-term enlisted training, productivity, and costs: conceptual framework

These training costs must of course be weighed against the "return" to military training, shown by the clear area between the individual's productivity and his or her cost (i.e., where the former exceed the latter).

Whether or not these returns are sufficient to offset the total investment made by the military is a function of the training policy and manpower utilization. The key policy issues therefore center on how the military can increase the return from training relative to the investment in it, rather than focusing on the size of the training effort. That is, examining the size of the training effort in isolation does not shed much light on what returns the military is able to realize on its investment. To analyze this larger question, we must determine how manpower policy can affect each of the components of training investment and return.

In general, the cost and productivity curves in Fig. 14-2— and, hence, investment and returns to training—are a function of the nature of first-term job assignments, the mix and timing of formal OJT, and the type of skills taught in formal training.

Through its emphasis on maintaining a primarily first-term enlisted force, the draft had a major, if subtle, impact on the military's approach to enlisted specialty training. First, the military services relied primarily on inexperienced personnel and had to provide extensive training for junior personnel. In other words, to shift the productivity curve illustrated in Fig. 14-2 up to an acceptably high level, the military provided large amounts of formal training to newly accessed recruits, thus substituting training for actual job experience.[22]

[22] To illustrate the effects that the removal of the draft has had, Gay estimated that the sum of formal training (and accession) costs and informal OJT costs (about $6600) exceeded the "returns" area shown in Fig. 14-2 (about $3400) by about $3000 for aircraft maintenance technicians. These areas were recalculated using the pre-AVF pay increases, and the results of this recalculation showed the "returns"

A second result was to encourage the military to give trainees far more general and theoretical classroom training than would be needed for their first actual job. For example, Air Force avionics technicians receive an eight-week course in basic electronics, even though analysis of the actual tasks that these individuals must perform shows that they may benefit little from such schooling.[23] Similarly, the Navy's third largest course, in terms of the numbers of recruits graduated each year, is a six-week introduction in basic electricity and electronics. The larger point is that this misplaced historic emphasis on providing extensive classroom teaching in the fundamentals is a result of the first-term orientation of the enlisted forces.[24] A preferred approach might be to provide more hands-on training experience and defer the theoretical classroom training until the individual reaches a point at which he can better use it in the actual job situation.

A basic problem in this regard, particularly for the more technically sophisticated jobs where theoretical training is most prevalent, is that there is frequently such a wide variety of different types of equipment in the field that general theory courses prove to be of little use. Because of the idiosyncracies of each of the types of equipment that individuals may have to work with, extensive hands-on training with specific equipment seems to be far more important in enabling them to perform successfully on the job.[25]

The provision of large amounts of theoretical and general training is further driven by the fact that the personnel managers like broad-based, theoretical training because it presumably facilitates flexibility in assigning personnel across weapon systems and in different locations. But the differences in weapon systems of even seemingly similar types and the fact that different systems are frequently used in different locations often mean that this flexibility is more myth than fact.

An alternative approach to enlisted specialty training would be to rely less on first-termers as the primary source of labor input, so that these inexperienced members of the force could be better used in jobs for which there is less of a premium for on-the-job experience. This, in turn, means that initial skill training could be directed to providing more actual hands-on training for the limited sets of tasks that would be initially required of first-termers. Later, perhaps after the initial reenlistment, or in the third or fourth year for long-term enlistees (such as the six-year obligors in the Air Force and Navy), more extensive training would be given. Such an approach would have the additional benefit of reducing the costs of attrition. That is, since most attrition takes place very early in the first term,

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area to actually exceed the formal and informal costs of training by about $1500. Thus, what may well have been a sensible training policy under the draft may be very costly without it. See Gay, op. cit.

[23] The results from an Air Training Command survey of avionics technicians provide some support for this contention. When interviewed about the parts of their training that they thought were relevant to their job, the interviewees responded almost unanimously that the basic electronics theory and fundamentals were of little or no use. See John P. Foley, *Evaluating Maintenance Performance: An Analysis*, AD/A-004 761, Air Force Human Resources Laboratory, October 1974.

[24] It has been argued frequently that this general training serves as an inducement or incentive for potential recruits. However, extensive classroom instruction on fundamentals is not necessarily such an inducement; indeed, it should be kept in mind that the new recruit may have enlisted because he or she was tired of formal classroom instruction (as exhibited by the fact that the individual did not pursue further academic training). Thus, whereas the new recruit may be interested in obtaining vocational training that can eventually be used to help secure desirable civilian employment, it is not clear that formal classroom instruction on fundamentals fills this need.

[25] See, for example, Gary R. Nelson, Robert M. Gay, and Charles Robert Roll, Jr., *Reducing Manpower Costs in Electronics Maintenance: Framework and Recommendations*, The Rand Corporation, R-1483-ARPA, July 1974.

deferring more advanced training until after most attrition has taken place means that unrecoverable training costs can be substantially reduced.

To summarize, the draft, by encouraging the military to rely on a very junior mix of enlisted personnel, was perhaps the dominant influence in shaping the size and structure of today's military training establishment, especially as it pertained to the training of enlisted personnel. The first-term emphasis of the draft both increased the flow through the training system and provided the impetus behind much of the actual training content that remains today. Indeed, rough estimates suggest that $1.0 to $1.5 billion in enlisted specialty training costs alone could be saved by shifting to a more career-intensive force.[26]

Significant reduction in the total training cost, formal and on-the-job, will require a fundamentally different outlook on the utilization of junior versus more experienced personnel. Piecemeal approaches can have, at best, only a modest effect on total training costs. A simple reduction in formal schooling, for example, will more than likely increase the costs of OJT, thereby offsetting the potential gains that would be achieved. In other words, major savings in training costs probably cannot be achieved without fundamental revision in the way the military views enlisted personnel utilization and the purpose of training—patterns that have become institutionalized through more than 25 years of peacetime conscription.

CAREER MANAGEMENT

The discussion in the last two sections has focused on how the military services obtain trained manpower for assignment to job duties. Once these individuals are trained and ready for actual duty assignments, the military faces a different set of problems—namely, how to effectively manage and use its personnel in ways that contribute to the successful accomplishment of defense mission objectives.

To achieve this end, the DoD has two primary sets of policies, those that include monetary incentives and those that encompass a wide range of nonmonetary tools and policies. The discussion in this section focuses on the nonmonetary tools and policies, which collectively make up career management. Career management includes a vast array of specific policies and tools that the military can use to affect where and how military personnel will be used during their Service careers. The following discussion addresses three major career management issues: career length, promotion policy, and rotation.

Career Length

One of the most important factors in shaping the postwar military structure has been the 20-year career. As we saw earlier, about 90 percent of all enlisted personnel reaching retirement eligibility retire with 25 years or less of military service; for officers, the comparable figure is about 60 percent.

For the most part, however, the 20-year career is unique to the postwar U.S. military, as the 30-year career has been the historical norm. In fact, Navy and Marine Corp enlisted personnel still technically serve a 30-year career, but the last

[26] See App. A to Chap. 13 (and Table 13-A-7 in particular).

10 years can be spent in an inactive reserve component, thereby achieving the practical effect of a 20-year career. The 20-year career is also unique according to the standards generally employed in the civilian sector and in foreign military establishments. With the exception of certain police and fire units, it is unusual to find civilian careers where retirement occurs before the age of 55 or 60. As an example of other military establishments, the Federal Republic of Germany, in a pattern typical of most of the European countries, requires that Captains serve until the age of 52, Majors until 54, Lieutenant Colonels until 56, and Colonels until 58.

The 20-year career has a number of important implications for manpower policy and career management. First, the short career results in the military losing many of its most productive members. Civilian employees typically reach their maximum earning power somewhere between their late 40s and early 50s.[27] To the extent that these earnings are reflective of individual productivity and performance, age-earnings profiles for civilian workers suggest that current military practice, where enlisted members may retire in their late 30s and officers in their early 40s, leads to the loss of personnel during the most productive years of their lifetime. This loss is particularly important for the high-skill occupations in the enlisted forces (e.g., maintenance and communications) and the senior management positions in the officer corps.

Second, the orientation toward the 20-year career leads to higher accession requirements and larger training costs. For example, a doubling of the number of enlisted personnel with more than 20 years of service (currently about 75,000) would result in a reduction in the Services' annual enlisted accession requirements of about 25,000 per year, other things being equal.

Third, because there is no retirement vesting before the 20-year point, the military services lose many highly qualified personnel at the end of the initial obligation—personnel who do not want to remain for 20 years but might be prompted to stay for another three or four years if there was some form of retirement vesting. At the same time, the Services are reluctant to separate the marginal performers who have remained past the initial obligation prior to their 20th anniversary, unless they are so unproductive as to be forced out by the promotion rules.[28] Indeed, the lucrative retirement benefit system encourages many marginal individuals to "hang on" for the last 5 to 10 years of their 20-year career, resulting in a less productive force.

In short, the 20-year career is both too long and too short. On the one hand, it clearly would be desirable to retain more personnel beyond the 20-year point, in fact beyond the 30-year point; on the other hand, it would also be desirable to separate more personnel with less than 20 years of service, both to encourage more to remain past the initial obligation and to eliminate much of the hanging on that occurs during the last 5 to 10 years of the marginal performer's career. Thus, whereas the 20-year career is in many ways an outgrowth of the emphasis on the combat soldier, a more flexible set of policies to encourage a wider spectrum of

[27] Age-earnings profiles for civilian workers are shown and discussed in the next chapter.

[28] Under the "up-or-out" promotion system, individuals not reaching the next higher grade within a specified period of time are forced out of the Service, subject to certain tenure provisions.

career lengths is needed to effectively manage a post-draft military in which 90 percent of all personnel are in noncombat assignments.[29]

Promotion Policy

Promotion policy, as it affects the grade distribution of the force, has been one of the most highly debated topics in the DoD and the Congress. The Congress' concern is that the military grade structure is too "rich"—i.e., that there are too many personnel, particularly officers, in the higher grades. Indeed, this interest and concern is so pronounced that the Congress imposes maximum grade ceilings for each of the Services' officer corps.

Other things being equal, a less rich grade structure would obviously lead to a less costly force. The problem, though, is that other things are not necessarily equal. Recent research by Gotz and Rostker, for example, shows that longer careers using the same promotional opportunities as found in today's force—which would mean an even larger proportion of the force in the senior grades[30]—would actually reduce life-cycle costs, since the savings in accession and retirement costs would more than offset the increases resulting from the richer grade structure.

Two of the draft-inspired management principles mentioned at the outset of this chapter warrant attention in regard to promotion policy. The first is the rigidity in promotion policy and the corresponding emphasis on the calendar metric rather than the performance metric. With promotion and pay tied largely and rigidly to years of service, the system places a premium on age instead of proven performance and capability. This often limits the opportunities for the brightest and most capable young officers and enlisted personnel and encourages these valuable individuals to leave the service after their first tour of duty to return to the civilian sector, where opportunity is less tied to age.

The second aspect of promotion policy warranting careful review is the "up-or-out" policy of the current promotion system, where the individual is required to reach the next highest grade within a specified period of time or else be forced out of the service. Under this approach to personnel policy, individuals who do not want or are not qualified for supervisory roles but who are able performers in nonsupervisory positions are forced out of the military. This means that the military may be losing some of its best workers, simply because these individuals may not want to assume or are not qualified to take on the supervisory positions that accompany promotions in grade.

To illustrate the potential importance of this loss, Gay, in his survey of more than 20,000 enlisted personnel, finds that almost 50 percent of all respondents indicated that they would prefer to remain in nonsupervisory positions. But because of the up-or-out policy, these individuals indicated that they were less likely

[29] In this regard, the Defense Manpower Commission's recommendations warrant particular consideration. Basically, the Commission suggested that retirement eligibility and pay be computed on the basis of the individual's career. For example, combat service would lead to earlier retirement eligibility and/or retirement pay. Under such a system, the minimum career length to achieve full retirement vesting would be 20 years for an all-combat career, 30 years for an all-noncombat career, and a weighted average for a mixed career.

[30] That is, if promotion opportunities, which are a function of the years of service, are held constant, then an increase in the proportion of the force with more years of service means that a larger proportion of the force will be in the higher pay grades. See Bernard Rostker and Glenn Gotz, *Officer Personnel Management Systems: The Up-or-Out Promotion and Tenure Policy*, op.cit.

to seek reenlistment than their coworkers who did want supervisory positions. As a result, the military services may be losing valuable personnel simply because of the philosophy guiding current promotion policy.

The origins of the up-or-out approach to promotion can be partially traced to the Type I/Type II error decision process outlined earlier in this chapter. The up-or-out requirements as they have been applied traditionally serve to weed out the worst performers and have thus helped to reduce the Type II selection errors. Because the draft provided adequate numbers of qualified personnel, there was less concern for the potentially satisfactory personnel lost because of the up-or-out rule (i.e., Type I errors). The rule therefore served an important purpose during the draft period, and, if modified, it can continue to be a valuable tool in the post-draft environment. The problem is that with the draft's removal, the cost of the personnel lost may exceed the benefits of the rule, at least as it has been applied in the past.

A more fundamental problem with the current approach to the up-or-out rule and promotion policy is that it is not necessarily desirable to have supervisory responsibility be a condition for the retention of more senior personnel. Indeed, the primary advantage of a more senior force, as advocated in Chap. 13, is in having *fewer supervisors.* Relying on a more senior mix of personnel could theoretically reduce the need for supervisors, since some senior personnel could be used more productively in nonsupervisory roles than their less experienced counterparts.

The current up-or-out policy, for both officer and enlisted personnel, serves the useful function of forcing out the least desirable personnel, but it is costly in terms of the valuable service members either forced out or encouraged to leave. Thus, the problem is not with the concept of up-or-out, but rather in the way that it has been applied.

An alternative approach would be to develop a "two-track" personnel management system, whereby those officers and enlisted personnel not desiring or not qualified to take on more management responsibility but who are technically qualified to continue in their current job could remain in the "technical" track. Those qualified for and desiring further management responsibility would follow the "management" track. Such a system would enable the Services to retain the desirable provisions of the up-or-out policy and at the same time keep technically qualified specialists.

For the most part, then, concern about promotion and the grade structure has centered on the wrong problem. Whereas the Congress has tended to view the grade structure in terms of "hard military requirements," grade requirements are by their very nature "soft." There are Majors, for example, who can serve (and have served) in Colonel slots in time of need. Alternatively, the DoD's justification for the grade structure frequently appears to be based on promotion for promotion's sake. In reality, the appropriate grade structure and promotion system must be based on both requirements and personnel considerations. On the one hand, mission requirements are important to the determination of the optimal grade structure, while on the other, even the most loyal individuals must be given the proper incentives.

Thus, the basic problem is not one of grade tables or promotion in the narrow sense, for the current system has demonstrated that it does work. Rather, the problem is in the rigidity with which the current system has been applied. In other words, the challenge posed by the AVF becomes one of expanding the flexibility of the current system of career management, for example, to encourage a wider variety of career paths and career lengths.

Rotation

The extensive rotation of military personnel among various job assignments is one of the more important by-products of the military's general approach to meeting manpower requirements and personnel management objectives. The need for rotation arises because the military is not one large conglomerate but consists of thousands of specific units spread across the world in thousands of different locations.

To provide some perspective on the magnitude of the problem, the United States maintains about 5,000 installations worldwide. Furthermore, of the 2.1 million total military strength in June 1976, 23,000 (1 percent) were in outlying U.S. areas (e.g., Guam, Panama Canal Zone, etc.); 392,000 (19 percent) were stationed in foreign countries; and 214,000 (10 percent) were on sea duty. Manning such a system is obviously a complex problem, and substantial movement of individuals among these locations is necessary just to meet the changing requirements.

The use of rotation arises out of two principal concerns: filling manpower requirements and maintaining personnel management objectives. On the requirements side, rotation is particularly important for the manning of overseas bases and installations located in remote regions and for solving the Navy's ship-shore manning problems, as well as simply for filling the vacancies created by losses from the force, reassignment, and promotion. On the personnel management side, rotation also serves to maintain the desired experience mix in specific locations.[31] For the officer corps, rotation also provides a vehicle for ensuring that present and future military executives have the desired breadth and scope of experience necessary for the military's top management positions.[32]

The extensive use of rotation that developed under the draft evolved out of a genuine concern for how to best meet the above manning and personnel requirements. The problem was further exacerbated by the substantial turbulence and corresponding need for rotation that was already present due to short-term conscripts and draft-motivated volunteers.

It is also important to recognize the role that the military's philosophical approach to personnel management played in the specific solutions to these problems that were adopted. The draft encouraged extensive rotation of military personnel, because of the underlying philosophy of distributing the burden of reassignment "fairly" (and, hence, frequently) across all members of the force and because the military frequently did not have at its disposal the other kinds of incentives, such as pay differentials to compensate for undesirable assignments, that could have been used instead of rotation.

As with many other aspects of the military's approach to personnel management, the rotation policies that developed and flourished under the draft may no longer be as appropriate in its absence. There are four reasons to suggest that the Services ought to revise their approach to rotation policy, the first and the most

[31] For example, suppose that personnel at base x had considerable loss rates, while those at base y had no losses. Without rotation, there would be a significant imbalance in the experience mixes at these two bases.

[32] At the same time, the concern for breadth of background may have become an objective in its own right. The Air Force's insistence on maintaining the "generalist" concept for its officer corps, as opposed to developing "specialists," may lead to unnecessarily large rotation requirements, since only a few personnel will ever need this general background.

obvious of which is cost. Personnel moves constitute a significant drain on defense resources, having amounted to more than $1.7 billion in fiscal 1976, a figure that is nearly three times as large as the $625 million that was spent for such activities in fiscal 1961.

Large as these costs are, they probably underestimate substantially the true cost of rotation, if the disruption caused by short two- to four-year assignments is taken into account. For example, newly arrived personnel frequently take considerable time to become acquainted with new job assignments, just as those preparing to leave a particular assignment may get little work done in their last few weeks or months on the job.

For maintenance personnel, this problem may be particularly acute, because of differences in the specific weapons and support systems used at different bases. Even though equipment at different locations may be of the same generic class, it may in fact be quite different. This is particularly true of certain aircraft in all four Services, where the electronic and avionics systems are quite different in different configurations of the same general aircraft.

Some perspective on the potential magnitude of these additional costs can be gained by noting that the Services planned on about 875,000 rotation moves during fiscal 1975, in addition to the more than 1.4 million moves resulting from accessions and losses.[33] Even if the average time lost in each of these personnel moves was only one month, the moves "cost" about 75,000 man-years, which, at the current average cost of military personnel, amounts to nearly $1 billion in additional costs not shown in the budget.

The second factor—one that is far more difficult to quantify but perhaps even more costly—is the implicit cost of personnel who leave the military because of an aversion to continuous movement during their career. Although presently available data do not permit estimations of these implicit costs, it can be conjectured that they are quite large.[34]

Third, in addition to the direct and indirect costs of permanent-change-of-station (PCS) moves described above, there is reason to believe that the practice of continually rotating military personnel results in isolating the military from the rest of society.[35] As indicated in Chap. 10, this possible isolation has become a topic of considerable debate, particularly among military sociologists and political scientists. The continual rotation of military personnel tends to remove them from the civilian environment within which their base is located. As a result, they may not have the time needed to participate fully in the community and may tend to associate only with other military personnel.

A fourth possible effect of rotation derives from the policy of very short (two- to four-year) assignments for senior military officers—which, as a matter of practice, frequently turn into assignments lasting less than a year.[36] Such short tours

[33] Source: Office of the Director of Defense Program Analysis and Evaluation.

[34] Of particular importance here are the attitudes of spouses. Surveys consistently show that service members' decisions regarding retention are importantly affected by the attitudes of their spouses. Since, according to the surveys, spouses also tend to object to such frequent moves, extensive rotation may cause many retention problems.

[35] See Janowitz, "U.S. Forces and the Zero Draft," op. cit., pp. 19-20.

[36] Actually, Mylander shows that in 1973 the average time in an assignment for Army Generals was 16.5 months; by 1974, it had dropped to 14.4 months. In 1972, 73 percent of all Army Generals had been in their current assignment less than two years; this figure increased to 79 percent in 1973, and to 85 percent in 1974. See Maureen Mylander, *The Generals: Making It, Military Style*, Dial Press, New York, 1974.

may result in the senior officials being reluctant to "rock the boat" and, as a consequence, not taking action on some of the more pressing problems that might lead to organizational conflicts. These short tours may also create some degree of myopia with respect to personnel planning, since the planning horizons may be very short when the senior management personnel are only in a given job for a short period of time. In other words, the rotation of senior military officials at frequent intervals may have provided disincentives for effecting the kinds of changes that will be required if the military is to successfully compete in a volunteer environment; as noted by Admiral Hyman Rickover, such short tours provide "... a system for evasion of responsibility."[37]

It is in this context of the direct and indirect economic costs and the sociopolitical implications of frequent rotation that Janowitz's suggestion of a regional or "home port/home base" peacetime military warrants consideration.[38] The British, for example, have effectively employed a regimental system for some time. To reduce the dissatisfaction that may result from forced rotation, the Services should consider career management policies that would permit the individual to choose his career pattern and geographical location during peacetime, subject to overall management constraints (such as personnel shortages at any particular military installation).

Again, successful management depends on a flexible set of management policies. Just as it may not be desirable to rotate the entire force virtually every few years, it is not necessarily desirable to eliminate rotation altogether. A modified system of self-selection, relying on both monetary and nonmonetary incentives to encourage the type of personnel flows desired, could probably be used to achieve such a flexible mix of policies.

To summarize, reducing the amount of rotation could reduce total PCS costs, provide greater continuity in the work force, help to reduce the isolation of the military, and encourage longer planning horizons among senior military officials. At the same time, some degree of rotation must be maintained to properly satisfy manpower requirements and career needs and to ensure an adequate infusion of new personnel into existing units.

[37] Ibid.

[38] See Janowitz, *U.S. Forces and the Zero Draft*, op. cit., pp. 27-29. Also, see William L. Hauser, *America's Army in Crisis*, Johns Hopkins University Press, Baltimore, 1973.

Chapter 15

MANPOWER MANAGEMENT: THE MILITARY COMPENSATION SYSTEM

Military compensation—which totaled more than $35 billion in fiscal 1975—is the single largest component of defense spending and the most important policy instrument available to the DoD for procuring and retaining the personnel needed to man the nation's Armed Forces.

Due in part to the general philosophy that has guided the military's overall management approach, the military compensation system has evolved over time into a very costly patchwork of separate legislation and regulations designed more to reward past service than to meet external market conditions. The end result is a system where personnel of similar rank and experience are paid similarly—almost irrespective of the prevailing supply and demand conditions or the individual job responsibilities.

It would of course be a mistake to assume that the military compensation system has been *entirely* unresponsive to changing supply and demand conditions. Indeed, the implementation of such programs and policies as proficiency pay in 1958 and the variable reenlistment bonus in 1966 (discussed earlier in Chap. 7) attests to the importance of market phenomena for compensation policy, even under the draft. There was also more general concern for the overall structure of military compensation during the draft, as evidenced by the establishment of the First Quadrennial Review of Military Compensation in 1967. Clearly, then, the evolution of the military compensation system—even during the draft—was influenced by the need to keep the military competitive with the civil sector.

At the same time, the types of changes made to the military compensation system during this evolution were for the most part *changes at the margin.* The fundamental revisions that are needed to bring military compensation policy in line with the needs of the post-draft environment have been noticeably absent.

Because the military must now compete directly with other civilian employers for *all* its personnel, policies regarding the level, structure, and composition of military compensation that were implemented largely for reasons of equity or administrative convenience must be reevaluated in terms of efficiency as well. Equity and administrative practicality must remain a central concern of the military compensation system, but the increased costliness of military compensation means that cost-effectiveness must also be emphasized. And this argues for fundamental revisions in compensation policy—not just changes at the margin.

The emphasis in this chapter is upon the effects that the draft and its removal imply for the nature of military compensation in the post-draft era, rather than upon the compensation system in its entirety. First, a simple analytic framework is developed for evaluating compensation policy, then the general nature of the military compensation package is examined. The two most important elements of the package, military pay and military retirement, are next analyzed, and the chapter concludes with an evaluation of the current compensation system in the context of efficiency.

THEORETICAL FRAMEWORK

It is important to recognize at the outset that the principal purpose of any compensation system, and the military's in particular, is to attract and retain the desired numbers and kinds of personnel in an equitable, but cost-effective manner. The system must be perceived as fair, or in the long run the military will not be able to attract or retain the desired types of personnel. At the same time, the removal of the draft and the concurrent large increases in manpower costs make cost-effectiveness an equally important concern.

The military compensation system should be evaluated with respect to its three main features: its level, structure, and composition. The level, or amount, of military compensation refers to what is paid on the average to military personnel; the structure of the compensation package refers to how military compensation is differentiated among various personnel, such as by rank, experience, and occupation; and the composition of military compensation refers to the makeup of the compensation package, particularly with respect to the mix of pay and fringe benefits. The overall costliness of the compensation package is a function of the amount or level of compensation, but the structure and composition of the package also play a vital role in determining the overall efficiency of the compensation system—and, hence, its cost.

Supply and Demand: The Competitive Pay Approach

Military labor supply depends on many factors, including military pay (M_P), military fringe benefits (M_F), the pay and fringe benefits that individuals can earn from civilian employment (C_P and C_F), and a host of other factors (Z), such as the chances of obtaining the desired civilian employment, recruiting effort, working conditions, and the "taste" for military service.

Taking into account the considerable theoretical and empirical evidence which suggests that the military pay and fringe benefit offer can be evaluated relative to the corresponding civilian employment offer, we can write the supply of labor to the military (S) as follows:

$$S = f\left(\frac{M_P}{C_P}, \frac{M_F}{C_F}, Z\right). \tag{15.1}$$

Other things being equal, then, the amount of military pay and fringe benefits required to attract and retain the personnel required to man the officer and enlisted ranks is a function of the pay and fringe benefits that these individuals can command from their preferred alternative civilian employment. Although military labor supply is also a function of many other factors—(Z) in Eq. (15.1)—the importance of this framework is simply that it provides a conceptual basis for evaluating how military pay and benefits ought to be set and structured.

Dismissing for a moment the distinction between pay and fringe benefits, Eq. (15.1) implies that, other things being equal, the supply of labor to the military is an upward-sloping function of the amount of military compensation paid to the individual, where the supply curve is shown by SS in the center panel of Fig. 15-1. The demand for military labor, on the other hand, is a downward-sloping function of the cost of military labor (i.e., the compensation paid) in the long run, as discussed earlier, and is shown by the curve DD in the center panel of Fig. 15-1.

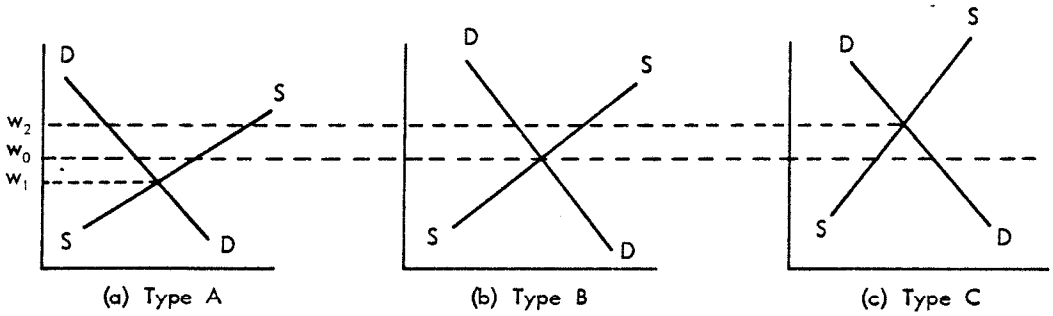

Fig.15-1—Military labor supply and demand in multiple labor markets

Together, these supply and demand curves provide the basis for determining how much compensation is required to provide the military with the personnel it requires, since paying less than w_0 in Fig. 15-1 results in a shortage of personnel, while paying more results in unnecessarily large compensation costs.[1] The point where the supply and demand curves intersect, w_0 in the center panel of Fig. 15-1, is therefore the cost-minimizing amount of compensation required to attract the desired personnel.

This discussion of compensation policy simplifies the actual problem because the analysis thus far has implicitly assumed that the military needs only one type of homogeneous labor input, when in fact, the military requires may different types of personnel to perform many different functions. The military's personnel requirements differ in the amount of skills and education required, the nature of the job, the amount of experience needed, job responsibilities, and so forth.

This situation can be depicted in a simplified form as shown in all three panels of Fig. 15-1. Specifically, assume that the military uses three types of personnel, and that each is characterized by its own supply and demand conditions. It can easily be seen that if the DoD pays a wage equal to w_0, the amount required to attract enough type B personnel, it ends up paying more than necessary for type A personnel but not enough for type C personnel and therefore incurs a shortage of type C individuals. Paying a wage equal to w_2 will attract enough personnel of all types, but the amount paid will be much more than necessary to attract types A and B personnel. Thus, rather than paying the same wage for all personnel, an efficient, or competitive, compensation system would maintain a differential pay structure, paying w_1 to type A, w_0 to type B, and w_2 to type C personnel, thereby attracting enough personnel of all types but simultaneously minimizing the total costs.

There are at least four ways that we would expect pay to be differentiated in accordance with the above concerns: by experience in the military, by responsibility or rank, by occupation, and by overall competence. In each of these areas, the supply and demand conditions could be expected to differ enough that pay differentiation would be required to simultaneously meet the military's personnel requirements and maintain a cost-effective compensation system.

Although the military compensation system is strongly differentiated by length of experience, rank is so highly correlated with length of service and there is so

[1] Not only does overpaying lead to unnecessarily large costs that must be borne by the taxpayer, but because of the excess supply, some means of rationing the available slots must be found, a problem that is not without its own social costs.

little pay differentiation by occupation or by type of individual that the system is much more like a single-pay-for-all-jobs structure than the differentiated pay structure that may be required to minimize costs.

The second way that the earlier discussion oversimplifies the problem of designing a cost-effective compensation system is in its use of a single compensation variable, such as pay, for analytical convenience. Since the total cost of the compensation package is clearly equal to the sum of the costs of the individual components, the mix of pay and fringe benefits must be included.

In addition, developing and implementing a cost-effective compensation system is dependent on maintaining a mix of pay and benefits with a value that is perceived by potential and current military personnel as being at least as much as the mix costs the government.[2] That is, the composition of the package will have a great deal to do with the ultimate cost of the compensation system and with the ability of the system to attract and retain military personnel, so cost-effectiveness is an important concern not only in terms of how much is paid to military personnel, but also in terms of how it is paid.

The competitive pay model developed above provides a powerful tool for examining the efficiency of the military compensation system. The power of this approach, however, does not lie in its literal interpretation. Indeed, a rigid interpretation of the competitive pay approach would seem to mean thousands of different pay scales, just to clear each of the thousands of different markets that make up the military personnel system. Such a system would not only be impractical, it would probably not be cost-effective either, given the costs of administering the system.

Instead, the usefulness of this approach lies in what it implies for how the military compensation problem ought to be viewed. For instance, the fact that regular military compensation (RMC) becomes lower than the wages and salaries earned by comparably aged and educated civilian workers at just about the time that the individual approaches his first reenlistment decision, as shown later in this chapter, helps to explain some of the difficulties experienced in attracting sufficient numbers of reenlistees. Alternatively, the military and the Congress tend to view reenlistment bonuses almost solely in terms of filling "shortage" skills when, in fact, the analysis presented in Chap. 13 suggests that more vigorous use of bonuses ought to be made in order to attract larger numbers of enlisted personnel into the career force in general.

The importance of the competitive pay model therefore derives from its implications for the level, structure, and composition of military compensation. Specifically, although the design of the system must clearly take into account the in many ways unique nature of military employment, the system should also reflect the conditions of military labor supply and demand. This would seem to mean age-earnings profiles broadly reflective of those found in the civilian sector, expanded use of bonuses to meet the different supply and demand conditions found in

[2] Note that if fringe benefits are valued at less than they cost, it is more cost-effective to provide the benefits in the form of cash rather than in kind.

At the same time, there may be particular social objectives that are served by certain fringe benefits. For example, the GI Bill has contributed, perhaps substantially, to providing a more educated populace and thus should be viewed in terms of the broader social welfare objectives. Conversely, to the extent that military retirement encourages individuals to leave the work force sooner than that time viewed as socially desirable, the social costs of military retirement may be even larger than the fringe benefit cost.

different areas of the military personnel system, and a careful balance in the composition of compensation, among other things.

The Comparability Pay Model

The above discussion outlines one theory of military compensation policy—the so-called competitive pay model. The notion that compensation should be set according to what comparable civilian jobs pay—i.e., the "comparability" pay principle—provides an alternative theory and, in fact, represents the approach actually used to set Federal pay scales (military and civilian alike).[3]

The rationale for the comparability approach to setting military compensation rests in the principle of equal pay for equal work: Jobs that are the same ought to be paid the same. In theory, the comparability pay model should yield the same results as the competitive pay model, since if jobs are in every way comparable, individuals will be completely indifferent with respect to what job they take.

In practice, however, the competitive and comparable pay approaches can differ substantially, since it is difficult to find jobs that are exactly comparable, especially in the case of comparisons between military and civilian jobs. Jobs that may seem to be similar in many respects, such as in job title, may actually be quite different in terms of other, less obvious characteristics. As a consequence, the comparability approach would pay the two jobs the same, while the competitive approach would pay them differently, according to the particular supply and demand conditions. Moreover, because the underlying supply and demand conditions differ for the two jobs, the comparability approach will result in a shortage of personnel for the relatively less attractive job (if pay is set so as to clear the market for the more attractive job) or in an excess supply for the more attractive job (if pay is set to clear the market for the less attractive job).

Thus, the basic problem with the comparability approach comes in finding which military jobs are comparable to which civilian jobs. To the extent that the matches are less than exact, the military will end up with either an excess supply or a shortage of personnel.

The comparability pay approach came to the military from the Federal civilian work force, and the military under the draft found that it met their requirements. Since the draft partially obscured conditions of supply and demand, the competitive approach to pay never received adequate consideration. It was well recognized that the draft had depressed military pay, and comparability seemed to be a reasonable way of solving this problem.

A second major problem, and one noted by the Rockefeller Pay Panel,[4] concerns the way comparability has been implemented and maintained (for the civilian as well as military work force). Specifically, comparability was established as the basis for *military pay,* not *total military compensation.* The military, however, enjoys a

[3] Actually, military pay is pegged to the pay rates of supposedly corresponding positions in the general schedule pay tables, which, in turn, are determined according to the comparability principle. For a description of the mechanisms for setting and adjusting military pay, see David S. C. Chu, Richard V. L. Cooper, and Robert Shishko, "The Adjustment Mechanism for Military Pay: Present Policy and Alternative Approaches," The Rand Corporation, unpublished paper, April 1976; and Robert Shishko, "Military Pay and Comparability: Some Observations about the PATC Index as the Basis for Adjusting Military Pay," The Rand Corporation, unpublished paper, March 1975.

[4] The President's Panel on Federal Compensation, *Report of the President's Panel on Federal Compensation,* Washington, D.C., December 1975.

generous fringe benefit package, especially the retirement system, which was implemented in part to help offset the depressed military wages. When military pay was raised to comparability levels, a large part of the justification for the size of the fringe benefit package disappeared. However, there was no corresponding reduction in the other elements of the compensation package. Thus, instead of setting a comparable wage, total military compensation now far exceeds that found in the private sector.

THE MILITARY COMPENSATION SYSTEM

The most immediate and obvious result to stand out from the aggregate view of military compensation, as shown in Table 15-1, is the sheer magnitude of this largest component of defense spending.[5] This is, of course, not surprising, since payroll costs are generally the dominant element in the budgets of most private firms and government agencies alike and since the DoD is the nation's single largest employer. But it does serve to reemphasize the importance of compensation policy as a tool for achieving force management and cost objectives.

The other major observation is the myriad of individual components that collectively make up what we view as military compensation. The package is composed of an amalgam of elements that represent both current and deferred payments (or, alternatively, current payments to present and past members of the force), that are provided both in cash and in kind, and that are offered by several different agencies of the Federal Government. To illustrate, the education and training benefits provided by the GI Bill, military retirement pay for those who served in the past, Post Exchange privileges, and medical care are all benefits that, though not necessarily a part of military pay in the narrow sense, are nonetheless important elements of the compensation package as viewed in the larger context. Indeed, these "other" elements made up nearly 45 percent of total compensation costs in fiscal 1975.

This aggregate view serves first to identify the two major elements of compensation, pay and fringe benefits. We view pay as being comprised of RMC (which itself is made up of several components, including basic military pay, basic allowance for quarters, the basic allowance for subsistence, and the tax advantage), as well as certain other allowances (e.g., overseas station allowances) and the differential pays such as bonuses and flying pay. Items I, II, III, and IV in Table 15-1 can therefore be viewed, in a sense, as military pay.[6] Fringe benefits, on the other hand, include the variety of supplements to military pay, such as retirement, medical care, commissary and Post Exchange privileges, and post-service education and training benefits (i.e., items V, VI, and VII).

This view of military compensation also demonstrates the complexity of the system, insofar as the compensation package is composed of many different specific elements provided by several different agencies and designed to serve many different purposes. Today's compensation system is not, however, the result of a well-structured approach designed to provide an equitable, but cost-effective compensation package. Instead, it is the result of a piecemeal approach whereby the addition

[5] Not all of the military compensation costs—e.g., the tax advantage and VA benefits—are included in the defense budget but they are nevertheless defense-related.

[6] For practical purposes, however, the discussion presented later regarding "pay" from the individual's viewpoint focuses on RMC as the measure of pay.

Table 15-1

Estimated Military Compensation: Fiscal 1975 Budget Costs
($ millions)

I.	Regular Military Compensation	
	1. Basic Pay[a]	$15768
	2. BAQ[a]	1917
	3. BAS[a]	1664
	4. Tax Advantage[b]	1150
		$20499
II.	Allowances	
	1. Uniform	293
	2. Other[c]	273
		$ 566
III.	Incentive Pay for Hazardous Duty[d]	*$ 291*
IV.	Special Pays	
	1. Bonuses: Enlistment and Reenlistment	392
	2. Proficiency Pay	126
	3. Physicians, Dentists, etc.	76
	4. Other[e]	81
		$ 674
V.	Supplemental Benefits	
	1. Retirement and FICA[f]	6885
	2. Medical	1508
	3. Commissary and Exchange	303
	4. Other[g]	28
		$ 8724
VI.	Separation[h]	*$ 496*
VII.	Benefits Provided by Other Agencies	
	1. VA Education and Training[i]	3306
	2. VA Disability for Military Retirees	748
	3. Other[j]	338
		$ 4392
	TOTAL	
	1. DoD[k]	30100
	2. Other Agencies[k]	5542
		$35642

Source: Except as noted, estimates are those shown in Defense Manpower Commission, *Defense Manpower: The Keystone of National Security*, U.S. Government Printing Office, Washington, D.C., April 1976, pp. 277-278.

[a] The DMC estimates were based on October 1973 pay rates; the results shown here are a weighted average of the October 1973 and October 1974 pay rates (coinciding with the fiscal year) and, as such, are 4.125 percent higher than shown in the DMC Report.

[b] Estimate was derived by estimating the tax advantage by year of service for officer and enlisted personnel; these estimates were then aggregated to a total by using the end FY1974 year of service distribution.

[c] Includes overseas station allowances, family separation allowances, and dislocation allowances.

[d] Includes flight pay, submarine pay, jump pay, demolition pay, and miscellaneous incentive pay.

[e] Includes continuation pay for submariners, flag and general office personnel money, sea duty pay, foreign duty pay, and diving duty pay.

[f] Includes military retirement ($8,000 million) and FICA contributions ($845 million). Estimates shown here are based on the *FY1976 Budget of the U.S. Government;* actual retirement pay for FY1975 (as shown in the FY1977 Budget) amounted to $6,239 million.

[g] Includes death gratuities, mortgage insurance, life insurance, and burial costs.

[h] Includes terminal leave pay, lump sum readjustment pay, severance pays, and early release.

[i] To be consistent with other estimates in the table, this estimate is based on the 1976 Budget. Actual figures (from the 1977 Budget), however, amounted to $4,328 million.

[j] Includes unemployment compensation and VA dependency and indemnity accrual. Estimates should also, but do not (for lack of data), include VA medical benefits.

[k] Non-DoD compensation given as the sum of "Benefits provided by Other Agencies" and the "Tax Advantage." Other costs are borne by the DoD.

and deletion of specific compensation elements have generally been argued more in terms of maintaining military benefits or implementing minor cost savings than in terms of the fundamental revisions required to bring military compensation policy in line with the needs of the post-draft environment.

Nowhere is the historically piecemeal approach to military compensation better illustrated than by the fact that:

> ... 260 separate bills pertaining to 111 pay and allowance subjects were introduced and referred to the House Armed Services Committee during the Ninety-Second Congress; on the Senate side, 46 bills covering 30 subjects were introduced and referred.[7]

This failure to deal with the compensation system as a whole may actually result in individual policy recommendations that work at cross-purposes. For example, past efforts to curb the costs of such relatively minor compensation elements as Post Exchange and commissary privileges and home-travel benefits for recent reenlistees could well have increased, rather than decreased, total compensation costs.[8] That is, such policies might have cost more in terms of lost "good will" than they would have saved.[9]

Thus the problem is not so much that there are many different components in the compensation package, for this will almost necessarily be the case given the enormity of the military personnel system; rather, it is that the historically piecemeal, item-by-item approach to the management of military compensation has probably resulted in a system that is far less than cost-effective. In short, it is important to view the individual elements of the compensation system in the larger context of overall force management.

Moreover, for all of the specific components that make up the compensation package, the system itself is relatively simple—*too simple, with respect to the management flexibility that it provides.* As a consequence, the military services have relatively little discretionary authority with respect to how they can achieve the basic purpose of the compensation system—that is, attracting the desired numbers and types of personnel at the least possible cost. Even the so-called incentive pays, which have since become a fixture of the military compensation system, have historically been based on the performance of extra military-related duties—not on prevailing supply and demand conditions. For example, flight pay, submarine pay, diving pay, and the like are all seen as a reward for performing unusually hazardous jobs and, as such, have tended to become "rights" rather than being reserved for use as flexible management tools.

The only truly discretionary components of the compensation package are the various bonuses and special pays,[10] and they only amount to some $500 million or

[7] Martin Binkin, *The Military Pay Muddle*, The Brookings Institution, Washington, D.C., 1975.

[8] In 1975 and 1976, the Administration recommended (1) that Post Exchanges and commissaries be put on a totally self-supporting basis and (2) that travel-to-home benefits for recent reenlistees be eliminated.

[9] In the case of Post Exchange and commissary privileges, their perceived value to individual Service members may be greater than their cost to the government. In the case of home-travel benefits, recent reenlistees may be among the most effective recruiting devices available, thereby reducing future recruiting costs.

[10] Rewards for past service have generally been the dominant factor even in the case of proficiency pay, which has historically been used after the fact rather than as an incentive to encourage greater reenlistment response.

so—less than 1.5 percent of the total $35 billion-plus compensation system. Thus, despite the proven effectiveness of discretionary compensation tools such as reenlistment bonuses,[11] the Services have relatively little flexibility to meet the differing supply and demand conditions that they confront, especially as brought on by the removal of the draft.

The problem of differential pays—or, more precisely, the lack thereof—can be seen in theoretical terms by referring to Fig. 15-1. Since compensation costs are minimized when pay levels are set so as to equate supply and demand, the military's compensation problem arises because the supply of and demand for labor may differ, perhaps substantially, within different segments of the military labor force (e.g., by occupation, experience level, and so forth).

Different pay levels are therefore needed to clear these different labor markets. Although the sheer size of the military personnel system probably argues for some degree of standardization and simplicity, the presence of only a small amount of special pay (e.g., bonuses) means that substantially more than necessary is probably being paid to many personnel while others are probably underpaid.[12] The end result is that the military compensation system may be ill-equipped to deal with the demands for efficiency imposed by rising manpower costs and the removal of the draft.

MILITARY PAY

The basic issues with respect to military pay concern, first, how much is needed to attract and retain the numbers and types of personnel desired and, second, how military pay should be measured. Unlike most civilian employment, where pay in the form of wages or salaries tends to be stated outright, military pay actually consists of many different components, as noted in Table 15-1.

The composite of individual elements that collectively make up military pay has led to some anomalous results. For example, the basic allowance for quarters is dependent in part on family size, so that those personnel with dependents receive a larger military "pay" than their equally productive counterparts who do not have dependents. Similarly, military personnel with outside sources of income, such as working spouses or investment income, actually receive a *larger* RMC because of the larger tax advantage resulting from the tax-exempt status of BAS and BAQ.

The rationale for the present system derived to some extent from the previously cited concern for equity. Because basic military pay was far below the wages and salaries earned in civilian employment, allowances for subsistence and quarters (or

[11] Reenlistment bonuses, for example, enable the military to provide additional pay incentives to individuals falling in certain shortage-skill occupations without having to provide similar pay incentives for all. As a result, significant cost savings can be achieved, since these additional pay incentives are only paid to some. To illustrate the magnitude of the costs involved, rough calculations suggest that replacing the current Selective Reenlistment Bonus (SRB) with an increase in basic military pay would add about $4 billion to basic pay costs in order to achieve the desired reenlistment response (simply because the bonuses would have to be paid to all and because of the desire to eliminate pay inversions), while saving only $300 million in SRB costs. For a discussion of the effects of bonuses on the reenlistment rates, see John Enns, *Reenlistment Bonuses: Their Impact on First-Term Retention*, The Rand Corporation, R-1935-ARPA, forthcoming.

[12] Only in the rare circumstance where all the supply and demand curves in Fig. 15-1 intersect at exactly the same wage rate would the present system of equal pay for equal rank and years of service (and generally similar promotion rates) be efficient.

their in-kind equivalents) helped to offset the disparity, thus providing military personnel with a "reasonable" standard of living. The end result may be far from equitable, however, since individuals with the identical job, rank, experience, and competence may be paid differently. That is, an individual's military pay depends in part on such non-job-related factors as his or her own financial circumstances and family size.

Perhaps the most important point, though, is the visibility of military pay as it is presently constituted. The problem is that although analysts can construct theoretical estimates of the civilian pay equivalent of the various individual elements that collectively make up military pay, *the individual employee never actually sees his or her total pay.*

As a consequence, the perceived value of RMC may be substantially less than its actual worth,[13] a proposition that is given some support by past survey results, as shown in Table 15-2. These survey results, reported in the First Quadrennial Review of Military Compensation, show that military personnel do in fact tend to systematically underestimate the value of RMC. They also show that the perceived value of military pay is not all that different from the amount of basic military pay—a finding that should not be viewed with much surprise, given that basic pay is the most visible element of RMC.

Table 15-2 also shows that the extent of the underestimation is most pronounced for the most junior personnel.[14] Yet, because of the manpower procurement problem, this is the very group for whom the visibility of pay is probably most important. That is, the lack of visibility of certain pay elements means that the military may have to pay far more than necessary to attract the desired numbers and types of new enlisted and officer recruits. This, in turn, may make the remainder of the pay scale larger than necessary, given the military's desire to maintain a certain shape to the military career earnings profile and to avoid pay "inversions."

The results from the 1976 DoD Personnel Survey presented in Table 15-2 show, furthermore, that perceptions of military pay are little different from those reported in the First Quadrennial Review, despite the DoD's continued efforts since then to publicize the value of RMC. Moreover, the perception problem *continues* to be most serious for junior military personnel. This, of course, is not surprising, since attempts to make known the value of RMC will probably have the least effect on prospective recruits and junior personnel—i.e., those unfamiliar with the system.

Thus, although more than 10 years have passed since the First Quadrennial Review recommended making military pay more visible, the composition of military pay and, accordingly, its perceived value remain virtually unchanged. As a result, the military may not be getting the full effectiveness of its overall expenditures for pay.

Given RMC as the measure of military pay, the policy question then centers on the amount of pay needed to attract the personnel required by the military. In this

[13] In contrast to fringe benefits, where the individual may value them at less than their cost, the value of the non-basic pay elements of RMC equals their costs. Whether individuals perceive this value, though, is another question altogether.

[14] The reason that pay may be least visible for the most junior personnel is thus that the non-basic pay elements represent a larger percentage of RMC for junior personnel than for senior personnel (based on 1975 pay scales): 35 percent for an E-1; 26 percent for an E-7 with 20 years of service; 28 percent for an O-1; and 18 percent for an O-6 with 25 years of service.

Table 15-2

Perceived Value of Military Pay

	Perceived Pay as a Percent of RMC		Basic Pay as a Percent of RMC	
	1966	1976	1966	1976
Officer 1 YOS	n.a.	95	63	72
4 YOS	76	85	74	77
10 YOS	87	92	77	79
20 YOS	90	92	80	81
Enlisted 1 YOS	n.a.	76	48	68
4 YOS	76	79	63	66
10 YOS	91	85	67	69
20 YOS	115	90	73	73

SOURCE: 1966 estimates, Department of Defense, *Modernizing Military Pay*, U.S. Government Printing Office, Washington, D.C., 1967; 1976 estimates based on source data from the 1976 DoD Personnel Survey as reported to the author by J. Michael Polich of The Rand Corporation (see also J. Michael Polich, "Reenlistment and Compensation Issues in the 1976 Department of Defense Personnel Survey," unpublished paper, The Rand Corporation, 1977).

regard, we recall from Eq. (15.1) that the amount required to attract and retain these personnel is a function of their civilian earnings opportunities, among other things. Recognizing that the officer ranks are competing primarily for college graduates and the enlisted ranks are competing primarily for high-school graduates, and further recognizing that potential entrants and careerists are concerned not only with the initial military and civilian wages but also with life-cycle earnings, we compare age-earnings profiles for officer and enlisted military pay with the corresponding age-earnings profiles for white college graduates and high-school graduates, respectively.[15,16]

Using data collected for the Current Population Survey conducted by the Bureau of the Census, we take the annual wage and salary earnings for year-round full-time employed civilian workers (white high-school graduates and white college graduates) as the measure of civilian earnings against which the military must compete.

[15] White males are used as the basis for comparison because of the lower earnings opportunities for all blacks and white females.

[16] Recall from the discussion earlier in this chapter that finding the right civilian jobs to compare with military jobs is one of the major difficulties of the comparability pay approach. Comparisons of the type mentioned above—e.g., comparing officer career earnings profiles with the age-earnings profiles for civilian college graduates—offer one solution to this problem. That is, whereas comparability calculations are supposedly structured on job-for-job comparisons, the above procedure might be more appropriate, since it reflects the earnings of individuals of the *types* that the military wants to attract and retain. For example, since the military desires to maintain an essentially college graduate officer corps, age-earnings profiles for civilian work force college graduates reflect the wages and salaries paid to the types of personnel the military wants to attract and retain for the officer corps, given the types of jobs that civilian college graduates hold. As such, this provides a reasonable way for viewing the comparability comparisons.

To put the issue of military pay into some perspective, it is useful to examine the historical trends in military pay relative to those found in civilian employment. Recognizing that first-term enlisted and officer personnel have generally been paid considerably less than their comparably aged and educated civilian counterparts, we focus instead on the pay for those in the career force (i.e., those with between 4 and 19 years of service).[17] The results from these comparisons, shown in Fig. 15-2, are quite revealing. For enlisted personnel, we see that career military earnings (i.e., RMC) under the draft were between 5 and 20 percent below the earnings of their comparably aged and educated civilian counterparts. For officers, however, the reverse was true. Even under the draft, career officers tended to earn 5 to 20 percent more in the form of RMC than their comparably aged and educated civilian counterparts.

Thus, the notion that the presence of the draft led to uniformly lower pay rates for military personnel is not entirely correct. At the same time, given the perceptions of military pay illustrated by the results in Table 15-2, it is not surprising that military pay has been viewed as being considerably less than could be earned from comparable civilian employment. As Fig. 15-2 shows, basic military pay for career personnel has historically been quite a bit below the median wage and salary earnings for comparably aged and educated civilian workers.[18]

The most important issue to emerge from this review concerns the perceived value of military pay as opposed to its actual worth. To examine this issue in more detail, we turn to the actual career earnings profiles for military and civilian workers.

It is important to recognize that the comparisons of military and civilian pay profiles presented here do not by themselves describe what military pay ought to be. Indeed, the simple framework outlined at the beginning of this chapter makes it clear, first, that the "appropriate" military pay profiles are a function of both supply and demand. Second, supply itself is a function of many factors—Z in Eq. (15.1)—in addition to the income that could be earned from civilian employment. At the same time, these comparisons provide valuable information, since no matter what these other factors are, alternative civilian earnings are an important determinant of the amount of pay required to attract and retain the desired quantity and quality of military personnel.

Beginning with enlisted personnel, Fig. 15-3 shows that the enlisted career earnings, using RMC as the basis for comparison, are very similar to the median civilian wage and salary income for white high-school graduates through the first

[17] Career earnings for military personnel were calculated by assuming that officers are promoted to 0-3 at 5 YOS, to 0-4 at 10 YOS, to 0-5 at 17 YOS. Enlisted promotions were assumed to be to E-5 at 5 YOS, to E-6 at 10 YOS, and to E-7 at 17 YOS. As such, these promotion phase points will modestly overstate military pay from the late 1940s through the early 1960s, since promotion did not occur as rapidly then as now. For example, Army promotion phase points in 1947 were 0-2 at the completion of 2 YOS, 0-3 at 6 YOS, 0-4 at 13 YOS, and 0-5 at 20 YOS. To determine the effects of the particular promotion schedule used, career military pay was recalculated using the slower 1947 promotion schedule. The fact that pay for these two different promotion schedules—the faster one used for calculating military pay in Fig. 15-2 and the slower 1947 Army schedule—differs by less than 3 percent means that summary measures of military pay such as those shown in Fig. 15-2 are not markedly affected by the exact promotion schedule assumed. The reason for this is that pay is more a function of years of service than it is of pay grade, at least for 0-1 through 0-5 and E-1 through E-7.

[18] A second factor that contributed to the impression that career military pay was depressed by the draft is the length of the intervals between pay increases prior to 1963; five or more years would sometimes pass between increases.

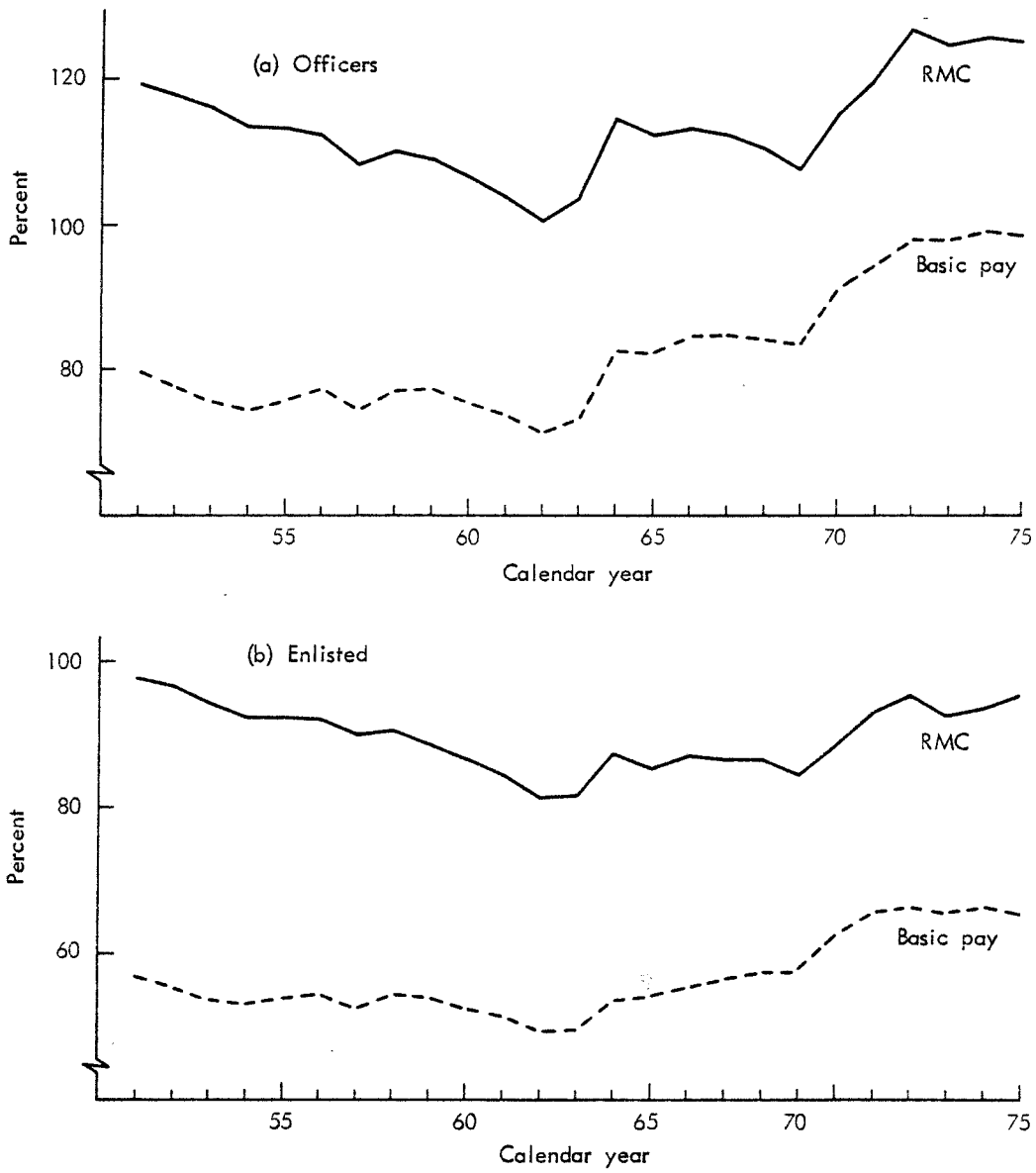

Fig.15-2—Military career basic pay and RMC expressed as a percentage of median wage and salary earnings of comparably aged and educated civilian workers (using white high-school graduates and white college graduates as the basis of comparisons for enlisted and officers, respectively)

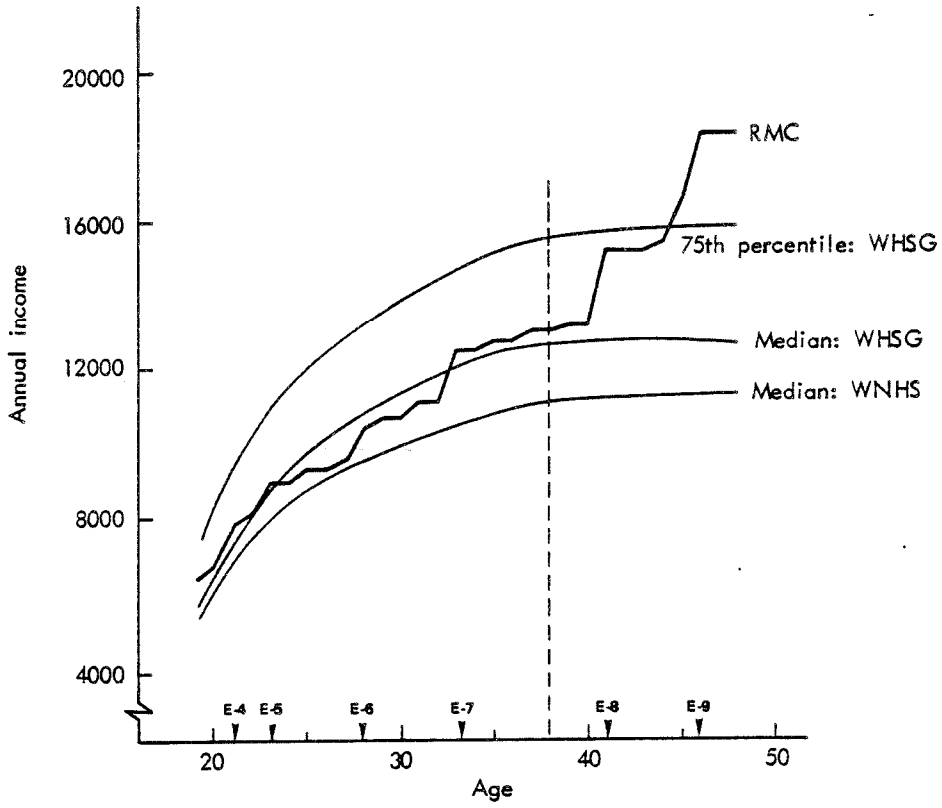

Fig.15-3—Enlisted RMC versus civilian wage and salary earnings for white high-school graduates and white non-high-school graduates: calendar year 1974

20 years of service.[19] Only after promotion to pay grade E-8 do career enlisted personnel begin to fare much better than their civilian counterparts, in terms of RMC alone.[20] This result (i.e., the similarity between the career earnings paths of enlisted personnel and those of white high-school graduates in civilian employment) should not be viewed with surprise, however, since the Gates Commission concluded that the military would not have to pay a premium to attract the required numbers and types of enlisted personnel. Accordingly, its recommended pay profiles for enlisted personnel were based on the civilian earnings opportunities for white high-school graduates.

For officers, a very different picture emerges: Fig. 15-4 shows that the career earnings profile for military officers (assuming the average promotion pattern) lies substantially above the median civilian earnings opportunities for comparably

[19] The similarity is even more striking if reenlistment bonuses are included—they are not included in Fig. 15-3—since the standard reenlistment bonus just about offsets the small decline in enlisted earnings (relative to civilian earnings) between 5 and 8 YOS.

[20] Since E-8s and E-9s represent the top management in the enlisted forces, comparisons with median earnings for white high-school graduates may not be appropriate. Rather, the comparisons ought to be with the 75th or the 90th percentile earnings for white high-school graduates. When viewed from this perspective, the military earnings for E-8s and E-9s are quite similar to those of their civilian counterparts.

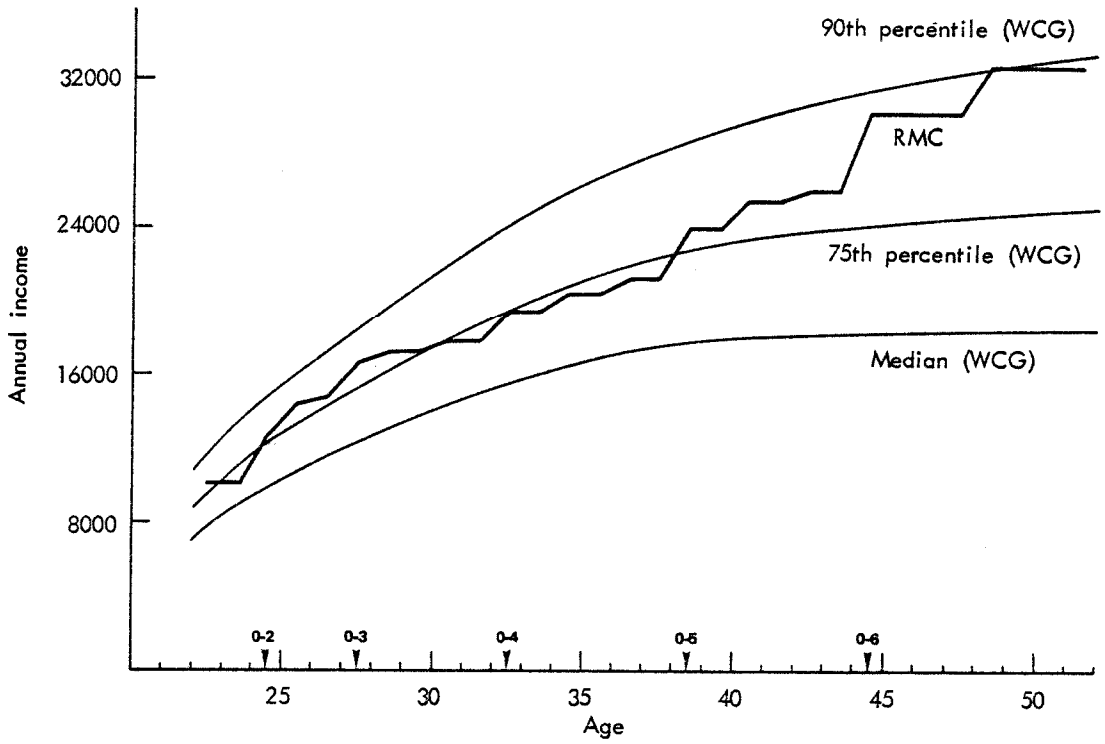

Fig.15-4—Officer RMC versus civilian wages and salary income for white college graduates: calendar year 1974

aged and educated civilian workers.[21] In fact, in terms of RMC alone, the career earnings path for military officers during their first 20 years of service just about equals that for the 75th percentile of white college graduates in year-round full-time civilian employment. *In other words, the RMC for military officers is more than the wage and salary income for 75 percent of the comparably aged and educated civilian workers.*[22]

It must be recognized, however, that the military needs some officers of truly exceptional quality and accordingly must pay more to keep these individuals in the service. In this regard, we compare the age-earnings profiles for two hypothetical officers, one who is truly exceptional, as evidenced by the fact that he is promoted two years ahead of schedule to pay grade 0-4, four years ahead of schedule to pay grade 0-5, and six years ahead of schedule to pay grade 0-6; and one who is just as clearly marginal, as illustrated by the fact that he is promoted two years behind schedule to pay grade 0-4 and does not reach pay grade 0-5 before the mandatory retirement point of 20 years of service.

Figure 15-5 shows the almost remarkable result that there is no difference in the pay that these two individuals receive during their first eight years of service

[21] This result may be partially a result of a statistical error by the Gates Commission. The final report of the Commission overestimates the earnings opportunities for white college graduates by about 10 to 15 percent. As a result, its estimates of the military pay required were also overestimated by about 10 percent.

[22] If anything, the results shown in Figs. 15-2 through 15-4 will understate military earnings relative to civilian earnings, since the Current Population Survey data include earned income from all sources (e.g., second jobs), whereas the military earnings include only those gained from military employment. Since many military personnel do engage in moonlighting, these figures understate the actual earnings for military personnel.

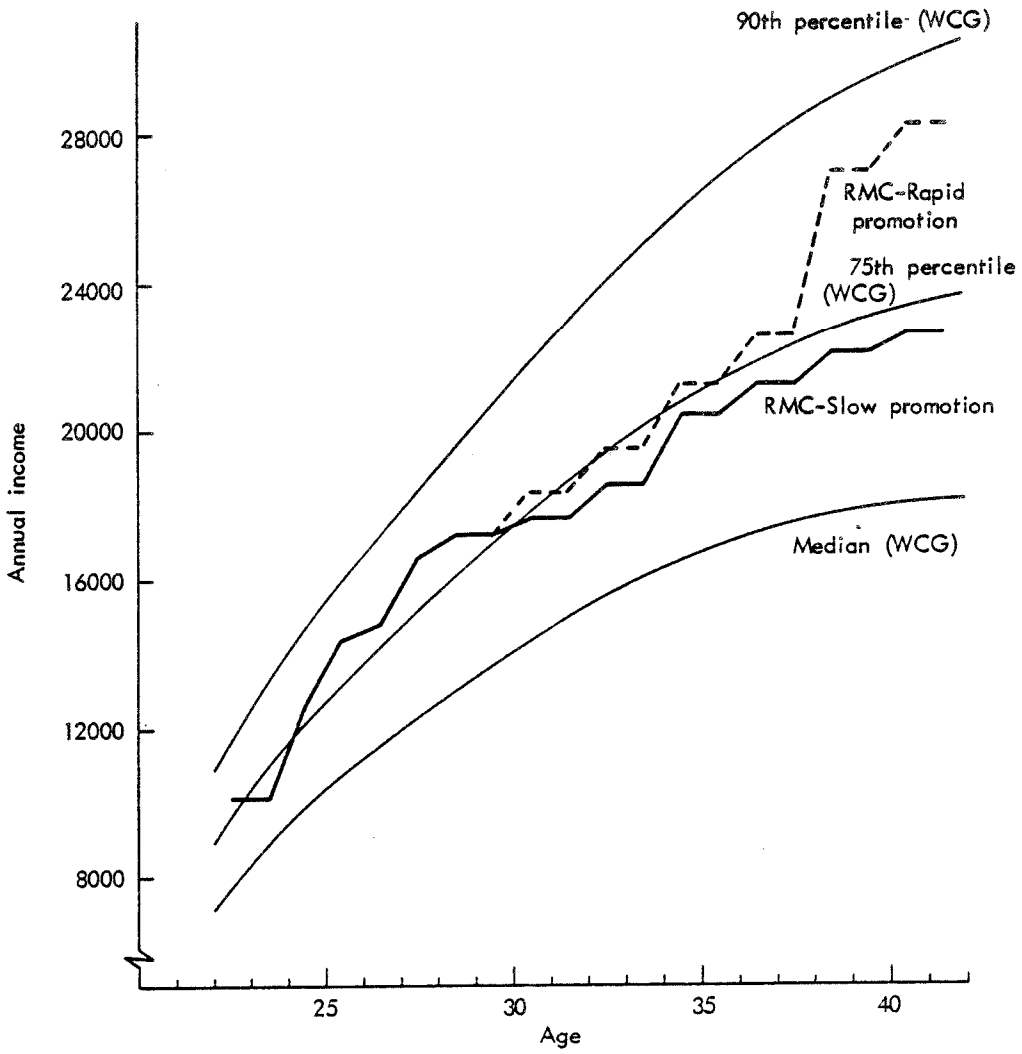

Fig.15-5—Officer RMC under slow and rapid promotion versus civilian wage and salary earnings for white college graduates: calendar year 1974

and only about $1000 per year difference for the next eight years. It is only after the truly exceptional officer reaches pay grade 0-6 that any appreciable difference opens up, and even then, it is only about $5000 per year.

Perhaps even more striking is the fact that the marginal officer continues to earn an RMC that is near the upper quartile of all comparably aged year-around full-time employed white college graduates, despite the fact that he is clearly of below average quality (relative to the remainder of the officer corps). The military should—and does—pay more in order to encourage the truly exceptional officer to remain in the military (i.e., he is in the upper quartile of civilian workers for most of his first 15 years of service and begins to approach the upper 10 percent of all comparably aged and educated civilian workers as he nears his 20th service anniversary). But the Services should not be expected to have to pay appreciably more than average for the marginal officer. Nevertheless, the estimates in Fig. 15-3 indicate that the marginal officer in fact earns substantially more than the median wage and salary earnings for comparably aged white college graduates.

Finally, Figs. 15-3, 15-4, and 15-5 serve to illustrate one other point which concerns the general nature of the military age-earnings profile. In general, these charts have shown that the shape of the military age-earnings profile is quite similar to that of the civilian age-earnings profile, despite the fact that a large retirement bonanza awaits military employees after the completion of 20 years of service, but only after 20 years.

Since fringe benefits—and retirement benefits in particular—are to some extent substitutable for military pay, a more efficient pay structure would seem to be one where military pay would increase relative to civilian earnings opportunities at between 5 and 10 years of service, to compensate Service personnel for the fact that there is no military retirement vesting until the completion of 20 years of service. Between 10 and 20 years of service, however, military pay should not have to keep pace with civilian earnings opportunities, because of the strong retirement lure. In other words, the relative shape of the military pay profile is the opposite of what it probably ought to be, which suggests that the military compensation system is not entirely responsive to general supply and demand conditions.

MILITARY RETIREMENT

Military retirement costs are one of the fastest growing and largest components of total manpower costs. After basic military pay, they are the second largest component of the military compensation system.

Budget Costs

As shown in Table 15-3, military retirement costs have grown from $477 million in fiscal 1956 to more than $8 billion by fiscal 1977. The source of this increase is twofold: (1) the number of retirees has grown by more than 500 percent during these 20 years, while the average cost per retiree has about doubled; and (2) the cost of military retirement has increased from about 1 percent of the DoD budget to about 7 percent, and from about 4 percent of manpower costs to about 17 percent. Moreover, the projections shown in Table 13-6 indicate that the problem will worsen over time. Assuming that the defense budget remains constant in "real" 1978 dollars, retirement costs are projected under current policy to grow to more than 12 percent of the DoD budget by the mid-1990s.

In addition to the concern for growing retirement costs, military retirement has also been a major political issue for the past 10 years or so, as a result of pressure brought by military retiree groups calling for recomputation.[23] Thus, from both a cost and a political point of view, military retirement has become one of the key issues and will probably remain one for the remainder of this century.

The Economic Cost of Military Retirement

For all the concern about military retirement, however, there has been a basic failure to come to grips with the fundamental issues involved. Military retirement

[23] The term "recomputation" refers to a policy whereby retired pay would be adjusted each year to reflect the increase in basic military pay that year. Those calling for recomputation are thus arguing for "equal retirement pay for equal rank and years of service" regardless of when they served.

Table 15-3

Military Retirement Costs

	Fiscal Year	Retirees[a] (000s)	Cost ($ billion)	Percent of DoD Budget
Actual:				
Current dollars[b]	1956	183	$ 0.48	1.3
	1960	243	0.69	1.7
	1964	411	1.21	2.4
	1968	624	2.10	2.7
	1972	867	3.39	5.2
	1976	1108	7.30	8.3
	1978	1180	9.04	8.3
Projections:[c]				
1978 constant dollars	1980	1196	9.83	9.0[d]
	1985	1256	11.21	10.2[d]
	1990	1280	12.71	11.6[d]
	1995	1250	13.58	12.4[d]

[a]Includes families on survivor benefits.

[b]Sources: *Selected Manpower Statistics* and *Budget of the U.S. Government*, various years.

[c]Source: Patricia Munch, "Projections of Military Retirement Costs," unpublished paper, The Rand Corporation, June 1975. Munch's estimates originally excluded survivors and were stated in 1974 constant dollars. The estimates shown here were therefore adjusted to include families on survivor benefits and to 1978 constant dollars.

[d]Assumes that the defense budget remains at $109.5 billion in 1978 constant dollars.

has been approached as a deferred payment for service rather than as an integral part of the military compensation system. There has been a general tendency to view military retirement in terms of what is "fair," rather than what is a sensible mix of present and deferred military compensation. Unlike most employers in the private sector, where contributions toward future retirement benefits are balanced carefully against current wages and other fringe benefits so as to derive the appropriate mix of pay and fringe benefits, the military retirement system has been generally considered quite apart from the remainder of the military compensation system.

It is helpful to begin with a brief review of the nature of the military retirement system. First of all, as noted earlier, there are no retirement vesting privileges prior to the completion of 20 years of active service,[24] so that those leaving the military before 20 years of service generally receive no retirement benefits. For those personnel serving at least 20 years, retirement benefits are collected immediately upon leaving the service and are calculated as 2.5 percent times the years of service completed (up to a maximum of 75 percent) times annual basic military pay at the

[24] There are certain involuntary termination pay provisions, however, as shown in Table 15-1.

time of retirement.[25] Thus, the individual serving 20 years receives annually an amount equal to 50 percent of his annual basic pay at the time of retirement; an individual serving 25 years receives annually an amount equal to 62.5 percent of his annual basic military pay at the time of retirement; and so forth, up to a maximum percentage multiplier of 75 percent. In addition, the individual retains many of the fringe benefits, such as free medical care, Post Exchange privileges, etc.

Part of the reason for the enormous growth of retirement costs is the number of years that each retiree spends on the retired rolls. In contrast to the civilian worker who retires at, say, age 65 and spends about 10 years receiving retirement pay (assuming a life expectancy of 75 years), the average enlisted member serving 20 years spends more than 35 years on the retirement rolls, and the average 20-year officer spends just a little under 35 years.

The implications of military retirement can be fully understood only if retirement is considered in the context of the compensation package for those currently serving in the military. We therefore need to compute what would have to be put into a retirement fund each year in order to maintain an *actuarially sound retirement system.* That is, retirement should be viewed in terms of the implicit contribution to a retirement fund that will eventually provide the retirement annuity. In this sense "actuarially sound" means that the accumulated value of the fund is just sufficient to support the retirement benefits. The issue here is not who contributes to this retirement fund—employee, employer, or both—but rather how much must be contributed (whether explicitly as in the case of most private sector employment or implicitly as in the case of military retirement) to maintain a solvent retirement system.

One way of viewing military retirement in this sense is to consider how much the DoD would have to pay if it were to purchase a retirement plan from a private firm. The results of this approach, shown in Table 15-4, help to illustrate why military retirement has become so enormously expensive.[26] For the 20-year officer, for instance, an amount equal to about 55 percent of his annual RMC would have to be put into a retirement fund every year of his active duty in order to fund his future retirement benefits.[27]

The results shown in Table 15-4 point to two important implications of the current military retirement system. The first concerns how expensive military retirement is when viewed in terms of implicit contributions toward the future retirement benefits for those who will eventually reach retirement eligibility. In

[25] The Services generally have certain requirements with respect to how long an individual must serve after being promoted in order to qualify for the larger retirement pay that results from the promotion.

[26] As shown elsewhere by the author (see Cooper, "Imputing the Economic Cost . . .," op. cit.), the actual percentage of RMC required to fund a given individual's future retirement benefits depends on a number of important assumptions regarding the individual's actual career and certain economic assumptions such as the discount rate. However, sensitivity calculations show that the actual estimates are relatively insensitive to the particular assumptions adopted (at least over the range of reasonable values). Thus, the estimates shown in Table 15-4 are reasonably representative of the typical amounts required to fund military retirement benefits.

[27] This does not take into account certain tax effects. For example, tax laws do not generally allow an individual to tax-defer more than 20 percent of his salary by putting it into a retirement fund. Since military retirement requires an implicit contribution of around 50 percent, only the first 20 percent would normally not be taxed. If the system were funded as in the private sector, the implicit contribution would actually have to be between 60 and 70 percent in order to realize a 50 percent after-tax contribution.

Table 15-4

Economic Cost of Military Retirement: The Percentage of Regular Military Compensation Necessary to Fund the Future Retirement Benefits for Those Who Serve Until Retirement[a]
(expressed as a percentage of annual RMC)

	Career Length			
	20	25	30	35
Officer	55	51	44	32
Enlisted	49	47	43	29

[a]Assumes a 3 percent real interest rate; a 2 percent per year increase in real military pay; 19 year-old age of entry for enlisted personnel and 23 year-old age of entry for officers; standard promotion patterns; and a life expectancy of 75 years.

Source: Richard V.L. Cooper, "Imputing the Economic Cost of Military Retirement," unpublished paper, The Rand Corporation, October 1975.

contrast to most civilian-type retirement plans, which typically call for an amount equal to between 5 and 20 percent of annual pay to be put into a retirement fund, the military retirement system is equivalent to a plan in which 30 to 60 percent of annual RMC would have to be put into a retirement fund to provide an actuarially sound retirement system.[28]

The second important result to become apparent from these calculations concerns the effect of career length on the implicit contribution toward retirement. Again in contrast to most civilian-type plans, which generally reward longer servers with larger retirement contributions, the longer-term military careerist is actually penalized relative to those serving shorter careers. Thus, the shorter (20- to 25-year) career is substantially more expensive in terms of the percentage of RMC that would have to be set aside each year to fund future retirement benefits. Indeed, this helps to explain why the majority of full career military personnel do not remain past their 25th anniversary.

The more general problem to emerge from this review is that military retirement is frequently viewed in isolation from the remainder of the compensation system. The costliness of military retirement has, of course, come to be well recognized. But discussions about the problems have tended to focus on retirement for retirement's sake, rather than upon the role that retirement ought to assume, first, relative to other components of the compensation package, and second, in the larger context of force management.

Putting retirement into the broader perspective of compensation policy in particular and force management in general serves to raise two key issues. The first

[28] Because not all individuals currently serving will ever reach retirement eligibility, the implicit contribution for the force as a whole is of course much less. Estimates place the forcewide implicit contribution at about 20 to 25 percent of the total amount of RMC. See Cooper, "Imputing the Economic Cost of Military Retirement," op. cit.

concerns the magnitude of retirement benefits, since it is rare to find other compensation systems where such a large fraction of total compensation is in the form of deferred payments. The cost-effectiveness, or lack thereof, of the current mix of present and deferred pay is apt to be particularly important for the most junior members of the force. That is, the promise of generous retirement benefits 15 or 20 years away may not have much effect on prospective recruits or individuals approaching the end of their initial obligation, a point given some support by a number of recent surveys.

The second issue concerns the impact of the retirement system on career management. As was argued in the last chapter, military careers are both too long and too short. Because there is no vesting in military retirement prior to the completion of 20 years of service, individuals who do not wish to continue for a full career are encouraged to leave at the completion of their initial obligation. Alternatively, the estimates presented in Table 15-4 show why those serving a full career are encouraged to serve shorter careers.

MILITARY COMPENSATION POLICY

In the absence of a draft, military compensation policy is the single most important element of manpower policy with respect to encouraging the types of supply behavior—both accession and retention—needed to man the nation's Armed Forces. It is also the largest component of defense costs. Despite its importance as a policy instrument, today's military compensation system is not the result of a thoughtful, integrated approach to meeting the military's post-draft manpower-requirements needs. Instead, it consists of a myriad of hidden and not-so-hidden components which provide more of a reward for past service than cost-effective incentives for the future.

The failure to view the compensation system in total has led to a situation, for example, where the compensation paid the average career officer throughout his 20-year career exceeds the compensation paid to more than 90 percent of the comparably aged and educated year-round full-time employed civilians, as shown in Fig. 15-6.[29,30] In other words, the military pays its average career officers (i.e.,

[29] Total military compensation was estimated as the sum of (1) RMC; (2) the cost of medical benefits, estimated as $427, $658, $888, and $1119 for family sizes of one, two, three, and four, respectively; (3) the DoD's contribution for Social Security, estimated as 5.85 percent of basic military pay, up to a maximum of $770 (corresponding to the maximum Social Security base of $14,200 in 1974); and (4) the value of commissary and Post Exchange privileges, estimated as $23 and $139 per year for Service members with and without dependents, respectively. For those Service members serving until retirement, total compensation also includes the amount that would have to be set aside each year to fund future retirement benefits. The estimates in Figs. 15-6 and 15-7 are based on a 25-year career, yielding an implicit contribution equal to 51 percent and 47 percent of annual RMC, respectively, for officer and enlisted personnel.

SOURCES: (a) RMC, from Figs. 15-3 and 15-4; (b) medical benefits and commissary and Post Exchange privileges from *Alternatives in Controlling Department of Defense Manpower Costs*, U.S. General Accounting Office, Washington, D.C., November 1976; and (c) implicit contribution for military retirement benefits from Table 15-4.

[30] Data on total compensation for civilian employment according to age, education, and race are not available. Total compensation profiles for civilian employment (for comparison with military compensation) were therefore estimated by inflating the wage and salary curves shown in Figs. 15-3 and 15-4 by 1.15, an estimate of the populationwide ratio of total compensation to wage and salary payments. This ratio was calculated using data from *Handbook of Labor Statistics 1975—Reference Edition*, U.S. Department of Labor, Bureau of Labor Statistics, U.S. Government Printing Office, Washington, D.C., 1975, pp. 303-308.

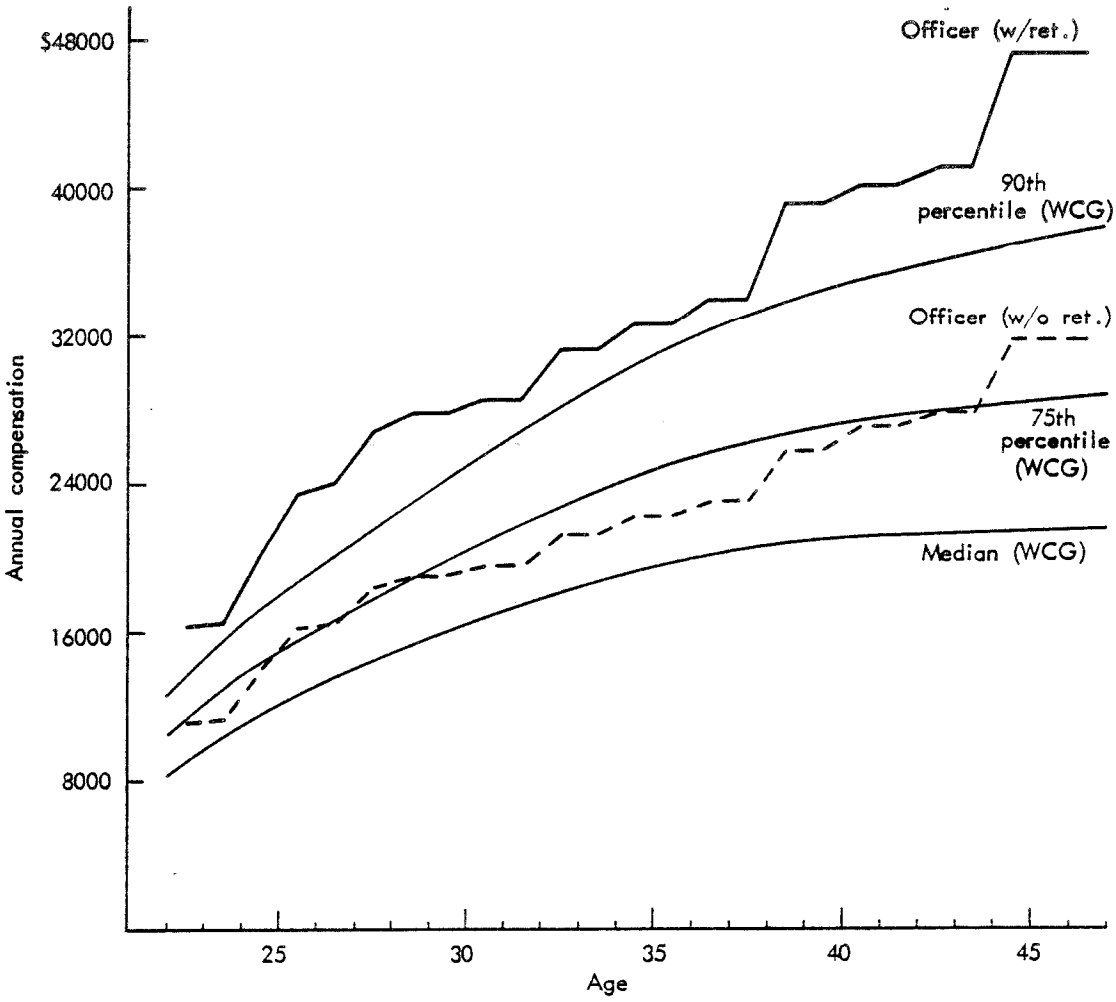

Fig.15-6—Total military officer compensation versus total compensation for white college graduates: calendar year 1974

those who serve a full career) between 30 and 40 percent more than the median civilian compensation for the types of personnel it is competing for—i.e., college graduates. As a result, career military officers are in the upper 10 percent of all comparably aged and educated civilian workers with respect to total compensation.

Similar results emerge for enlisted members who serve a full 20-year career, as shown in Fig. 15-7. Enlisted members serving a full career do not fare quite as well as their officer counterparts in terms of how their earnings compare with comparably aged and educated civilians (i.e., high-school graduates), but their total military compensation package still falls between the 75th and 90th percentiles of all comparably aged and educated year-round full-time white high-school graduates.

Military personnel who do not serve a full career do not, of course, fare anywhere near as well because of the minimum 20-year vesting of military retirement. In fact, enlisted members not serving a full career actually earn somewhat less than the median compensation for their comparably aged and educated civilian counterparts.

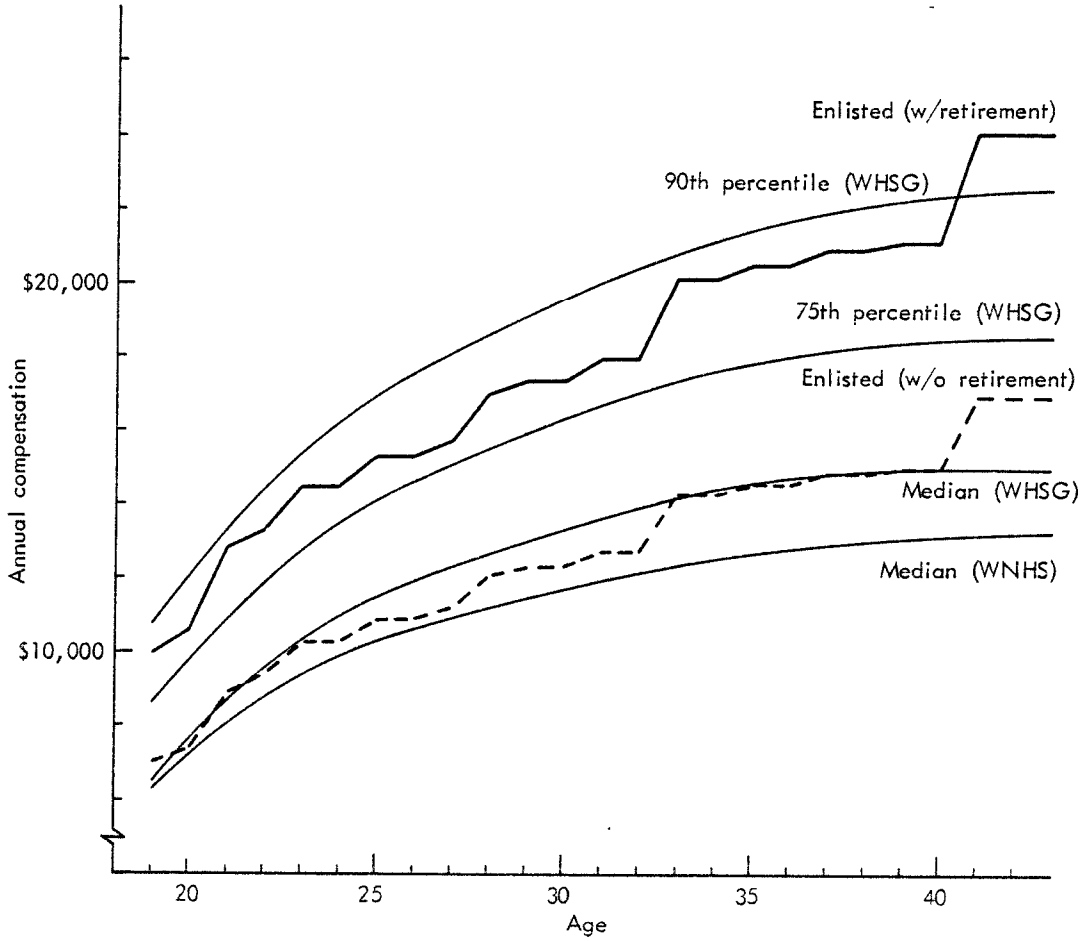

Fig.15-7—Total military enlisted compensation versus total compensation for white high-school graduates and white non-high-school graduates: calendar year 1974

The above discussion does not necessarily mean that military personnel are paid too much, though the compensation estimates shown in Figs. 15-6 and 15-7 suggest that this may be a distinct possibility, especially in the case of average and below average officers. Rather, the basic problem is that the current compensation structure is not the consequence of a well-designed, systematic effort based on a thorough examination of the amount of compensation required to attract and retain the necessary personnel.

Because it is not the result of a reasoned and integrated approach, today's compensation system may be ill-equipped to deal in a cost-effective manner with many of the needs of the post-draft military. In this regard, the review of military compensation policy presented in this chapter has highlighted four key issues. First, and at the most aggregate level, military compensation is probably higher than it should be. Second, it is not designed to meet the supply and demand conditions that confront the military, with the result that some personnel are probably paid far too much while others may not be paid enough. Third, the perceived value of military compensation may be far less than its actual cost, thus raising questions

about the composition of the compensation package. Finally, the military compensation system is inflexible.

There are, however, practical alternatives. For example, the current rank and years-of-service pay tables are probably responsible for the military losing many of their best officer and enlisted personnel at the end of the initial obligation and for the Services paying average and below average military personnel too much. An alternative approach would be provided by a rank and *years-in-grade* pay table, combined with a widening of the promotion zones, especially at the junior pay grades. This would have the desirable effect of rewarding personnel more on the basis of their achievements in the force than on their years of service. This seemingly minor difference in the basis for pay rates could have a dramatic effect on incentives for highly qualified officer and enlisted personnel, while simultaneously paying the less outstanding, but still useful members of the force an adequate wage.

Similarly, the military compensation system could be made considerably more flexible by using less automatic pay increase mechanisms and expanding the use of bonus authority. Whereas bonuses have tended to be used mostly to solve short-run shortage problems, bonuses can and should be used to encourage longer-run manning objectives, such as moving to a more career-intensive enlisted force as described in Chap. 13.

Reevaluating the composition of the compensation package is likewise of critical importance, given the past and continued emphasis on nonpay elements such as retirement benefits and health care. Indeed, even military pay is made up of a variety of elements, the value of which may not be accurately perceived by military personnel—current or prospective. Thus, whereas nonpay elements in most civilian compensation schemes tend to make up less than 25 percent of the entire compensation package, they make up about half of all military compensation. Even military "pay" is not very visible, given its numerous components. This raises important questions concerning whether the military is getting the most out of its expenditures on compensation, and thus suggests that careful consideration ought to be given to altering the composition of the compensation package, especially as regards retirement benefits.

The kinds of changes that ought to be considered include, but are not limited to, the following:

- Changing the pay tables from a rank and years-of-service to a rank and years-in-grade basis to better reward achievement.
- Changing the military pay profile so that military pay is increased (for example, through bonuses) relative to civilian alternatives at between 5 and 10 years of service but is decreased at between 10 and 20 years of service to reflect the inclusion of retirement benefits.
- Making military pay increases less automatic but more responsive to external supply and demand conditions such as civilian unemployment rates.[31]
- Reestablishing the 30-year career as the norm (with, perhaps, special provisions for shorter careers in the combat arms as recommended by the Defense Manpower Commission) and encouraging more 35-year, or perhaps longer, careers.

[31] For a discussion of the alternative mechanisms for adjusting military pay over time and their implications, see Chu, Cooper, and Shishko, op. cit.

- Making the military retirement system contributory, so that the growing cost of retirement would be shared by both the individual and the DoD, and introducing some vesting prior to the completion of 20 years of service.
- Making military pay more visible (such as by instituting a "salary" system) so as to increase its perceived value—and hence its cost-effectiveness.

Though the rationale for these kinds of changes clearly goes beyond the volunteer force in the narrow sense, the timeliness and importance of such considerations have clearly been enhanced by the removal of the draft.

The removal of the draft thus brings military compensation policy to the forefront of defense policy, for it is no longer sufficient to merely reward military personnel for their service. Instead, the advent of the AVF makes it imperative to use military compensation as a tool for managing the military manpower system. To do so clearly requires a fundamentally different approach to the way that military compensation is viewed and structured. The potential savings from such revisions are enormous—as *the above-mentioned changes alone could yield budget savings of $3 billion per year.*

Chapter 16

DEFENSE WITHOUT THE DRAFT

The advent of the All-Volunteer Force marked the beginnings of one of the largest public policy experiments of its type ever conducted, with effects reaching far beyond the narrower confines of the U.S. defense effort. Accordingly, this report has attempted to structure a policy level assessment of the AVF—its origins, its progress, and its prospects.

The analysis itself has been dominated by four basic themes:

1. *The time was right for the AVF.* Although some have tended to characterize the decision to end the draft as almost a passing infatuation, it is important to recognize that the volunteer force offered one of the very few viable alternatives to the growing inequities created by the selective service draft—inequities that were simply a result of the increasing numbers of young men reaching military age and constant or decreasing personnel requirements. In other words, smaller and smaller proportions of military-age youth would have to bear the burdens of the draft.
2. *The volunteer force has worked.* In spite of initial management difficulties, the military services have succeeded in attracting a socially representative mix of the desired numbers and types of personnel without the pressure of the draft and at a cost substantially less than generally assumed.
3. *The removal of the draft has raised genuine questions about the ways in which the DoD uses and manages its human resources.* The legacy of the draft means that fundamental changes in manpower management and utilization are needed, not only to ensure the long-run success of the volunteer force, but more important, to halt spiraling manpower costs and make better use of defense resources.
4. *There has been a failure, not with the volunteer force, but rather with the AVF policy debate.* Whether due to misinformation, a lack of information, or a misunderstanding about the basic issues, the AVF debate has not come to grips with the important policy issues of the 1970s and 1980s, with the result that opportunities for saving billions of dollars from the defense budget may never be realized.

These four basic conclusions are examined in more depth in the following discussion.

DRAFT OR VOLUNTEER?

The choice of a military manpower procurement policy has historically been and will continue to be an issue of considerable public interest and controversy. Just as the use of conscription has always met with a good deal of opposition in the United States, the AVF has not been achieved without reservation, and considerable reservation in some quarters. The larger point is that many changing and often

conflicting objectives and constraints must be taken into account in the design and selection of a nation's policy for procuring military manpower; no single policy is universally "optimal."

At the same time, certain constants do emerge. Factors such as population size and military force structure requirements are always critical to the selection of a military manpower procurement policy. They were instrumental both in the implementation of peacetime conscription in 1948 and in the decision to end the draft in the early 1970s, and they will continue to play a dominant role in shaping the manpower procurement policy options throughout the remainder of this century.

The Decision to End the Draft

The policy problem of the 1960s centered on two main issues: the burden of military service and the inequities resulting from the way this burden was distributed. For those forced into the military, the burden of military service had many components—the interruption in their lives, the risks to life and limb, and the financial penalties from having to forgo productive civilian employment, to name but a few. The imposition of this burden does not in itself constitute inequity, for society frequently imposes "burdens" on its members (usually in the form of taxes). Rather, the inequity of selective service derived from the *selective* way that the burden was (and was not) shared: Some young men had to serve, while others did not.

The selective nature of the selective service draft can be traced largely to some basic demographic trends: Increasing numbers of young men were reaching military age every year, while force strengths remained roughly constant (or actually decreased somewhat). Unlike the military in many countries of Continental Europe, the American military was basically reluctant (probably correctly so) to make the conscription tour shorter than two years, for reasons of readiness and efficiency. But this meant that the proportion of the military-age cohort of young men bearing the burden of military service would decrease over time—hence, the growing inequity of the selective service draft.

The inequity was particularly onerous during the pre-lottery draft, since the ways of avoiding military service (such as attending college) were generally not as available to the less economically advantaged members of society. The result of this system was predictable: Those least able to afford the burden—i.e., the poor and the black—ended up bearing the largest share. In fact, approximately twice as many blacks (relative to their military-eligible population base) served as did whites. Expressed as a percentage of their lifetime earnings, this meant that young blacks paid an average of between two and three times as much as their white counterparts in the form of the "conscription tax." Thus, not only was the selective service draft inequitable, it was discriminatory as well.

To this end, the Gates Commission argued vigorously that the pay for junior military personnel ought to be made comparable with that earned by comparably aged and educated civilian workers, irrespective of what was decided about the draft. Interestingly, the Commission estimated that raising military pay to this level would generate enough volunteers to support an all-volunteer military, thus making it possible to avoid the problem of deciding who would have to "bear the burden" of involuntary military service. In other words, an all-volunteer military

would not require any extraordinary measures; instead, it basically meant the payment of a "market" wage to young recruits.

Policy Options for the Future

The policy problem of the 1960s and 1970s—larger numbers of military-age young men in the population than the military force structure can absorb—is projected to continue throughout the remainder of this century. Whereas military accession requirements will average some 350,000 to 400,000 per year, the numbers of young men reaching the age of 19 will vary between 1.65 and 2.2 million.

To begin with, a return to selective service, as advocated by some participants in the AVF debate, would generate a number of severe policy problems, enough so that any possible advantages are probably far outweighed by the very undesirable consequences that selective service would bring. Since the vast majority—between 70 and 80 percent—of military-age young men would not serve, the equity issue would once again become a major concern.

Another facet of the equity issue is that there is no "fair" way of distributing the burden of involuntary military service after the fact. No matter how "fair" the initial selection process may be, those who are forced to serve bear the burden, while those not serving bear no burden. Thus, even if everyone stands an equal chance of being selected beforehand, something that not even the lottery draft could accomplish, the inequities of selective service would remain.

Reducing the pay for junior military personnel, as some have suggested as a means to reduce budgetary costs, would only exacerbate the inequities of a selective service draft. Not only would those serving be forced to pay an additional large financial penalty, the less economically advantaged youth would be more likely to bear this burden. Since this type of regressive taxation runs contrary to U.S. social welfare objectives, it is not only undesirable but unlikely that pay for junior military personnel would be reduced. Without this pay reduction, budget savings from a return to selective service would amount to a few hundred million dollars per year at most, less than 1 percent of the defense budget (see Chap. 11).[1] The real costs to the military and to society under selective service would of course be more than under a volunteer regime because of the hidden costs resulting from inefficiencies, draft-avoidance activities, and so forth.

As a practical matter, then, selective service conscription would not appear to offer a socially viable or economically attractive alternative for procuring the nation's military manpower, at least under present and projected defense requirements and objectives. Not only would a selective service draft increase the real resource costs associated with defense manpower, it would result in only minor budgetary cost savings. And, it would be inequitable.

Because of force size constraints and force readiness requirements, the projected demogra hic trends mean that universal military service is probably not practical for the foreseeable future, either. For example, force readiness requirements and increasing technological complexity probably dictate two years as the minimum conscription tour. Assuming that about 25 percent of the age cohort would be declared ineligible for military service and that about 1 million "professional"

[1] Even if recruit pay was reduced to *zero*—so that recruits received only food and shelter—a return to the draft would save less than $5 billion.

servicemen would be needed (as was the case during most of the postwar draft), universal military service would therefore result in a total force size of more than 4 million uniformed members. This is much larger than necessary, given current defense missions and, furthermore, would add some $10 to $20 billion to the defense budget.

Universal military training, on the other hand, would not mean force sizes as large as required by universal military service; nor would it lead to all the inequities of selective service conscription, since all those eligible for military service would at least be required to receive military training. Under universal military training, those serving in the active forces would be required to serve a minimum tour of, say, two years in order to satisfy readiness requirements (though there would, of course, be longer-serving enlistees as well). The portion of the eligible manpower pool not required for the active forces would be assigned to the reserves.

There would be problems with universal military training, however. Besides the problems that always accompany the use of compulsion, UMT would result in reserve forces considerably larger than have historically been deemed necessary. Specifically, it would lead to reserve forces of at least 2 to 2.5 million uniformed members, as opposed to the 900,000 or so that have been viewed as necessary throughout the postwar period to man the selected reserves.[2] Moreover, because of their inexperience, these reserves would be limited mostly to ground combat roles and other less skilled requirements when, in fact, one of the most severe problems that today's reserves face is a shortage of skilled and experienced manpower. Third, the combination of population size and downward pressure on force sizes would reduce employment opportunities for women in the military, just when most observers have come to agree that their role in the military ought to be increased, if anything.

Finally, UMT would not be costless, as it would probably add somewhere between $3 and $6 billion to the defense budget. Thus, whereas UMT does provide an alternative to the AVF, it is probably not to be preferred, at least as long as defense objectives do not require substantial increases in the size of reserve ground combat forces.

Compulsory national service has also been seen by some as a way of dealing with the problem created by large numbers of military-age youth, military force size constraints, and force readiness requirements.[3] Under such a policy, each young citizen is seen as having an obligation to serve his or her country, but this service can be fulfilled either in the military or in designated nonmilitary activities. National service is also seen by some as a vehicle for encouraging a new "sense of commitment" to the country—a hoped-for result of the direct labor contribution that each young citizen would make—though it is also possible that just the reverse would happen. A possible side benefit would be a decrease in future unemployment among the nation's youth, since national service participants would gain some

[2] Based on the assumptions that (1) there are 2 million 18 year old males, (2) 75 percent would qualify for military service, and (3) 400,000 young men would be required each year to join the active forces, 1.1 million young men would have to join the reserves each year. Assuming a two-year tour in the reserves, the selected reserves would have about 2.2 million inexperienced young men.

[3] For a discussion of national service in general and compulsory national service, see Richard V. L. Cooper, *A National Service Draft?*, The Rand Corporation, P-5880, May 1977 (presented at the 1977 Senior Conference, United States Military Academy); William R. King, op. cit.; Donald J. Eberly, "National Service: Alternative Strategies," *Armed Forces and Society*, Vol. 3, May 1977; and "National Service: A Selective Bibliography," The Army Library, The Pentagon, May 1977.

additional skills and maturity that could help them obtain productive employment following their period of service.

Implementation of a national service draft also raises some possibly severe problems, however, of which there are at least four. First, there is the question of how national service workers would be distributed among the various national service jobs—especially between military and nonmilitary assignments—given that the distribution of individual preferences would be unlikely to match the distribution of jobs. In particular, an excess supply of applicants for nonmilitary assignments would be expected. This selection problem could be resolved by a random selection process, though past history tells us that the better qualified would stand a better chance of obtaining their preferred choices. Alternatively, a pay or period-of-service differential could be introduced. Military pay might be set at a level higher than that for other national service jobs, or other jobs might have a three-year commitment as opposed to two years of military duty.[4]

Second, a national service draft would be enormously expensive. At a minimum, it would add some $25 billion to the Federal budget, assuming that women were not eligible for national service (an unlikely event), that there were no pay or service commitment differentials, and that the minimum period of service was two years. Under less conservative assumptions in which women were eligible but not required to serve and there would be some modest pay or service commitment differential, the total program cost would probably rise to $50 billion at least, half the size of the entire fiscal 1976 defense budget.

Third, a national service draft would be likely to displace some currently employed workers. Moreover, because national service workers would tend to be less educated, trained, and experienced, the individuals most likely to be displaced from their current employment would be the black, the poor, and the undereducated—those who have the most difficulty in finding alternative employment offers.

Besides the economic and equity problems, there is some question about how well a national service program would work, since the "need" for this type of conscription is not certain to be well recognized. We only have to look back to the Vietnam War to see the effects of an "unpopular" war or the lack of a national commitment on the ability to successfully maintain conscription. Thus, whereas the importance of defense may be recognized by American youth, drafting for "nonessential" purposes might seriously dilute support of a nonmilitary draft.

Finally, the use of compulsory national service raises a number of philosophical and legal problems, including the problems resulting from the use of coercion to allocate labor resources in a free society. Indeed, it is not clear whether a nonmilitary draft is even constitutional. These problems with compulsory national service do not necessarily preclude its use, but they certainly are sufficient to raise serious questions about its advisability—*especially in view of the fact that the volunteer force has worked.*

Thus, the decision to end the draft did not come "out of the blue." Rather, it was based on very sound reasons—reasons that could not be ignored, given the demographic trends projected for the 1970s and beyond.

[4] President John F. Kennedy, for example, proposed that a three-year period of service in the Peace Corps serve as an exemption from the two-year minimum military service. Although this proposal was never implemented, it is illustrative of how a period-of-service differential might be applied.

EARLY EXPERIENCE WITH THE VOLUNTEER FORCE

The AVF has worked. Unlike the volunteer forces in some other countries where implementation was accompanied by sizable force reductions, the American volunteer force has shown that force strength objectives can be met, quality standards maintained (and exceeded), and social representation concerns satisfied without the draft and at a reasonable cost. Analysis of the early volunteer experience has thus yielded valuable insights into the viability of the volunteer force, as summarized below.

Quantity. With the exception of modest recruiting shortfalls in the Army and Marine Corps during the first year of the volunteer force (and again during the summer of 1976), the Services have successfully met their quantitative recruiting objectives since the removal of the draft. Moreover, because these recruiting shortfalls were shown to be largely the result of shortages of recruiters in the field, unnecessarily restrictive quality standards, and unusually large accession requirements, the first-year recruiting difficulties are not indicative of longer run recruiting problems.

Enlisted accession requirements. The key AVF issue, therefore, does not concern manpower supply, but instead concerns enlisted accession requirements. As a result of Service policies such as limiting the flow into the career force, personnel turnover rates are actually higher under the volunteer force than they were under the draft, when we would expect just the reverse. The key to the long-run success of the volunteer force, as well as to more cost-effective management of enlisted manpower, rests in reducing personnel turnover rates—and hence reducing enlisted accession requirements.

Quality. Although some have expressed concern about declining quality under the volunteer force, the evidence reveals just the opposite. The quality of new recruits, as measured by such indicators as mental aptitude and educational attainment, has actually increased since the removal of the draft—substantially so since about fiscal 1975. The real quality issues instead concern whether the Services' current quality-maximizing philosophy yields standards that are too restrictive (rather than too lenient) and whether the right balance among individual quality criteria such as mental aptitude and educational attainment is being maintained. The more general problem is thus not one of maximizing quality but rather one of basing the mix of mental aptitude, educational attainment, and physical fitness requirements on individual job requirements.

Effects of Unemployment. High unemployment rates, though certainly aiding the recruiting effort, are not responsible for the success of the volunteer force. The military services have used high unemployment to achieve unusually high quality standards, but since statistical estimates indicate that a 10 percent increase in the unemployment rate for young males results in only a 2 to 3 percent increase in the number of enlistments, the future of the volunteer force does not depend on continued high unemployment. Indeed, perhaps the greatest problem with the recent high unemployment is that the Services may unrealistically base future quality standards on what was achievable during the recession, rather than on what their requirements dictate.

Social Representation. Two important findings emerge with respect to social representation under the volunteer force. First, the steady increase in the numbers of blacks entering the military during the 1970s is largely unrelated to the volun-

teer force per se. It is instead explainable by such factors as the increasing proportion of black youth found eligible for military service, the unusually high unemployment rates experienced by young black men, and the fact that wages for fully employed blacks have not kept pace with those of their white counterparts during the 1970s. That is, the proportions of blacks in the force would have been approximately the same whether or not the draft was ended. The difference between the AVF and the draft is therefore not in the percentages of blacks in the force but rather in the fact that the AVF, in allowing voluntary participation and in paying a market wage, has not discriminated against blacks the way the draft did.

Second, the increasing proportion of blacks in the force does not mean that the AVF has resulted in an army of the poor. There are as many new recruits from middle- and high-income areas under the volunteer force as there were during the pre-lottery draft, presumably the most socially representative period of conscription. The analysis also shows the regional composition and the urban-rural makeup of the force to be remarkably alike under the draft and under the volunteer force. Moreover, surveys continue to show that the reasons for enlistment are about the same as they were before the removal of the draft: pay, benefits, desire to serve the country, the chance to travel, and so forth. In other words, military service continues to be viewed in a favorable light by a broad cross section of American youth.

Cost. Defense manpower costs have risen enormously since the early 1960s, but the attribution of these costs to the AVF is plainly incorrect. The vast majority of the increase can be traced to increases in the budget outlays for retired personnel, civilians, and support costs. Analysis shows that, at most, a few hundred million dollars—less than 1 percent of all defense expenditures—could be "saved" from the defense budget by returning to the draft.

Far more important, the debate has failed to recognize that the real costs of military manpower have declined since the removal of the draft. Because the draft underpriced the cost of junior military personnel, budget expenditures did not reflect the real resource cost to society of those serving in the military and, furthermore, did not capture the large amounts of real resources expended for draft avoidance. Thus, not only are the budget expenditures for the AVF less than generally assumed, the real costs of manpower have declined.

For the most part, then, the story of the volunteer force has been a story of success. To be sure, there have been certain problems, such as the first-year recruiting shortfalls previously mentioned, but these have been largely problems with the way that the transition was managed, not with the fundamental concept or policy. Other problems remain, such as reserve forces manning and first-term enlisted attrition, but again these are basically problems of developing the appropriate force structure or finding the right management solutions, not problems with the volunteer force per se.

In fact, it is perhaps surprising that more problems have not occurred. To illustrate, the Gates Commission predicted that the AVF would experience some initial strength deficits and that the Services might have to accept up to 20 percent Category IV personnel during the transition. That neither of these happened is some indication that the problems of transition have been fewer than originally anticipated.

The one major problem to emerge during the first few years without conscription does not concern the volunteer force in the narrow sense; rather, it concerns

the policy debate about the AVF. There has been a tendency to take issues and statistics out of context, to rely on incomplete and misleading information, and, as a result, to miss the most important issues and problems. For example, in focusing almost exclusively on supply problems such as recruiting and advertising budgets, the far more important issue of accession requirements has gone virtually unnoticed. Similarly, in dwelling on the rising proportions of blacks in the enlisted ranks, little notice has been given to the substantial progress made in recruiting minority officer candidates or to the remaining problems of developing effective race relations programs. In other words, the failure has been with the policy debate, not with the volunteer force.

THE LEGACY OF THE DRAFT

As of the final writing in this report, conscription had not been used for more than four years. But to assume that the draft is entirely history is to fail to recognize the imprint that it has left throughout the defense establishment, especially on the ways that the military manages and uses its personnel. Dealing effectively with this legacy will be one of the most formidable obstacles that the DoD and the Congress must face during the next decade.

In a managerial sense, the elimination of the draft was a major shock. The immediate effect of ending the draft was to substantially increase the budget cost and scarcity of new recruits. The full impact, though, is clearly much larger, since in a draft environment, the military could afford to be dominated by policies and traditions that ran counter to the general thrust of change in the outside civilian environment. Whereas the draft ensured an adequate supply of manpower almost no matter what personnel policies the Services followed, the Armed Forces must now be responsive to the conditions of change in the civilian world.

The removal of the draft has thus altered the entire philosophy under which the military must manage its human resources. Once plentiful and seemingly cheap manpower is now scarce and expensive. Policies adopted for reasons of convenience and equity must therefore be reevaluated in terms of efficiency as well. In short, manpower is important, so cost-effective solutions to the manpower problem must be developed and implemented.

One type of philosophical change that must take place is illustrated by the way the volunteer force was achieved. The major responsibilities for procuring manpower under the all-volunteer military were given to the personnel managers. That is, rather than reexamining the demand for manpower as manpower costs increased, the personnel managers were charged with obtaining the "required" numbers and kinds of personnel. However, personnel policy and supply behavior are, by their very nature, generally more reactive than anticipatory, with the result that opportunities for making major improvements in efficiency have not been and may never be realized. In other words, as long as the organizational entity that carries the cost is precluded from questioning demand, cost savings will be few.

The more substantive questions relating to costs are determined in the requirements process that sets the military's demand for manpower. In general, there has been historic lack of response to increasing manpower costs, as reflected by the patterns of labor usage over time. Alternatives include substituting equipment for

manpower and substituting less expensive personnel for more expensive kinds. Therefore, the thrust should be toward a closer integration of the personnel planning (supply) and manpower requirements (demand) processes.

There are organizational and behavioral reasons for the historic lack of response. In each of the Services and in the OSD, separate organizational entities have traditionally been responsible for manpower supply (personnel) and for manpower demand (requirements).[5] As a result of this distinction, manpower costs have seldom entered as a criterion for determining the basic structure of the force. Only when these individual requirements become aggregated into total Service budgets (or, more accurately, into major program elements of the individual Service budgets) has a real concern for costs emerged. This concern, though, has often resulted in gross adjustments such as force structure cuts rather than a reallocation of resources within a given force structure. Yet such reallocations can save billions of dollars per year without degrading force capabilities.

The traditional methods of military personnel management and compensation are likewise in need of major philosophical adjustment. In some sense, uniformed personnel have historically been treated like the "poor relation." With the guarantee of the draft, the United States was able to pay military personnel less than a market wage. This has led to a series of "second-best" managerial solutions where convenience and equity, not cost-effectiveness, were frequently the driving concerns. Paying personnel with security and compensation "add-ons" has resulted in total system costs that are actually larger than they would probably be if a competitive compensation policy had been developed in the first place.

As a consequence of this legacy, current defense policies and costs are today driven largely by manpower policies which, though perhaps sensible under the draft, add needless constraints and unnecessary costs to defense planning and budgeting. To illustrate, rough calculations suggest that annual savings of $5 to $10 billion—10 to 20 percent of the entire manpower budget—could result from relatively modest changes in the ways that the DoD (and the Congress) allocates and manages its manpower resources. The resource allocation issues involve such possible policies as substituting capital for labor, making more extensive use of contract hires, and relying on a more experienced force; management questions involve training policy, rotation, career length, compensation, and retirement, among others. Far more important than the specific cost figures, as these figures are at best suggestive, is what the earlier discussion implies for the way that the manpower problem ought to be viewed. Indeed, it is clear that new ways of viewing the manpower problem are required if the DoD is to rid itself of the legacy of the draft.

THE ALL-VOLUNTEER FORCE: PROVIDING THE NATION'S DEFENSE

The analysis presented here has shown, first, that the decision to end the draft was right for the time, and second, that the early experience with the volunteer force has been a success. Equally, if not more important, the analysis has also

[5] It is noteworthy that the OSD and the Services have begun to correct this problem by incorporating the manpower requirements planning process into the personnel organization entity, thus helping to facilitate better coordination between supply and demand.

demonstrated the need for change in the ways the military manages and uses its human resources.

In the narrow sense of the volunteer force—that is, recruiting the desired numbers and types of personnel—the major issues and potential problem areas do not concern manpower supply, but rather the "requirements" for recruits, particularly for the enlisted ranks. The potential problems include both the absolute numbers and the types of individuals desired. The analysis specifically points to two recommendations, summarized below.

Accession Requirements. The key to the future of the volunteer force lies in reducing the demand for enlisted recruits. For a variety of reasons, including limitations on the numbers of personnel allowed to enter the career force and large first-term attrition, Service enlisted personnel turnover rates have been and are projected to be larger under the volunteer force than they were under the draft, when just the reverse would be expected and desired. Accordingly, the Services must seek ways of reducing male enlisted accession requirements if the volunteer force is to be successful in the long run and if substantial cost savings are to be realized. The specific policy options include increasing the number of reenlistments and accessing more women.

Screening Criteria. The Services' current "quality-maximizing" approach may yield screening standards that are too restrictive and, as a result, will exclude many potentially valuable Service members. Specifically, analysis suggests that Category IV personnel, particularly high-school graduates, represent a good investment for a wide array of medium- and low-skill jobs, of which there are many in the military. Furthermore, estimates indicate that a relaxation of some of the physical (i.e., medical) standards for enlistment could produce a 5 to 10 percent increase in enlistment supply with only modest cost increases and no degradation of force readiness or capability. Therefore, specific consideration ought to be given to increasing the numbers of Category IV high-school graduates accessed and to relaxing the medical standards used to screen applicants for enlistment.

The above changes alone would help to ensure the adequacy of enlisted manpower supply for the remainder of this century under almost all foreseeable circumstances, even a return to very favorable national economic conditions.

The more substantive and most important questions do not concern the volunteer force in the narrow sense of manpower procurement, however, but instead center on the types of changes in the management and utilization of defense resources necessitated by the removal of the draft. Some resource reallocations especially worth noting are outlined below.

Capital-Labor Substitution. The cost of labor has risen by some 40 to 50 percent relative to the cost of capital during the past 10 years, and yet there has been little response in terms of the mix of manpower and equipment used in the defense mission. Consideration ought therefore to be given to finding ways of substituting equipment for manpower, such as the development of less maintenance-intensive systems.

Military-Civilian Substitution. With the removal of the draft, the costs of military personnel have risen substantially relative to the costs of DoD civilian employees. Not surprisingly, this has given rise to considerable interest in sub-

stituting civilians for uniformed service members. Analysis shows that the DoD has in fact responded to much of the cost increase, by substituting direct-hire civilians (government employees) for military personnel. Further substitutions of this sort, however, are likely to realize only marginal savings at best. Alternatively, cost savings somewhere in the neighborhood of $1 billion per year might be realized by contracting out for 250,000 direct-hire and indirect-hire civilian positions. Thus, the question is not so much one of substituting direct hires for military personnel as it is one of substituting contract hires for direct hires. In any case, careful consideration should be given to the costs and substitution opportunities available with respect to the various activities currently performed by civilian personnel in the DoD.

First-Term/Career Substitution. Perhaps the most important but least recognized type of resource reallocation possibility raised by the removal of the draft concerns the experience mix of the force. Because of first-term pay increases and recruiting costs, the costs of first-term personnel have increased dramatically relative to the costs of career personnel. Yet the Services continue to rely on the same mix of first-term and career personnel that they did during the pre-Vietnam draft. A substitution of career enlisted personnel for first-termers would not only help to reduce enlisted accession requirements but would result in substantial cost savings as well. Shifting from the current mix of 60 percent first-termers and 40 percent careerists to a 55/45 mix or a 50/50 mix would yield cost savings of some $1 to $2 billion per year because it would lead to better utilization of junior service members by having them in jobs for which they are better suited.

The issues raised above are only examples of the ways that resources could be reallocated within a given force structure to achieve either cost savings or capability increases (or both). But, to illustrate the importance of such reallocations, these examples suggest that long-run annual cost savings of some *$3 to $5 billion* (1976 constant dollars) could be achieved by substituting capital for labor, contract-hire civilian personnel for direct-hire DoD civilians, and career enlisted personnel for first-termers, without changing other features of the personnel system.

As important as the questions of resource allocation are those concerning the ways in which the DoD manages its uniformed personnel. Policies based on a very junior force and those implemented and retained mostly for reasons of equity and administrative convenience must be reevaluated in light of the draft's removal. The individual examples are many, but three areas in particular stand out:

Military Training. With total individual military training costs amounting to some $6 to $10 billion per year, individual military training is clearly one of the key policy problems and is well recognized as such. However, most attention has been directed to improving the efficiency of the training establishment in the narrow sense—that is, in designing better courses, reducing the student to staff ratio, and so forth. Equally important, though less obvious, is the impact that the draft had on the magnitude of first-term enlisted training, the largest single component of the training establishment.

Specifically, first-term enlisted personnel training costs are determined in a large part by the numbers of such personnel receiving training and by course length. Shifting to a somewhat more career-intensive force would dramatically reduce the numbers of personnel that receive basic and skill training because of the

smaller numbers of enlisted accessions. In addition, first-term enlisted personnel would not be required to perform such a wide variety of tasks under a more career-intensive force because they would be used in jobs for which they were better suited. As a result, fewer tasks would need to be taught to first-termers—hence, shorter courses. Advanced career training could then be deferred until after the reenlistment point, where individuals could make better use of the skills taught to them. In addition, deferral of advanced skill training would greatly reduce the unrecoverable training costs resulting from first-term enlisted attrition.

Thus, by placing such a heavy reliance on first-term personnel, the draft had a subtle, but pronounced effect on the magnitude and conduct of military training. The result is that the key to significant reductions in training costs probably rests in the shift to a more career-intensive force. Rough calculations suggest that annual savings amounting to at least $1 billion could be achieved as a result of the smaller numbers of personnel requiring training and the shorter course lengths that would take place with a 50/50 experience mix.

Career Management. Though the effects are perhaps more difficult to quantify, the draft and its removal have also had a substantial impact on career management policies such as promotion, rotation, assignment, and career length. For example, the historic emphasis on maintaining a first-term intensive force has resulted in policies requiring career enlisted personnel to assume supervisory responsibilities in order to remain in the force. The military might be better served if larger numbers could remain as career technicians.

Alternatively, the relatively short assignments at a given duty station can be at least partially traced to the sizable personnel turnover rates during the draft and a desire on the part of the Services to equalize the burden of undesirable duty assignments. DoD estimates suggest that about $500 million per year could be saved in moving costs alone by extending the average tour length one year. Not included in this estimate is the potentially significant increase in capability and readiness that would result from longer tours at a given assignment because of the reduced amount of "down time."

On the officer side, the Officer Personnel Act of 1947 continues, with only modest alterations, to determine the ways that officer personnel today—30 years later—are managed and used throughout their service careers. The presence of the draft provided little incentive to alter the basis upon which the individual officer was managed during his or her career, even though substantial changes had occurred in the outside civilian world.

Military Compensation and Retirement. With total military compensation budget outlays amounting to more than $35 billion in fiscal 1975, the variety of specific elements that collectively make up military compensation represent the largest single component of defense spending. Although compensation is perhaps the most important tool available to the policy planner, today's military compensation system is not the result of a well thought out approach for meeting defense needs. It instead consists of a patchwork of separate regulations and legislation designed more to provide rewards for past service than cost-effective incentives for accession and retention. One result of the historically piecemeal approach to the setting and adjusting of military compensation is that the military pay (RMC) for the average officer is more than the wages and salaries earned by 75 percent of his comparably aged and educated civilian counterparts.

The military retirement system is similarly not the result of a reasoned and integrated approach to choosing the appropriate balance of pay and fringe benefits; instead, it has been traditionally viewed as an element separate and distinct from the remainder of the compensation system. The conditions underlying the original development of the retirement system, such as a small standing military and low active duty pay, no longer prevail, but the retirement system has gone unchanged. The reasons why retirement costs have become such a major concern is amply illustrated by the fact that to fund military retirement on an actuarially sound basis, the individual reaching retirement would have to put an amount equal to between 40 and 55 percent of his annual RMC each year of his career into a retirement fund—an amount that stands in stark contrast to the 5 to 20 percent usually found in private sector pension plans.

When the various elements of the compensation system are aggregated, it turns out that military personnel remaining until retirement earn a total compensation package 30 to 40 percent higher than the average amount earned by their comparably aged and educated counterparts. Yet the fact that military compensation is perceived by large numbers of military personnel to be less than that found in civilian employment, when the reverse is in fact the case, suggests that the current system is less than cost-effective. The system has other peculiarities as well. To illustrate, military compensation declines relative to civilian pay at 4 to 8 years of service, an important milestone because of the reenlistment decision, but increases significantly relative to civilian pay at 15 to 19 years of service, despite the fact that the lure of retirement is so strong at that point that virtually no one leaves.

There are two basic messages that emerge from this analysis. First, military personnel are paid far better than is commonly assumed. Second, there are significant opportunities for reducing total compensation costs, but to do so, it is necessary to take a systems approach to the problem. That is, whereas the traditional approach has been one of separate legislation for adjusting military retirement policy, for setting veterans education and training benefits, for medical care, for setting and adjusting military pay, for setting promotion policy, and so forth, the only way that compensation costs can be controlled in the long run is to set and manage the compensation system as a whole.

The above discussion has focused on three examples—training, career management, and compensation—but the larger point is that the draft provided little incentive to examine and reevaluate the types of policies used to manage military personnel. The removal of the draft provides that incentive.

The key to making significant improvements in the management and utilization of defense resources, however, lies in the ways that the various policies of management and utilization are managed together. For example, the success of a policy change calling for the substitution of career enlisted personnel for first-termers depends largely on the military's altering its traditional policy of using career personnel in primarily supervisory positions. That is, the advantage of having a more experienced force is not in having more supervisors, but rather is in having more experienced individuals in production jobs.

Similarly, the key to making major savings in training is not in designing better courses, but rather can be traced back to the number of accessions and the types of jobs that first-termers perform. In other words, what would appear to be a training problem is in reality a requirements problem.

The more general implication is that the removal of the draft presents an opportunity to make better use of defense (and, therefore, society's) resources—an opportunity that was not always present under or encouraged by the draft. The importance of this point is dramatically underlined by the fact that the relatively modest changes discussed above could yield long-run annual cost savings of some $5 to $10 billion (1976 constant dollars), an amount equal to between 10 and 20 percent of all manpower costs.

Clearly one of the most important effects brought about by the removal of the draft is the visibility that has been accorded to defense manpower. Once a secondary concern, defense manpower has moved to the forefront of public policy. Although much of the discussion has focused on the remaining problems and the lack of response in certain areas, it is important to recognize that the military has made substantial progress in dealing with the increased importance of manpower in a volunteer environment. The numbers of specific new programs and policies, including bonuses, personnel planning models, improved management practices, and affirmative action programs to bring more minorities into the officer corps, all attest to the progress. Indeed, and as noted by a former Pentagon official:

> The evidence appears to indicate that the Services are actually doing a better job now in managing their manpower programs than they did when the draft was in effect. In other words, the Armed Forces no longer need the draft as a crutch, and they may work better without it.

Whether or not the potential for improved manpower management is realized will depend critically on the policies that the military services, the DoD, and the Congress adopt and implement during the next 10 years, for the true test will occur in the 1980s. If this potential is not realized, society may not be willing to pay the escalating costs emanating from the current approach and, as a result, may simply reduce force sizes.

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