STUDY S-290

THE SUPPLY OF FIRST-TERM MILITARY OFFICERS

Alan E. Fechter

March 1967

INSTITUTE FOR DEFENSE ANALYSES
PROGRAM ANALYSIS DIVISION

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FOREWORD

This Study was financed under Contract No. SD-50 for the Office of the Assistant Secretary of Defense (Manpower). I am indebted to John Hause, Anthony Fisher, Stuart Altman, Walter Oi and Harold Wool all of whom were as deeply involved in the 1964 DoD Draft Study as was I, for their stimulation, suggestions, and criticisms. I also wish to thank Miss Elissandra Fiore and Mrs. Susan Herbert for what were truly yeoman efforts in performing the tedious chores of data-gathering and processing. My debt of gratitude to Mrs. Ann Rabbit, Miss Elaine Amrozowicz, Mrs. Evelyn Cole and Mrs. Patricia Curry, who had to struggle with my handwriting and type the numerous drafts of this Study. Last, but certainly not least, my thanks to Charles Lerner and Leonard Bates who improved the quality of the Study by their valuable editorial suggestions.

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SUMMARY

This Study examines three determinants of officer supply--eligible population, the draft, and pay--and estimates the additional budgetary costs to the Department of Defense if the draft were eliminated. It was part of a larger effort, sponsored by the Office of the Secretary of Defense, to estimate the costs of eliminating the draft as a method of procuring adequate military manpower.

The relation between eligible population and officer-supply was examined by means of the "enrollment rate" in ROTC-I; i.e., the number of males enrolled in ROTC-I per hundred male undergraduate freshmen, in schools where ROTC was voluntary. (ROTC was the most fruitful source of data because of demand constraints on many of the other commissioning programs.) This "enrollment rate" proved to be extremely stable except for years in which major changes occurred in either draft policy or policy regarding the length of the initial tour of duty for officers commissioned from these programs.

Since there were no direct behavioral data which would allow us to distinguish between draft-motivated and truly voluntary officers, we had to rely on responses to survey questions to estimate the effect of the draft on officer-procurement. The proportion of first-term officers (or potential first-term officers) who would not have sought (or will not consider) commissions in the military service in the absence of a draft varied by level of education, service, and source of commission. There was an inverse relationship between level of education and estimated impact of the draft on officer-accessions. The draft also had a relatively larger influence on officers commissioned from programs which required shorter initial tours of duty. To estimate supply response to changes in relative military pay, we again focused on ROTC. Data existed for these programs from which

supply relationships could be identified. Earnings of college graduates were significantly negatively associated with enrollment rates. Enrollment rates were also significantly related to the type of ROTC program and the geographic location of the institution. We concluded from this analysis that a 10 percent increase in first-term military pay could raise the enrollment rate by as much as 20 percent.

In estimating the costs of maintaining an all-volunteer officer force in 1972, it was assumed that military strength would return to the pre-Vietnam level of 2.65 million, and that the state of cold-war tension would also return to the pre-Vietnam level. Given a continuing draft and stable relative pay, population growth will enable the Services to continue to meet required officer-accessions.

Projections of the supply of officers in the absence of a draft were derived by adjusting downward the projections of officer-accessions with a continued draft. Estimates of the draft-effect were derived from one of the DoD surveys. The no-draft projections indicate that officer-accessions will be short of estimated required accessions by 27 percent. The shortage of 9.7 thousand officers is about 60 percent of what we considered pay-sensitive officer-accessions, and could be eliminated by raising the pay of entering officers by 30 percent. It would cost from $68 to $363 million to raise officer pay by enough to produce an all-volunteer officer force.

This cost does not take into account increases in retirement costs that would result from having to pay retirement on a larger base pay to a larger number of officers. It also does not include the cost increases that would result from the relatively more experienced officer force produced under all-volunteer circumstances. Offsetting these, it does not fully account for the cost saving which would result from the lower turnover of an all-volunteer force.

These costs represent the increased budgetary expenditures required by the Department of Defense to shift to an all-volunteer officer force. No attempt has been made to estimate the total costs to the nation of shifting to an all-volunteer force. Under most conditions a shift to an all-volunteer force would produce net benefits to the nation.

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NATURE AND SCOPE

This Study was part of a larger research program, sponsored by the Office of the Secretary of Defense, to estimate the feasibility and costs of meeting military requirements in the absence of a draft. It examines the effects of population trends, military conscription, and pay on the supply of newly commissioned officers and, based on these factors, estimates the additional budgetary costs that would be incurred by the Department of Defense in eliminating the draft as a procurement factor for officers.

Section 2 reviews current trends and patterns of officer-procurement. Section 3 discusses the factors which are thought to be important determinants of officer-supply; eligible population, the draft, and earnings opportunities for potential officers in military and non-military careers. It also contains estimates of the effect of population trends on the supply of newly commissioned officers. The effects of military conscription are examined in Section 4. Military and non-military earnings opportunities and their effects on supply are treated in Section 5. The final section contains a summary of our findings and an illustrative example of how these may be used to estimate the cost of shifting to an all-volunteer officer force.

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OFFICER-PROCUREMENT PROGRAMS

Recent officer-procurement experience is examined here to serve as a background for our analysis. In general, the number of officers commissioned has been adequate to meet Service requirements.

2.1 RECENT TRENDS

Recent trends in officer-accessions by Service are illustrated in Figure 1. The large changes in DoD totals that occurred between 1957 and 1960, 1961 and 1962, and 1965 and 1966 (Table 1) are attributable to planned changes in force levels.[1] Active duty officer strength declined by 8 percent between 1957 and 1960 and rose by 8 percent between 1961 and 1962 compared to a 27 percent decline and a 29 percent rise in officer-accessions for these years. The planned increase in officer-accessions for fiscal years 1966 and 1967 conforms to the planned active duty force buildup from 2.7 to over 3.0 million men as a result of the Vietnam conflict. The fact that the Army has experienced the largest relative changes in both active duty

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1. The relation between active duty officer strength and required officer-accessions is given by the following equation.

$$A_t = \Delta S_t + L_t$$

where A_t and L_t represent accessions and losses during period t and ΔS_t represents the change in the level of active duty strength which has occurred over period t. It can be seen that A_t will vary positively with both ΔS_t and L_t.

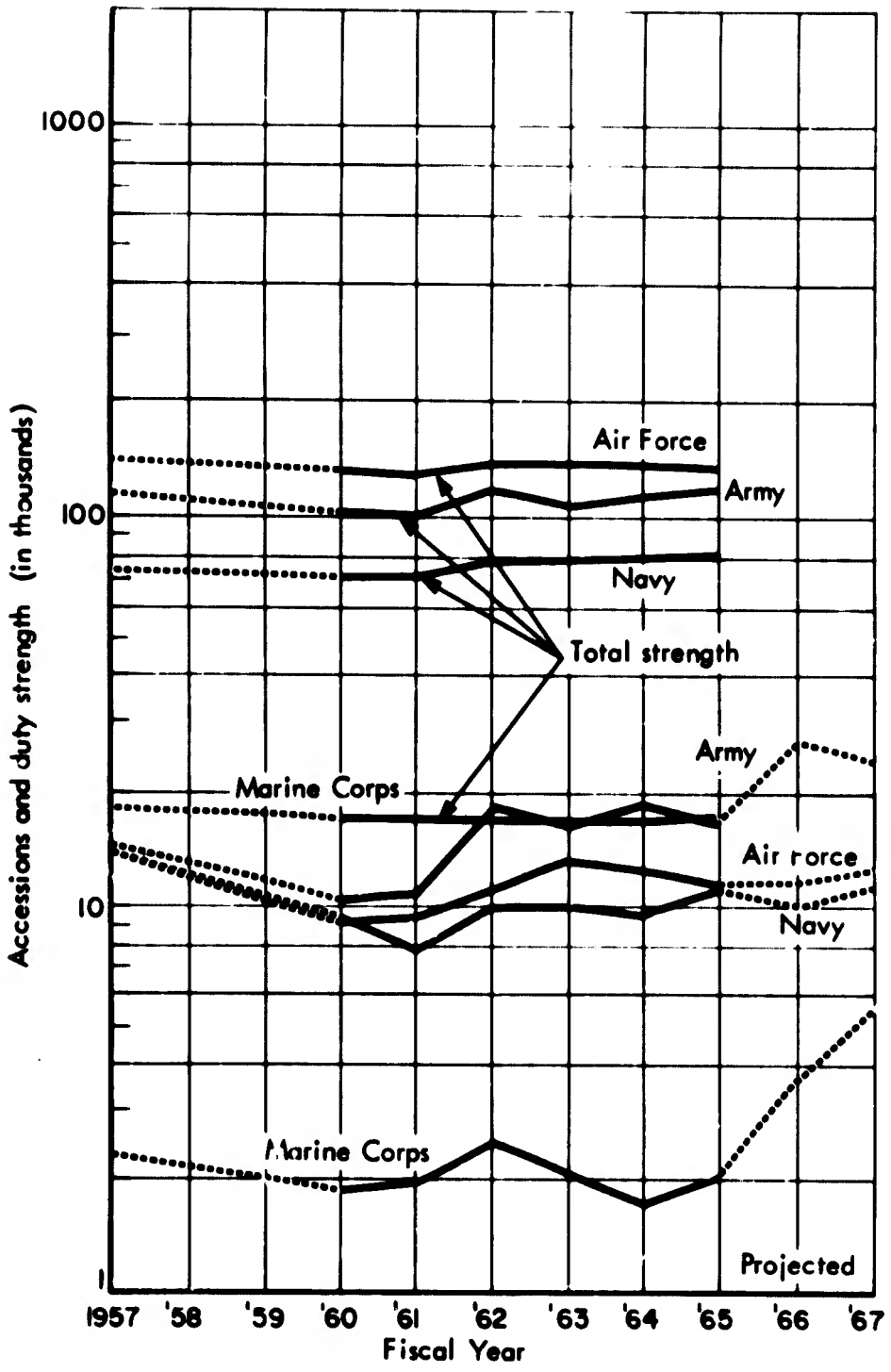

FIGURE 1 Number of Newly Commissioned Officers by Service, 1957-1967 and Total Number Active Duty Officers

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officer-strength and officer-accessions lends further weight to the notion that these accessions statistics reflect planned changes in force levels and are therefore primarily affected by changes in officer-requirements.

Table 1

NUMBER OF NEWLY COMMISSIONED AND ACTIVE DUTY OFFICERS, DOD TOTALS, 1957 AND 1960-1965; 1966-1967 (PROJECTED)[a]

Fiscal Year	Newly Commissioned		Active Duty	
	Number (thousands)	Percent Change	Number (thousands)	Percent Change
1957	42.3[b]	base	342.9	base
1960	30.8	- 17.2	316.7	- 7.6
1961	29.3	- 20.7	314.8	- 8.2
1962	41.4	- 2.1	343.2	0.1
1963	41.0	- 3.1	334.4	- 2.5
1964	41.3	- 2.4	337.5	- 1.6
1965	40.3	- 4.7	338.9	- 1.2
1966 (projected)	51.1	20.8		
1967 (projected)	51.3	21.3		

a. Office of the Assistant Secretary of Defense (Manpower) unpublished tables.
b. Details for each Service are contained in Appendix A.

Still further evidence to support the assertion that the Services were more than able to meet their officer-requirements may be found in other data. In the late 1950's the Army had more candidates in its ROTC program than it needed for its active duty requirements. It therefore assigned its excess officers to active duty for only six months, and immediately diverted them to the Reserves. Although these excess accessions do not appear in Table 1, they are clearly relevant to a supply analysis. Since 1962 all new officers from the Army ROTC program have served on active duty for a full two years (Table 2).

In addition, the Service Academies and the Navy Regular ROTC program have had more applicants than available vacancies. The Navy Regular ROTC program had 23,000 applicants for only 1,700 places in 1964. The Service Academies receive nominations for many times the

Table 2

ARMY ROTC OFFICERS COMMISSIONED TO SERVE FOR SIX MONTHS ACTIVE DUTY, FISCAL YEARS 1955-1963[a]

	Fiscal Year								
	1955	1956	1957	1958	1959	1960	1961	1962	1963
Six-month Active Duty ROTC Officers	0	3,600	7,487	6,614	7,440	5,540	4,253	778	0

a. Annual Reports of the Secretary of Defense on Reserve Forces.

number of vacancies available. Moreover, these nominations do not fully reflect the number of applicants since the number of individuals authorized to nominate and the number who may be nominated each year is limited by law.

Finally, there is evidence that, for several years, the Army ROTC program limited its graduates (including those found in Table 2) by means of a screening test given between the basic (first two years) and advanced (last two years) courses. Cut-off scores were chosen to allow a sufficient number of students into the advanced program to produce the desired number of officer-accessions.

This evidence indicates that the number of officers procured has been largely demand-determined. We must, therefore, look to specific programs at specific periods to find evidence of supply effects.

2.2 PROGRAM MIX

Table 3 summarizes the distribution of procurement programs in selected years between 1957 and 1966. Each Service relies on different types of programs for meeting its new officer requirements. Moreover, within each Service, the emphasis shifts among procurement programs at times of sudden buildups. The shift is from programs which require long lead times for training to those which need only short lead times. 1957 and 1965 represent years in which manpower requirements remained fairly stable. 1962 and 1966 are years in which large and rapid buildups

Table 3

RELATIVE IMPORTANCE OF SELECTED PROCUREMENT PROGRAMS AS SOURCES OF NEWLY COMMISSIONED OFFICERS IN SELECTED YEARS, 1957-1966[a]

Service and Procurement Program	Percent of Total Accessions			
	FY 1957	FY 1962	FY 1965	FY 1966
Army				
Military Academy	2.9	3.0	3.2	2.2
ROTC	57.5	66.1	60.5	43.1
Officer Candidate School	4.8	3.3	13.9	25.0
Direct Appointment, Health	14.1	12.9	10.2	13.5
All Others	20.7	14.7	12.2	16.2
Navy				
Naval Academy	4.3	6.3	6.5	6.0
ROTC - Regular	8.1	8.0	8.2	8.6
Contract	7.3	6.5	6.2	6.7
Officer Candidate School	36.5	45.5	35.3	28.6
Direct Appointment, Health	11.6	12.9	8.8	17.9
Naval Cadets	11.8	3.6	3.3	3.5
All Others	20.4	17.2	31.7	26.7
Marine Corps				
Officer Candidate Course	29.3	43.2	22.2	22.8
Platoon Leaders Course	25.1	24.9	43.3	16.8
Marine Cadets	13.9	4.8	9.3	4.7
All Others	31.7	27.1	25.2	55.7
Air Force				
Academy	2.6	3.9	5.2	4.4
ROTC	47.9	32.1	34.7	41.7
Officer Training School	--	20.7	33.1	23.4
Aviation Cadet	12.0	4.9	1.4	--
Direct Appointment, Health	26.2	26.9	23.1	27.3
All Others	11.3	11.5	2.5	3.2

a. Detailed figures and notes are contained in Appendix A.

took place; the former because of the Berlin and Cuban crises, the latter because of the Vietnam conflict.

The procurement programs singled out for analysis were those which were either major sources of newly commissioned officers, such as the ROTC in the Army; or which are unusual in the type of officer they commission, such as Service Academies, which attract highly motivated individuals,[2] and Direct Appointment programs for doctors, dentists, and veterinarians.[3]

The Army uses its ROTC as its major source of commissioned officers. This program provides a large number of officers, but only 25 percent remain on active duty after completing their two-year obligated tour. During the 1962 buildup the Army relied almost entirely on the excess of ROTC officers who up until this time had been transferred to the Reserves after six months of active duty. By extending the six-month tour to two-year tours the Army was able to increase its accessions almost instantaneously. After 1962, the number commissioned from this program was no longer adequate to meet requirements. For the 1966 buildup, the Army is making more intensive use of its Officer Candidate School (OCS). Originally used for obtaining commissioned officers from the enlisted ranks, the OCS program was revamped in 1965 so that it might also be used to commission college graduates who did not participate in ROTC in college. Initial plans for the new OCS called for commissioning one-half of its officers from the enlisted ranks and one-half from the colleges.[4] The increased reliance on OCS as a source of commissioned

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2. Over 75 percent of the officers commissioned from the Service Academies currently remain on active duty after they have completed their initial four-year obligated tour.

3. Direct Appointment programs obtain most of their officers by threatening to induct the prospective officers as enlisted men if they do not apply for commissions.

4. Most of the officers commissioned from OCS in 1966 did, however, come from the enlisted ranks because of an inadequate supply of college-graduate applicants.

officers with college degrees stemmed, in part, from the inability of the ROTC program to produce an adequate number of commissioned officers. The OCS program is also more responsive to changes in requirements as it can produce a newly commissioned officer in three months in contrast to the two-year lead time required to produce an ROTC officer.

The Navy relies heavily on its OCS for new officers. Unlike the Army program, all its candidates are college graduates. Although fluctuations in Navy officer strength have not been as severe as those of the Army, notable changes have occurred in the relative output of the different procurement programs. The reduction in output from the Naval Cadet program results from a decision to phase this program out. This program produces Naval aviators with only two years of college. In its place the Navy has initiated a special Naval Aviator program for college graduates. Officers commissioned from this program are counted as part of OCS output. The growth in importance of "All Others" in recent years represents increased reliance on programs which commission officers from the enlisted ranks.[5] The increased proportion of accessions coming from Direct Appointment, Health, appears to represent a special Vietnam requirement.

The Marine Corps obtains most of its commissioned officers from its Officer Candidate Course (OCC) and Platoon Leaders programs. The former program is analagous to Navy OCS and the latter resembles Navy ROTC. In 1962 the Marine Corps relied entirely on OCC, with its short lead time, to supply the additional officer-accessions required. In 1966, the Marines reverted to a program of temporary commissions in which enlisted non-commissioned officers are appointed "Temporary Lieutenants" with the understanding that once they are no longer

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5. The most important of these programs is the Limited Duty Officer program which obtains its officers from the ranks of the enlisted men with six to ten years of service experience. These enlisted men are commissioned as Ensigns (O-1) and can expect to make Lieutenant or Lt. Commander before they retire. Another program in this group is the Navy Enlisted Scientific Education program, which selects bright young enlisted men and sends them to college for degrees. After completing their schooling, they are commissioned Ensigns.

needed as officers they will revert back to their original non-commissioned grade. This program, included under "All Others," has advantages of both speed and flexibility.

The Air Force, like the Army, relies most heavily on ROTC for its newly commissioned officers. Since 1960 it has been expanding its Officer Training School (OTS) program, a three-month program which commissions persons with college degrees; while contracting its Aviation Cadet program, an 18-month program which commissions persons with two years of college. The big increase in annual officer-accessions in the Air Force occurred in 1963 and was supported mainly by the expansion of OTS. The reason for this one-year lag in the Air Force buildup may stem from the lead time required to institute the OTS as a major commissioning program.

2.3 SUMMARY

Several interesting facts emerge from this examination. First, variations in officer-accessions are largely the result of changes in force levels and are thus demand--rather than supply--determined. These force level changes generally have their largest impact on the Army. Second, for rapid expansions of force levels, the Services usually rely heavily on their short lead time programs. Finally, there has been a tendency for the Services to switch from programs which produce officers without college degrees to programs which commission officers with Bachelors degrees. In part, this tendency may have been the result of an excess supply of applicants to the officer-commissioning programs. However, the Army, Navy, and Marine Corps have had to lower their educational standards recently because of the large buildup for Vietnam and are again turning to programs that commission noncollege graduate officers. We can expect similar qualitative changes to occur whenever requirements for officers change suddenly and substantially.

3

ELIGIBLE POPULATION AND THE SUPPLY OF OFFICER-ACCESSIONS

There are a large number of factors that affect the supply of military officers. We have examined a small number of these; eligible population, military conscription, and expected earnings of potential officers in both military and civilian careers. These variables are important supply determinants for which data are readily available.

3.1 ELIGIBLE POPULATION

Eligible population, the pool from which potential officers may be drawn, varies for the different officer-procurement programs. The educational limitations on eligibility range from male high school graduates to males with advanced degrees. Other limitations, such as age and physical standards, are, for the purpose of this study, considerably less important.

Newly commissioned officers with no prior service experience have been grouped according to the populations from which they are drawn: high school graduates, college freshmen, college drop-outs, college graduates, and post-graduates. High school graduate programs include Service Academies and Navy ROTC (Regular). The ROTC, Marine Platoon Leaders Course and Navy Reserve Officer Corps draw their candidates from entering college freshmen. College drop-out programs include the Navy and Air Force Aviation Cadet programs. The Navy OCS (including Aviation Officer Candidates), the Air Force OTS, the Marine Corps Officer Candidate Course and Marine Cadet Program (MARCAD) have college graduates as their candidates. Direct appointments to commissions from civilian life are usually tendered to individuals with specialties which require post-graduate training, e.g., doctors, dentists, lawyers, chaplains, and veterinarians.

3.2 HIGH SCHOOL GRADUATE PROGRAMS

New officers are produced from these programs by offering what are essentially four-year college scholarships in exchange for four years of active duty as regular commissioned officers. Because of quota restrictions the number of officers commissioned from these programs are determined primarily by demand factors. We have therefore restricted our analysis to the number of applicants.

There has been no apparent trend in the number of applicants to the Navy Regular ROTC program over the past eleven years (Figure 2). The net increase of only six percent in the annual number of applicants contrasts sharply to the over 85 percent increase in the annual number of male high school graduates. The most plausible explanation is that a decline in recruiting effort in this program may be offsetting population growth. As population increases and program size remains constant, a sufficient number of applicants can be produced with less and less effort. Other factors that may explain this apparent lack of relation between applications and number of high school graduates are: the lengthening of the initial tour of obligated duty from three to four years in 1957; the provision of deferments to individuals enlisting in Reserve units under programs providing for an initial period of active duty training, typically six months, and a total six-year Reserve training obligation; declining relative military pay;[1] and the increasing availability of civilian college student aid funds.[2]

This analysis does not take into account the offsetting factor of rising costs of tuition and fees. These have risen in the private liberal arts colleges by 100 percent over the past ten years.

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1. Annual earnings of a newly commissioned officer increased 7 percent during the period 1954-1963, in contrast to the 50 percent rise in starting salaries for college graduates.

2. Expenditures for student aid in private liberal arts colleges changes both in the proportion of students receiving aid, and given this proportion, changes in the amount of aid received per student. This aid has increased by 160 percent from 1952 to 1962, implying that there are more student aid funds available per student now than in 1952 (U.S. Office of Education, Biennial Survey of Education).

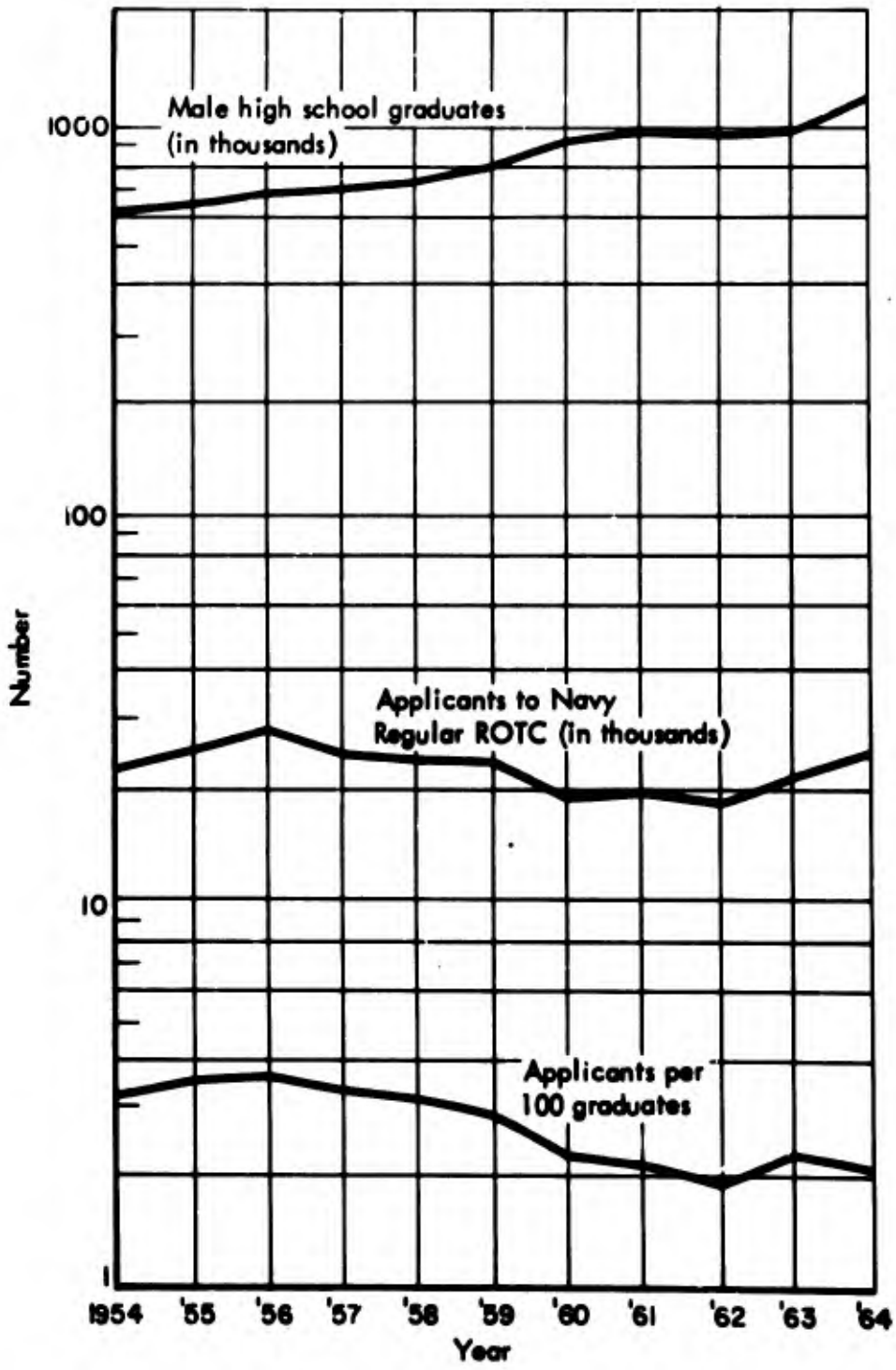

FIGURE 2 Applicants to Naval ROTC (Regular) and in Male High School Graduates, 1954-1964

Source: Appendix B

(Figures from private liberal arts colleges are used in order to minimize the effects of graduate student aid, which is a large, but undeterminable fraction of total aid in universities.)

There are no direct statistics on applicants to the Service Academies. The closest one can get is the number of individuals nominated (Table 4). These figures substantially understate the number of applicants since there is a legal ceiling on nominations. The Army and the Air Force estimate that the number of applicants are approximately ten times the number of nominees to their academy programs. The legal constraints on nominations make them poor measures of supply behavior.

Table 4

NOMINATIONS TO MILITARY ACADEMIES, 1955 TO 1964

Year	Army[a]	Navy	Air Force
1955	na	3,925	6,500
1956	na	4,201	5,533
1967	na	4,690	5,260
1958	na	5,678	5,613
1959	2,434	5,972	6,781
1960	na	5,862	7,100
1961	na	5,735	7,210
1962	2,952	6,219	7,700
1963	3,104	5,684	7,781
1964	3,224	6,220	7,735

a. Number nominated and examined. Understates number nominated, since all nominees do not take examinations. Figures for 1955-1958 and 1960-1961 were not available.

These programs are the most expensive of the commissioning programs. The average cost of a commissioned officer from one of the Service Academies ranges from $30,000 to $50,000. The Regular Navy ROTC Program produces a commissioned officer at an average cost of approximately $9,000.[3]

3. The marginal costs would be higher if expansion of the programs resulted in a deterioration in the quality of their students and a consequent increase in attrition rates.

Legislation has recently been passed in Congress which authorizes the Army and the Air Force to establish ROTC programs similar to that of the Navy Regular ROTC.[4] These programs, once established, will contain up to 5,500 students each. These Services, unlike the Navy, will finance the last two years of schooling for students who have completed two years of ROTC, or have completed equivalent training during a special summer program. The net effect of this legislation will be to increase the number of new officers produced from Regular ROTC.

3.3 COLLEGE STUDENT PROGRAMS

ROTC Programs (other than Navy Regular ROTC), Marine Platoon Leaders' Programs, and Navy Reserve Officers' Programs share the feature of providing officer training concurrent with college training. The ROTC programs consist of four years of military science courses and four to six weeks of training during a summer. The Marine Platoon Leaders Class (PLC) and the Navy Reserve Officers Course (ROC) consist of one or two summers of training during the college years.

The major source of accessions from these programs is ROTC.[5] There are currently 309 institutions offering ROTC programs. These schools account for 47 percent of the 1964 male undergraduate freshmen class. Physical and other limitations are imposed on participation.[6]

Initial enrollments in ROTC do not appear to be limited by quotas or limitations of training personnel and equipment. However, institutional policy concerning enrollment in the basic ROTC program complicates the use of enrollment figures as evidence of supply behavior. Some institutions compel their students to take the basic ROTC program;

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4. The bill was entitled "Reserve Officers' Training Corps Vitalization Act of 1964."

5. In fiscal year 1964, 15,391 of the 16,389 commissions, or 95 percent of the total supply produced from college student programs, were from the ROTC.

6. The Navy, for example, does not allow married men to enter their program. Persons who have committed felonies are also ineligible.

at other institutions the program is optional.[7] The former will be called "compulsory" institutions and the latter, "voluntary" institutions.

There was a shift in institutional policy, concentrated mainly in the years 1960 and 1961, away from requiring students to take basic ROTC. This has decreased the importance of the compulsory institutions in terms of overall student enrollment.[8] Other things equal, enrollments in basic ROTC in compulsory schools are considerably higher than in voluntary institutions. To standardize for the effect of this shift in policy, we have classified the enrollment data by institutions according to their ROTC enrollment policy.

Enrollments in the first course of basic ROTC (ROTC-I) were divided by male freshman enrollments to derive enrollment rates. Stability in these rates would imply stability in the relationship between enrollment in ROTC-I and male freshman enrollments.[9] Several interesting patterns emerge. There has been considerable variation in enrollment rates in both the voluntary and the compulsory schools (Figure 3). Enrollment rates have generally been rising in compulsory schools and declining in voluntary schools. Part of this variation reflects changes that have occurred as institutions have changed enrollment policies. Standardized enrollment rates appear in Figure 4. With the exception of the Navy, ROTC-I enrollments in compulsory schools have been rising at a more rapid rate than male freshman enrollments. This may reflect the gradual decline of GI-Bill veterans enrolled in these institutions.[10]

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7. The basic ROTC program is generally taken during the first two years of college.

8. In 1954 compulsory institutions accounted for 57 percent of the male freshmen enrollments in institutions offering ROTC; by 1953 the fraction fell to 40 percent. A chronological account of the change appears in Appendix C.

9. It would imply that proportional changes in the population would produce equi-proportionate changes in enrollments.

10. Veterans enrolled in institutions of higher education have fallen from 451,000 in 1955 to 38,000 in 1963. See U.S. Bureau of the Census, Statistical Abstract of the United States, 1964 (85th edition), Washington, D. C., 1964, Table 373.

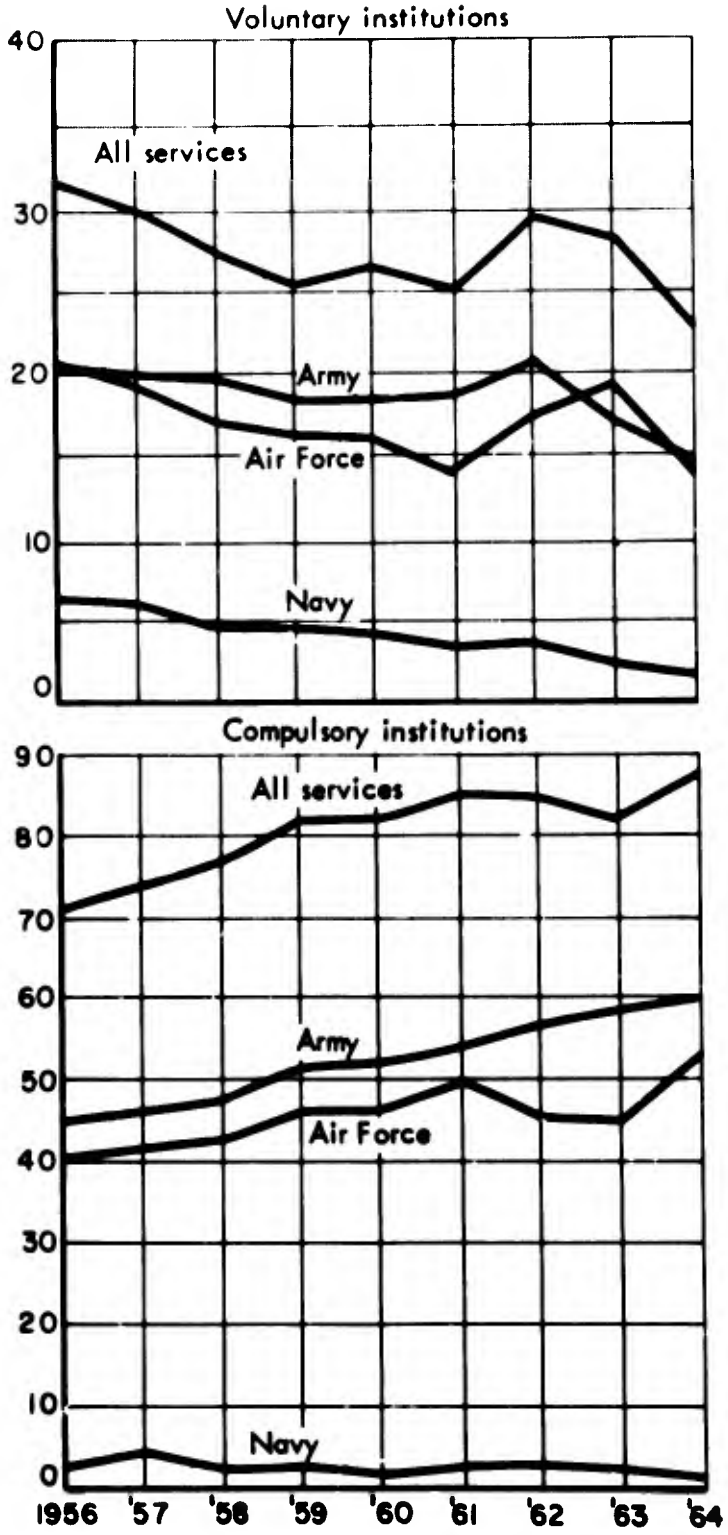

FIGURE 3 Enrollments in ROTC-I per 100 Male Freshman[a]

[a]Source: Appendix D

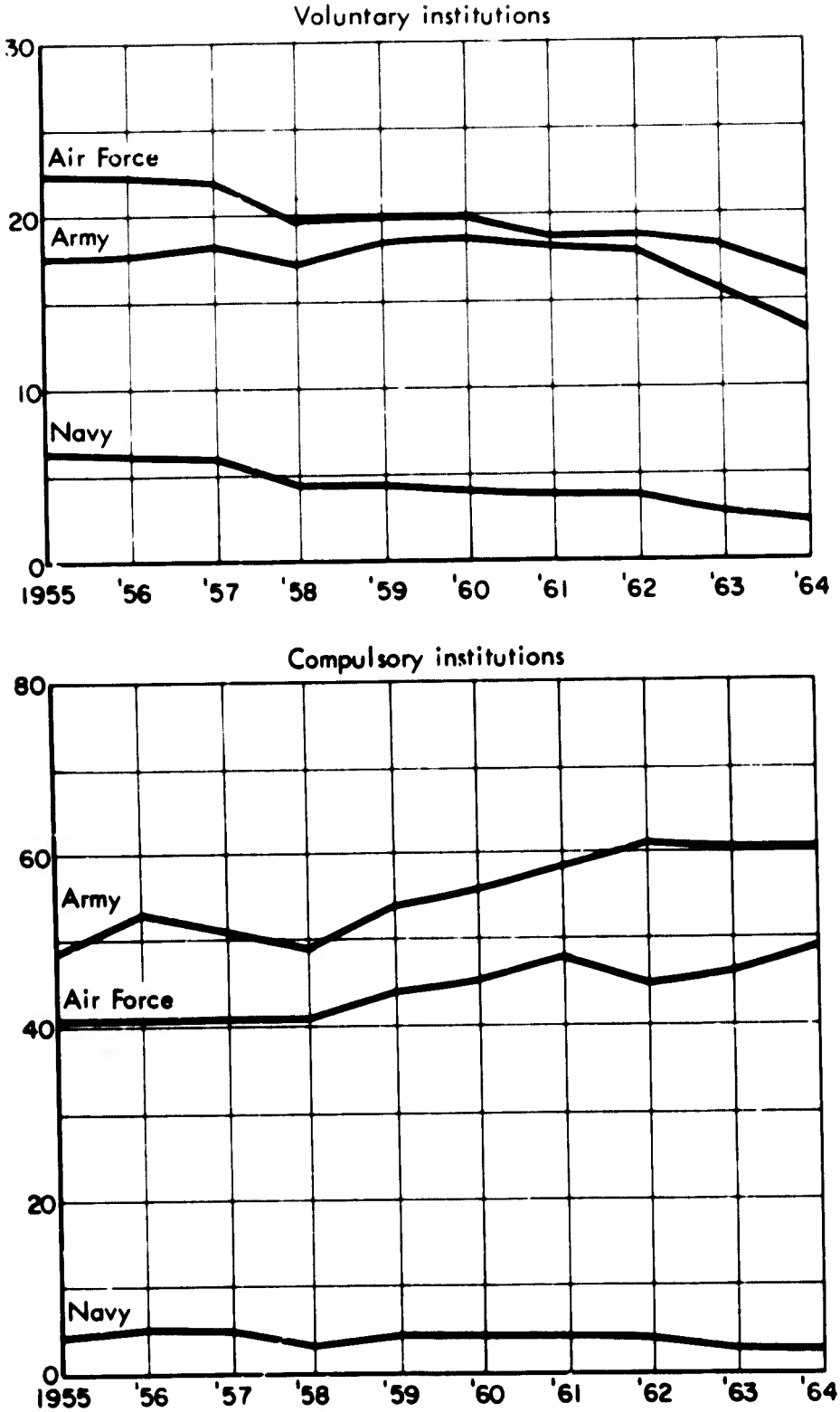

FIGURE 4 Enrollment in ROTC-1 per 100 Male Freshmen in Institutions that have Maintained a Stable Policy Toward Enrollment in ROTC-1

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The enrollment rate in voluntary schools cropped sharply for each service in 1957. The Navy and Air Force rates remained at the lower levels, but the Army rate rose above its former level in 1958. We believe this drop was the result of the 1957 decision of the Selective Service Board to defer persons above the age of 19½ who fulfill their military obligation by enlisting in the Reserves, typically for six months of active duty training. In effect, this offered a more desirable option than ROTC (in terms of active duty time) for college students. The fact that the impact was felt less by the Army, which had a six-month active duty program for its ROTC Officers,[11] further strengthens this speculation.

With the exception of 1957, enrollment rates for the Army program were extremely stable until 1962, when the Army eliminated its six-month active duty program. The enrollment rate then fell from 17.9 to 15.5. We attribute the subsequent decline from 15.5 in 1963 to 13.5 in 1964 to the influence of an Executive Order which, for all practical purposes, exempted married men from draft liability. This influence also had a substantial impact on the Navy and Air Force programs. The Navy's enrollment rate in voluntary schools fell from 2.9 to 2.2 and the Air Force rate declined from 18.3 to 16.5.

Navy enrollment rates in voluntary schools declined also in 1962 from 3.9 to 2.9, when it lengthened its initial tour of obligated duty from two to three years. The enrollment rate in the Air Force program dropped significantly from 19.8 to 18.4 in 1960, when its initial tour of obligated duty was lengthened from three to four years.

With the exception of periods in which draft policies or tours of obligated duty were changed, enrollment rates have been fairly stable. The range of variation has been less than one per 100 male freshmen undergraduates in each of the programs.

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11. See Table 2.

3.4 COLLEGE GRADUATE PROGRAMS

Accessions from the college graduate population are mainly derived from the Navy Officer Candidate and Air Force Officer Training programs. Table 5 contains data describing the annual number of applicants to these programs. It is apparent that the rising trend in applicants to these programs is due to more than just population growth. In fiscal year 1964, applicants to these programs totaled approximately eight percent of the male college graduating class in contrast to the three percent of 1954. The most significant feature of the table is the dramatic rise in the number of applicants between 1961 and 1962, when they more than doubled. This resulted from the expansion of the OTS program and the force buildup produced by the Berlin and Cuban crises. OTS applications more than tripled from 2.7 to 9.4 thousand as the program was expanded and the recruiting effort was increased. In subsequent years the number of applicants has stabalized at nearly 12 thousand per year. There was also a sizable increase in the number of OCS applicants in 1962; but this increase may be attributed to the Berlin and Cuban crises and was not sustained in subsequent years. A sudden surge in applications to the Navy programs also occurred in 1957. We have been unable to trace its cause.

Statistics were not examined for the other college graduate programs because of time and resource limitations and because of the small number of accessions from these programs.

3.5 COLLEGE DROP-OUT PROGRAMS

The Air Force and Navy Aviation Cadet programs draw their applicants from the ranks of the population with some college but no degree. Both programs are currently rather small and are gradually being phased out. Discussion with persons involved in recruiting for these programs revealed that there are considerably more applicants than there are places in the programs.

Table 5

APPLICATIONS TO THE OCS, AOC, AND OTS PROGRAMS AND MALE BACHELORS, AND FIRST PROFESSIONAL DEGREES, 1955-1964[a]

Fiscal Year	OCS	AOC	OTS	Total	Male Bachelors and First Degrees (in thousands)
1955	5,699	17		5,716	183
1956	5,452	1,184		6,636	199
1957	7,590	1,707		9,297	222
1958	4,218	776		4,994	242
1959	5,686	716		6,402	254
1960	4,638	1,040	2,608	8,286	254
1961	5,096	1,688	2,780	9,564	254
1962	9,874	2,198	9,429	21,501	261
1963	6,808	1,920	12,334	21,062	273
1964	6,334	2,168	12,008	20,510	298

a. Applications: Unpublished tabulations from the Services. Bachelors and First Degrees: U.S. Office of Education, op. cit., 21.

3.6 SUMMARY

Among the non-prior service sources of officer-accessions, we noted that the Service Academies and the Regular-ROTC programs had excess supplies of applicants. Enrollments in the ROTC programs were found to be sensitive to institutional policy concerning compulsory enrollment in ROTC and to changes in draft policy. The OCS and OTS programs expanded substantially during the past ten years, largely because of the Services' decisions to recruit a larger proportion of its officers from the population of college graduates. The Cadet programs, currently being curtailed by the services, also appear to have had an excess of applicants over available places.

For programs which secure applicants from high school graduates or college drop-outs, the number of officers produced will be determined by military service requirements since these programs have a substantial excess of applicants over available vacancies. Variations in the number of applicants to programs which draw from college freshmen or college graduates were found to be highly correlated with variations in the size of the population.

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MILITARY CONSCRIPTION AND THE SUPPLY OF NEW OFFICERS

Military conscription operates to increase the supply of military officers over what the supply would have been in its absence. One could explain this behavior by suggesting that, to the potential officer, an increase in the likelihood of being drafted is equivalent to a reduction in expected earnings over his civilian career. A potential officer can expect smaller earnings if he is drafted than he can obtain at the same point in his career in a civilian occupation.[1] Given earnings expectations in military and civilian occupations, an increase in the likelihood of being drafted represents an increase in the likelihood of experiencing two years at substantially reduced earnings for his civilian career, and thus acts to enhance the relative attractiveness of military duty as an officer. Another explanation might be based on the distribution of potential officers with respect to their preferences and tastes for the uncertainty that accompanies the draft. Given a finite likelihood of being drafted, those potential officers with considerable distaste for this uncertainty might volunteer to serve as officers in order to be able to determine the branch and type of military service they will perform. The larger the likelihood of being drafted, the greater the number of potential officers who will try to enter the Service as officers.

For enlisted men the draft has both a direct and an indirect effect. It is clear that, other things equal, inductees would not have entered the service had it not been for the draft. The indirect effect is more difficult to isolate. It consists of those individuals who enter service by means other than induction (who therefore entered on an apparently voluntary basis), but would not have entered military service if there had been no draft.

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1. See Appendix I.

Since the impact of the draft on officer-procurement is indirect, estimating its magnitude is extremely difficult. We have examined two types of data relating to draft-impact--behavioral and attitudinal. Behavioral data were based on directly observable events; attitudinal data were derived from responses to survey questionnaires.

4.1 BEHAVIORAL EVIDENCE ON THE IMPACT OF THE DRAFT

Some notion of the effect of changes in draft policy has already been derived from our description of the experience of the ROTC programs. We noted that enrollment rates in ROTC-I fell dramatically in 1957 after the six month active duty option became available to men of college age. We inferred from this that large number of college students, when given the choice, preferred enlisting in the Reserves for six months of active duty to enrolling in ROTC for a commission and at least two years of active duty. A similar decline in enrollment rates was observed after tours of obligated duty were lengthened. These actions imply that there are many individuals who, at current levels of expected relative military career earnings, are not willing to spend more than the minimum amount of time in military service. While this may only reflect a desire to minimize the period of contractual obligation, it is likely that, for some individuals, it also reflects an unwillingness to be in service at all.

The virtual exemption of married men from draft liability through an Executive Order signed by the President in September 1963 provided us with a unique opportunity to examine the way in which a particular group reacted to what, for them, appeared at the time to be an indefinite deferment. Enrollments in Officer-Candidate School and Aviation Officer Candidate classes were classified by martial status of enrollees for the first three calendar quarters of 1963 and 1964. If we assume that relative changes in other factors affecting the supply of enrollees were independent of marital status, then differentials changes in enrollments by marital status for this period may be traced directly to the effect of the Executive Order.

Table 6 contains the statistics used in computing the "Executive Order effect " From these figures we might infer that the Executive Order reduced enrollments of married men in these programs 37 percent below what they otherwise would have been. However, other events were operating during this period which lead us to suspect that this actually underestimates the Executive Order effect. The most important of these events was the announcement by President Johnson of a study to consider the possibilities of eliminating the draft, and the injection of the draft as an issue in the presidential election campaign. The creation of uncertainty as to the future of the draft should have caused draft-motivated enrollees to defer decisions about entering military service until after the issue had been resolved. Since married men had already been exempt from the draft by the time these events occurred it is likely that the uncertainty concerning the draft would have affected only single men, reducing their enrollments in these programs. This would have reduced the differential decline between married and single enrollees that would have resulted from the Executive Order alone.

Table 6

ESTIMATES OF THE EFFECT OF THE EXECUTIVE ORDER OF SEPTEMBER, 1963 ON ENROLLMENTS IN THE NAVY OCS AND ROC PROGRAMS BY MARITAL STATUS[a]

Enrollments, married candidates, first three quarters, 1963	654
Enrollments, married candidates, first three quarters, 1964	381
Percent change, married candidates, 1963-1964	- 41.7
Enrollments, single candidates, first three quarters, 1963	2858
Enrollments, single candidates, first three quarters, 1964	2730
Percent change, single candidates, 1963-1964	- 4.5

a. Bureau of Naval Personnel

Even if this were an unbiased estimate of the Executive Order effect, it is not necessarily an unbiased estimate of the draft-effect for groups other than married men. It is likely that married enrollees were relatively less draft-motivated than single enrollees even before the Executive Order since they had a relatively greater opportunity to qualify for exemption by means of dependency status.[2] Thus, it is likely that their response understates the change that could occur to all enrollees from an elimination of the draft. These considerations lead us to conclude that 37 percent is a conservative estimate of the decline in officer-accessions that would occur in this program if the draft were abolished.

4.2 EVIDENCE BASED ON SURVEY DATA

Since we could not derive parametric estimates of the influence of draft pressure on procurement from the data available, we relied on responses to survey questions on attitudes and motives. Because of the likelihood of response or classification errors, we used a number of surveys and questions to check the consistency of our estimates.

Civilian nonveterans were asked whether they would enter military service if there were no draft. The fraction of male college students and graduates who answered "yes, definitely" or "yes, probably" is shown in Table 7. Thirty percent of the male college students but only seventeen percent of the male college graduates responded that they would enter service in the absence of a draft. The more positive attitude of college students may be attributed to their relatively poorer civilian earnings opportunities and to the fact that they have not yet committed themselves as firmly to a civilian occupation as have the college graduates. It is interesting to note that, even when standardized for age, the male college students still show a greater willingness to enter military service than do the male college graduates. This is consistent with the notion that

2. Deferments were granted to men with children prior to the signing of the Executive Order. Other things equal, a married man should expect to qualify for this deferment more readily than a single man.

Table 7

DISTRIBUTION OF CIVILIAN NON-VETERANS BY WHETHER THEY WOULD ENTER MILITARY SERVICE IF THERE WERE NO DRAFT[a]

School Enrollment Status	Number (in thousands)	Percent				Number No Idea (in thousands)
		Yes, Definitely	Yes, Probably	No, Probably	No, Definitely	
College graduates: 20-25 year olds	288	2.4	14.6	67.7	15.3	30
Enrolled in college:						
Under 20 years	808	9.7	22.1	49.3	18.9	175
20-25 years	867	5.8	22.0	53.5	18.7	150
(Weighted average)	--	7.7	22.0	51.5	18.8	--

a. Special tabulation produced from Department of Defense Survey of Civilian Men, 16-34 years old, October, 1964, question 26, non-veteran survey.

job-commitment is an important factor in explaining the difference in attitudes between the two groups. It suggests that recruiting efforts ought to be concentrated on potential officers before they complete their schooling and become committed to specific civilian occupations.

Civilian veterans were asked substantially the same question. Thirty-four percent of the respondents who served as officers in 1954 and afterward stated that they would have entered military service even if there had been no draft (Table 8). When these veterans were classified by level of schooling completed, it was found that those who had not completed college were substantially more positively inclined toward military service than were those who had completed college. Again, this may reflect differences in alternative civilian earnings between the two groups.

Further estimates of the effect of the draft on officer-accessions were derived from two DoD surveys taken in 1964. Respondents analyzed were junior officers.

The first survey, the DoD Retirement Survey, was made in April 1964. Responses to two questions were tabulated for officers who had less than two years of active commissioned service: one question asked for the

Table 8

DISTRIBUTION OF CIVILIAN VETERANS BY WHETHER THEY WOULD HAVE ENTERED THE MILITARY SERVICE IF THERE WERE NO DRAFT

Date and Mode of Entry, Age and Education	Number (in thousands)	Percent				Number (in thousands) No Idea
		Yes, Definitely	Yes, Probably	No, Probably	No, Definitely	
Totals						
Before 1954	2,550	38.6	18.8	26.6	16.0	273
Enlisted	1,414	55.3	19.5	16.3	8.8	94
Officers	56	32.1	14.3	28.6	25.0	--
Draft & Reserve	1,080	17.0	18.1	39.9	25.0	179
1954 and After	4,093	34.8	19.4	26.2	19.7	356
Enlisted	1,699	57.9	23.0	13.1	6.1	103
Officers	215	14.9	19.1	40.5	25.6	31
Draft & Reserve	2,179	18.7	16.6	35.0	29.7	223
Officers						
Before 1954	56	32.1	14.3	28.6	25.0	--
Less than College Degree	12	33.3	16.7	16.7	33.3	--
College Degree	44	31.8	13.6	31.8	22.7	--
1954 and After	215	15.0	19.2	40.7	25.7	31
Less than College Degree	33	42.4	15.2	30.3	12.1	9
College Degree	182	9.9	19.8	42.3	27.5	22

a. Special tabulation from Department of Defense Survey of Civilian Men, 16-34 years old, October, 1964, Veteran survey, question 29.

respondent's most important reason for entry into service; the second asked for the respondent's career plans at the time he entered service. On the basis of their answers respondents were classified into groups which could conveniently be transformed to draft-motivated and voluntary accessions. Table 9 summarizes the distributions.[3] The rankings conform to *a priori* expectations. The military academies had the smallest proportion of its officers in groups considered draft-motivated, with the estimates ranging between 5 and 10 percent. Other nonprior-service college-graduate officers were from 40 to 70 percent draft-motivated, depending on service and source of commission. Cadet programs, which draw their officers predominantly from the population of college dropouts, had proportionately less draft-motivated accessions. The proportion of ROTC officers who

3. Details are contained in Appendix G.

Table 9

COMPARISON OF SURVEY ESTIMATES OF PROPORTION OF OFFICERS WHO ARE DRAFT MOTIVATED[a]

Branch of Service and Source of Commission	Retirement Survey		Service Plans Survey	
	Most Important Reason For Entering Service	Career Plans	Most Important Reason For Entering Service	Draft Influence
Army				
Academy	5.6	5.9	4.8	9.4
ROTC	69.0	66.5	70.4	55.4
OCS	37.2	57.2	12.3	41.5
Direct Appointment	68.4	73.7	78.8	66.5
Other	38.4	24.9	24.4	19.4
Navy				
Academy	10.5	7.3	9.7	9.4
ROTC	47.4	43.5	66.1	44.1
OCS	61.0	62.5	74.6	58.7
Cadet	14.7	--	28.5	--
Direct Appointment	55.3	62.6	72.7	49.4
Other	29.0	15.8	11.4	41.1
Marine Corps				
Academy	7.1	0.0	0.1	0.0
ROTC (Navy)	47.5	43.7	62.5	28.6
OCC	52.9	47.1	62.7	38.6
Cadet	16.7	--	8.6	--
Other	28.6	17.0	2.2	10.2
Air Force				
Academy	5.3	13.6	7.1	15.6
ROTC	42.3	39.4	39.8	32.4
OTS	56.0	53.4	43.7	48.9
Cadet	15.4	--	13.3	--
Direct Appointment	50.3	60.9	73.2	53.8
Other	49.7	35.1	20.8	26.8

a. Estimates are derived from two DoD studies: Retirement Survey of Active Duty Personnel and Survey of Military Service Plans, Experience and Attitudes, Commissioned and Warrant Officers. The figures show here represent responses which are considered to reflect draft-motivation from questions concerning reasons for entering service, career plans, and whether or not the officer would have entered Service in the absence of the draft. See Appendix F for detail.

were draft-motivated was largest in the Army, which has the shortest tour of obligated duty, and was smallest in the Air Force, which has the longest tour.[4] The proportion of Navy OCS officers who were draft-motivated is considerably larger than the 37 percent implied by the Executive Order effect.

The second survey, the DoD Survey of Active Duty Military Personnel as of 31 October 1964, contained two questions which were tabulated to estimate the proportion of first-term officers who were draft-motivated. They related to the respondent's most important reason for originally entering service and whether, in the absence of a draft, they would have entered military service. Respondents were again classified into groups which could conveniently be called draft-motivated and voluntary. Distributions are also summarized in Table 9. Again the rankings conform with a priori expectations for nonprior-service first-term officers.

Since the two surveys were taken within a relatively short time of each other we have classified essentially the same group of officers in each survey,[5] and the results should not vary significantly because of lack of comparability between the two samples. The greater part of the variation in our estimates should be attributed to response and classification bias. The four estimates may be conveniently analyzed by type of survey question; two of the estimates were based on questions relating to the respondent's most important reason for entering military service, one estimate was based on original career plans upon entry into military service, and one was based on whether the respondent would have entered service in the absence of a draft. There is significantly more variation between the estimates based on different questions than there is between the estimates based on the two similar questions. This supports our notion that the variation

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4. The tour of duty for first-term ROTC officers is two years for the Army, three years for the Navy, and four years for the Air Force.

5. The first-term officers include officers with 3,4, and 5 years of service, depending on the particular source of commission.

in estimates is caused by difference in wording of the questions on the several surveys. With the exception of the academy officers, the career-intentions question produced the highest estimates of draft-motivated officer-accessions. The lowest estimates resulted from the question relating to behavior if there were no draft.

Finally, a National Science Foundation survey of 1958 college graduates asked those who had been in military service their reason for entering. Respondents had a choice of three answers: "to follow a military career," "undecided," and "to discharge military obligation." Table 10 contains the distribution of respondents by their military rank and their reason for entering service. Roughly two-thirds of the officers and five-sixths of the enlisted men responded that they were in service to discharge their military obligation. We classified these respondents as draft-motivated officer-accessions.[7] This corresponds closely to our earlier figures of 70 percent of the civilian veteran officers who stated they would not have served had there been no draft (Table 8).

Table 10

DISTRIBUTION OF 1958 MALE COLLEGE GRADUATE MILITARY VETERANS BY REASONS FOR ENTERING SERVICE

Rank	Number	Reason for Entering		
		To Follow a Miltary Career	Undecided	To Discharge Military Obligation
Officer	2,595	10.8	22.2	67.0
Enlisted	6,964	3.1	9.6	87.3
Total	9,559	5.2	13.0	81.8

a. Special tabulation, from the National Science Foundation survey of 1958 college graduates.

7. The large percentage of college graduates who served as enlisted men and who were draft-motivated stems in part from the fact that some of these were inductees.

4.3 SUMMARY

Evidence from the effects of the Executive Order on enrollments of married men in the Navy Officer Candidate programs suggests that the proportion of officer-accessions from that program who are draft motivated is at least 37 percent. Tabulations from survey questionnaires indicated that this proportion varies by source of commission, branch of service, and level of education. It is as high as 75 percent for non-prior service accessions from the college-graduate population through the fellowship programs. It is also relatively low for officer-accessions from college dropouts, ranging from 9 to 28 percent in the Cadet programs.

5

RELATIVE MILITARY EARNINGS AND THE SUPPLY OF OFFICERS

Expected earnings of potential officers in military and civilian careers operate to determine the number who will choose military careers. Because of the many differences in military and civilian occupations, a potential officer might be unwilling to choose a military career for the same career earnings he would receive as a civilian. In principle, there is an "equilibrating" career earnings differential for each potential officer which, given his relative preferences for the non-pecuniary aspects of the work in each career makes him indifferent about working in either.[1] Potential officers will choose a military career only if the actual differential exceeds their equilibrating differential. Since individuals differ in tastes there will be some dispersion in equilibrating differentials. For a given dispersion, the larger the actual differential, the greater the number of potential officers who will choose military careers. This responsiveness of the supply of new officers to changes in pay differentials is an important consideration in estimating the cost of an all-volunteer officer force.

5.1 ESTIMATION OF THE SUPPLY RESPONSE OF NEWLY COMMISSIONED OFFICERS WITH RESPECT TO CHANGES IN RELATIVE MILITARY EARNINGS.

Officers commissioned by the different commissioning programs will display different sensitivities to changes in military and civilian career earnings. Programs which now enjoy excess supplies of

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1. This discussion is based on the concept of "equalizing differentials" found in the theory of occupational supply. See, for example, M. Friedman, Price Theory: A Provisional Text, (Chicago: Aldine Publishing Co., 1962); M. Friedman and S. Kuznets, Income from Independent Professional Practice, (New York: National Bureau of Economic Research, 1954) p. 82-83

applicants can, within a certain range, increase the number of officers they commission without changing expected earnings. The Service Academies, ROTC-fellowship programs, and the Cadet Programs are cases for which this kind of supply increase is possible. On the other hand, the ROTC and Officer Candidate programs do not appear to have an excess supply of applicants presently, even in the presence of a draft. Moreover, the considerable extent to which the supply of officer-accessions from these programs are affected by the draft strongly suggests that there would be a further shortage in the absence of a draft. These programs could not expand their outputs without an increase in expected earnings or without some other measure designed to increase their supply of applicants.

The only data from which the supply response could be estimated were statistics of ROTC enrollments in "voluntary" schools; i.e., schools that allow their students the option of enrolling in ROTC. Median 1963 incomes of the 1958 male graduates of these schools were derived from a special tabulation from a National Science Foundation survey. Other things equal, a higher level of income of the male college graduates should be associated with a lower level of enrollments in ROTC-I. Our estimating equation[2] was:

$$\log e = \log a + b \log Y_{cg} + u \qquad (1)$$

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2. This equation assumes the following relationship between officer-supply and expected earnings:

$$X = \alpha_L \left(\frac{Y_m}{Y_c}\right)^{\beta_L} \qquad \beta_L > 0$$

where X equals the supply of applicants to ROTC per 100 male freshmen; Y_m equals expected military career earnings and Y_c equals expected civilian career earnings. Expressed in logs, this equation may be written:

$$\log X = \log \alpha_L + \beta_L (\log Y_m - \log Y_c)$$

This functional form is not necessarily the best to describe the supply relationship. It was chosen because there is reason to believe that the supply schedule is non-linear and the log-linear function is a convenient non-linear form. There is no a priori reason to think that this function is superior or inferior to any alternative form.

where e represents enrollments in ROTC per 100 male freshmen, Y_{cg} equals median incomes of 1958 male college graduates, and u represents a random error term.[3]

Statistics of ROTC-I enrollments, undergraduate male freshmen, and median income of 1958 male college graduates are available for 1963 from 82 schools which were classified as "voluntary." While there were actually 150 "voluntary" schools which could have been used, many had to be dropped from the analysis because of inadequate sample sizes for computing medians or because the median income fell in open-ended classes.[4] Two institutions were dropped because of strong administrative pressure on the students to enroll in ROTC.

Estimates of pay-sensitivity were derived from regression analyses performed on the data from these 82 institutions. The dependent variable was enrollments in ROTC-I per 100 male undergraduate freshmen, hereafter referred to as the "enrollment rate." A number of additional independent variables were added to the estimating equation to control the factors, independent of income, which affect enrollment rates. These included variables measuring program mix, the number of different ROTC programs offered, region (South and non-South) and place of residence of students (rural-urban), graduate school intentions, and family backgrounds of students. A description of the estimates of these variables and the manner in which they are expected to influence enrollment rates appears in Appendix G.

Table 11 summarizes the coefficients of the regression fit to Eq. 1. The variables that were significantly related to enrollment rates were income, three dummy variables denoting the ROTC programs available, and a dummy variable for regional background. These five variables accounted for 40 percent of the total variation in enrollment

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3. The effects of variation in military incomes (as well as the draft and tastes) will be reflected by the error term and will not bias our estimate of β_L if they are independent of variations in incomes of male college graduates.

4. Income classes of $500 intervals were used between six nine thousand dollars and there were open-ended intervals below six and above nine thousand dollars.

rates. Their coeeficients all had the "expected" signs and all but Region were statistically significant at the .001 level. Region was also significant, but only at the 0.05 level.[5] The remaining independent variables did not contribute significantly to "explaining" the variance in log e, and they had virtually no effect on the income coefficient. The regression coefficient of the income variable implies that a 10 percent increase in civilian income is associated with a 19.9 percent reduction in the enrollment rate. The coefficients of the dummy variables representing program mix may be interpreted as "shift" variables; i.e., for a given level of income, the presence of the Army program results in a larger enrollment rate than if there were no Army program; for given levels of income, the presence of the Navy program results in a smaller enrollment rate than if there were no Navy program.[6] The sign of the Region coefficient indicates that, given income and types of programs available, Southern schools have higher enrollment rates than non-Southern schools. Further regressions were run on Eq. 1 with the interaction between income and each of the dummy variables as independent variables. This tests whether these dummy variables affect the slope as well as the level of the supply

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5. Auto correlation in the residuals ranked by the magnitude of log e was discovered. This means that the significance levels are overstated.

6. Algebraically, this may be illustrated by the following example:

Let $X = a + bY + cZ$, where $Z = 1$ if there is an Army program
$= 0$ is there is no Army program
and $c > 0$.

For schools with an Army program, this equation solves to:

$$X = (a + c) + bY.$$

For schools with no Army program, the equation becomes:

$$X = a + bY.$$

Thus, the presence of an Army program raises X by c for all values of Y.

Table 11

COEFFICIENTS ESTIMATED FROM LOG-LINEAR ESTIMATING EQUATION

Variable	Constant	Y_{cg}	D-A	D-N	D-AF	Region	R^2
Coefficient	8.869	-1.987	.2696	-.2166	.1956	- .1585	.41
Standard error	3.053	.7935	.0616	.0571	.0648	.0737	
t-ratio	2.91	-2.50	4.38	-3.80	3.02	-2.15	

Glossary:

Y_{cg} = median 1963 income of male college graduates

D-A = dummy variable; equals one if Army ROTC is offered and zero if it is not.

D-N = dummy variable; equals one if Navy ROTC is offered and zero if it is not.

D-AF = dummy variable; equals one if Air Force ROTC is offered and zero if it is not.

Region = dummy variable; equals zero if the school is in the South and one if the school is not.

function.[7] The interaction terms were not significant, leading us to conclude that the dummy variables are important determinants of enrollment rates, but do not affect the sensitivity of these rates to changes in income.

We suspect that the poor results derived from the education variable--the proportion of the 1958 male college graduates who took some additional schooling beyond the bachelors degree--was due in part to measurement error. This statistic does not adequately

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7. Again the effect of the interaction term on the slope may be demonstrated algebraically:

Let $X = a + bY + cZ + dYZ$, where $Z = 1$ if the school has an Army program;

$= 0$ if the school has no Army program; and

$c > 0$.

For schools with an Army program, this equation becomes:

$$X = (a + c) + (b + d)\,Y.$$

For schools with no Army program, the equation becomes:

$$X = a + bY.$$

reflect the number of 1958 male college graduates who continued their schooling full time after having obtained their bachelors degree. In teaching, for example, many continue their schooling on a part-time basis because they are paid higher salaries if they have taken additional course work. A possible bias may result because students who have taken graduate training may have earned more money on average in 1963 than students who did not. They are less likely to enroll in ROTC because they do not wish to tie themselves down to military service after college graduation or because they think that the further exemptions for graduate school lessens the probability of their being drafted. If the true education variable is positively related to our estimate of income, failure to measure it properly may cause the income variable to capture some of the effects of the education variable, and may lead to an overstatement of the income coefficient.[8]

Similar regressions were run on the following estimating equation.[9]

$$e = a_A + b_A Y_{cg} + U \qquad (2)$$

We again experimented with a variety of independent variables other than income in our regression analysis.

The results are quite similar. Virtually the same variables proved to be significantly related to enrollment rates but the proportion of the variance that was accounted for was somewhat less.

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8. If one expects a negative relation between education and enrollment in ROTC and a positive relation between education and income of college graduates, then omitting education from the equation results in its effects being included with those of the income variable, biasing the coefficient of the income variable toward a negative coefficient. This is commonly called a "specification bias." For a discussion of this bias, see Z. Griliches, "Specification Bias in Estimates of Production Functions," Journal of Farm Economics, February 1957, pp. 8-20.

9. This implies the following supply function:

$$X = \alpha_A + \beta_A (Y_m - Y_c)$$

The regression coefficients are summarized in Table 12. The variables for Air Force Program and Region proved to be significant at the 0.10 level. At the point representing the mean value of income and enrollment rates, a 10 percent increase in income is associated with a 13.5 percent decrease in enrollment rates.[10] This regression equation produced a slightly less sensitive response to pay changes than did the log-linear equation.

Table 12

COEFFICIENTS ESTIMATED FROM LINEAR ESTIMATING EQUATION

Variable	Constant	Y_{cg}	D-A	D-N	D-AF	Region	R^2
Coefficient	50.75	-.003916	9.692	-9.431	3.631	-4.815	.33
Standard error	14.33	.001954	2.682	2.483	2.830	3.220	
t-ratio	3.54	2.0	3.61	-3.80	1.28	-1.50	

Glossary: See Table 11.

5.2 SUPPLY RESPONSE IN THE ABSENCE OF A DRAFT

These regression equations were estimated in the presence of a draft. It is difficult to determine directly the pay sensitivity of the enrollment rate if there were no draft. Removal of the draft may simply lower the enrollment rate by an equal (or equiproportionate) amount at all levels of income, or may both lower the enrollment rate and change the sensitivity of the estimated supply function.

Several attempts were made to determine whether the sensitivity would change. Responses to survey questions indicate that first-term officers and former officers have been slightly more draft-motivated at higher levels of expected or actual civilian earnings.

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10. This was derived by multiplying the income coefficient, -.003916, by the ratio of the average value of Y_{cg}, $7,723, to the average value of e, 22.42. In economic parlance, this measures the elasticity of enrollment rates with respect to income at their means.

Table 13 contains the distribution of 1958 male college graduates who served as officers and listed "to fulfill military obligation" as their reason for entering service. The proportion rises with income, but the relationship is weak. Table 14 contains the distribution of first-term officers grouped by Service, expected civilian income and their responses to the question: If there were no draft and you had no military obligation, would you have entered military service? In the Army and the Air Force the proportion who answered "yes" declined with expected civilian income. However, the relationship does not appear to hold for the Navy and the Marine Corps.

These tabulations indicate that there is some systematic relationship between the effects of the draft and income. We can therefore state that there is some evidence indicating that pay-sensitivity will differ in a no-draft world. However, the evidence is extremely weak.

If we assume a positive relationship between draft-effect and income, then our estimates of pay-sensitivity tend to overstate the pay-sensitivity in no draft circumstances. In the case of the arithmetic Eq. 2, if the effect of an abolition of the draft was to reduce enrollment rates without effecting the estimated income coefficient, a given relative change in income would produce a larger relative change in enrollment rates. Enrollment rates would be lower, while the income coefficient and average civilian pay would remain unchanged. For example, if we use a draft-effect of .4, a 10 percent increase in civilian income would produce a 22.5 percent decrease in enrollment rates in the absence of a draft.

5.3 SUMMARY

Evidence derived from ROTC participation rates in voluntary schools suggests that officer-accessions are highly responsive to variations in civilian income. A 10 percent increase in civilian income was associated with a decrease in participation rates between 13.5 and 19.9 percent, depending on the estimating equation. These equations also account for the effects of different program mixes

Table 13

DISTRIBUTION OF 1958 MALE COLLEGE GRADUATES WHO HAVE SERVED OR ARE SERVING AS OFFICERS BY THEIR REASON FOR ENTERING MILITARY SERVICE AND INCOME[a]

Income, $	Proportion Who Answered "To Fulfill Military Obligation"
Less than 7,000	59.8
More than 7,000	69.9

a. Special tabulation from NSF, 5 year follow-up of 1958 college graduates.

Table 14

DISTRIBUTION OF FIRST-TERM OFFICERS BY WHETHER IN THE ABSENCE OF A DRAFT, THEY WOULD HAVE ENTERED MILITARY SERVICE, EXPECTED CIVILIAN INCOME, AND BRANCH OF SERVICE[a]

Branch of Service and Expected Civilian Income	Percent Who Responded "Yes"
Army	
Less than $7,500	53.5
More than $7,500	46.7
Navy	
Less than $7,500	53.8
More than $7,500	64.8
Marine Corps	
Less than $7,500	68.0
More than $7,500	76.5
Air Force	
Less than $7,500	62.7
More than $7,500	57.4

a. Special tabulation from the DoD Officers Survey, October 1964.

and Region, which were also found to be significantly related to enrollment rates. Other variables, such as the number of programs, size of place, and family background proved to have little effect on our estimates of pay-sensitivity. We believe our estimates may overstate the actual pay-sensitivity of ROTC programs due to our inability to adequately control for the effects of graduate school plans of potential enrollees. The effect of the presence of a draft on our estimate is unclear and it is difficult to determine how estimates made in no-draft circumstances would have differed.

6

SUMMARY OF FINDINGS AND ESTIMATES OF THE COSTS OF AN ALL-VOLUNTEER OFFICER FORCE

6.1 TRENDS IN OFFICER-PROCUREMENT

Variations in new officer-accessions were found to be closely associated with changes in military manpower force levels. In addition, many of the commissioning programs showed evidence of an excess supply of applicants. These factors combined to indicate that the number of new officers commissioned was determined largely by quotas and was strongly affected by demand rather than supply factors.

Examination of applicants and officers commissioned from the various commissioning programs over the period 1957-1964 produced several interesting findings: (1) programs which offered free college educations (i.e., Service Academies and Regular ROTC) had considerable excess supplies of applicants; (2) programs which commissioned officers without college degrees (i.e., Warrant Officers, All Other) also had excess supplies of applicants; (3) there was a tendency for the Services to draw a proportionately larger number of their officers from the college-graduate population (Service Academies, ROTC, Officer-Candidate schools and Direct Appointment programs). All of these accord well with what economic theory would suggest.

The popularity of the programs which subsidize college training stems in part from the high returns offered in the form of improved earnings potential relative to the cost to the individual. Military careers as officers appear more attractive to persons without college degrees in part because initial earnings opportunities in military careers relative to nonmilitary careers are higher than they are for college graduates. Newly commissioned officers were paid

approximately $4,800 per year (base pay, allowances, and tax advantages) indepencent of their schooling completed.[1] In contrast there was a 11.1 percent differential between the median incomes of males who were 25 to 34 year-old college graduates and males in the same age group who had one to three years of college.[2] The tendency of the Services to enrich the educational mix of their officers is typical of the behavior of employers in loose labor markets. With the draft stimulating more potential officers to seek commissions than otherwise would, the labor market for newly commissioned officers has been predominantly a buyers market and available positions have been rationed by raising educational standards.

6.2 POPULATION AND THE SUPPLY OF OFFICER-ACCESSIONS

Because of the demand constraints operating on many of the commissioning programs, our analysis of the effects of population on the supply of officers was limited to programs in which demand constraints did not exist. The most fruitful source of data was that generated by ROTC. We discovered that demand constraints had been operating on the number of new officers produced from these programs, but that recently these programs were unable to meet their production goals. Moreover, there did not appear to be any significant constraint on enrollment in first-year ROTC (ROTC-I). We performed our analysis on data for schools stratified by whether ROTC was "compulsory" or "voluntary" for first-year students. Data for compulsory schools were not useful in understanding voluntary supply

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1. Newly commissioned officers with post-graduate training in certain areas are exceptions to this statement. Their military pay is considerably higher because they are initially commissioned into higher ranks, or are given longevity credit for the time they spent in graduate school, or are given special pays in addition to their base pay and allowances. A detailed analysis of military and civilian pay is given in Appendix H.

2. College graduates had a median income of $7,235 and persons with one to three years of college had a median income of $6,386 in 1964. U.S. Bureau of the Census, Current Population Reports, Series P-60, Consumer Income, No. 47, Table 22.

behavior. The relation between eligible population and officer-supply was examined by means of the "enrollment rate" in ROTC-I--the number of males enrolled in ROTC-I per hundred male undergraduate freshmen. This "enrollment rate" proved to be stable except for years in which major changes occurred in either draft policy or policy regarding the length of the initial tour of duty for ROTC officers. In general, whenever a new policy tended to reduce the likelihood of a potential ROTC student being drafted or resulted in his having to serve a longer tour of duty, the enrollment rate fell. We concluded from these data that, given draft policies and a stable length of initial tour of duty, "voluntary" enrollments in ROTC would vary proportionately with variations in enrollments of undergraduate male freshmen.

6.3 THE EFFECTS OF MILITARY CONSCRIPTION ON THE SUPPLY OF NEW OFFICERS

Evidence implying a substantial draft-effect on officer-procurement was described in Section 5. Enrollment rates in ROTC were quite sensitive to changes in draft policy and tour of obligated duty.[3] Further evidence of how the draft affects officer-supply was obtained from an analysis of the effect of an Executive Order in September, 1963, which placed married men at the bottom of the draft pool. Enrollment statistics, classified by marital status of the enrollees, were examined in the Navy Officer-Candidate program for the first three quarters of 1963 and 1964. We inferred from these data that the Executive Order reduced enrollments of married men 37 percent. This represented a lower bound estimate of draft-effect for this program.

Since there were no direct behavioral data for all programs which would allow us to distinguish between draft-motivated and truly voluntary officers, we had to rely on responses to survey questions.

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3. While the declines in enrollment rates accompanying the lengthening of initial tour of duty may only reflect aversion to long contractual agreements, it is also likely that it reflects, for some, an unwillingness to be in service at all.

Questions appearing on surveys conducted by the Department of Defense, Bureau of the Census, and National Science Foundation were analyzed. These questions dealt with reasons for entry into service and whether the respondent would have entered service in the absence of a draft.

There was an inverse relationship between level of education and estimated impact of the draft on officer-accessions. Among civilian nonveterans, college students displayed more of a willingness to enter service in the absence of the draft than did college graduates. Among civilian veterans, ex-officers who did not possess college degrees were less motivated by the draft to seek commissions. First-term officers on active duty in 1964 were asked in two separate surveys questions relating to their motives for entering service and their career plans when they entered service. Officers commissioned from programs that did not require college degrees were less motivated by the draft than officers commissioned from college graduate programs. Officers who obtained their commissions by means of direct appointment (primarily doctors, dentists, veterinarians, and chaplains) tended to be most highly influenced by the draft in their decisions to obtain commissions. Service differentials in estimates of draft-effect for a given type of program may, in part, be due to different lengths of initial tours of duty. The draft had a relatively large influence on officers commissioned from the Army ROTC program, which has a two year initial tour, and a relatively small impact on the Air Force ROTC program, which has a four year initial tour. Officers commissioned from the Navy Officer Candidate program, which has a three year tour, were more highly influenced by the draft than were officers commissioned from the Air Force Officer Candidate program (OTS), which entails a 4 to 5 year initial obligation.[4] Officers commissioned from the Service Academies exhibited the smallest draft-motivation.

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4. Army OCS consists largely of officers commissioned from the enlisted ranks and is not comparable to the Navy OCS and the Air Force OTS.

The inverse relation between draft-impact and level of education may be evidence of the relatively better earnings opportunities the military affords a potential officer without a college degree. However, it is also consistent with a taste differential for the non-pecuniary aspects of military relative to civilian working conditions, i.e., that persons with higher levels of education have more aversion to the military working environment. The inverse relation between draft-impact and length of initial tour may reflect aversion to long term commitments. Regular officers may be less motivated by the draft because programs producing Regular officers systematically select more highly motivated applicants.

6.4 THE EFFECTS OF PAY ON THE SUPPLY OF OFFICERS

The effects of relative pay will differ among the commissioning programs for a variety of reasons. A particularly relevant reason is the presence or absence of excess supplies of applicants to the programs. Commissioning programs with an excess of applicants can expand their output without resort to changes in relative military pay simply by enlarging their inputs. Programs without an excess of applicants can expand their output only by increasing their supplies of applicants. One method of expanding these supplies is to make military careers more attractive by raising relative military pay.

Because of excess supply conditions in most programs, there were only a few programs which appeared to be potentially fruitful in yielding estimates of elasticities of supply with respect to relative military pay. We again focused on ROTC because data existed from which supply relationships could be identified. Earnings of college graduates were negatively associated with enrollment rates. Enrollment rates were also significantly related to the type of ROTC program and the geographic location of the institution. Enrollment rates tended to be higher in schools offering Army or Air Force programs and in schools located in the South. The effect of types of ROTC program appears to reflect differences in recruiting philosophies among the Services. The Navy expects all entering students to stay

with the ROTC program until completion and commissioning; the Army and the Air Force are less demanding. The South-non-South differential in enrollment rates may be reflecting regional differences in tastes for military careers. Supply elasticities estimated from logarithmic and linear equations were 1.99 and 1.35, respectively.

6.5 ESTIMATION OF THE COST OF AN ALL-VOLUNTEER OFFICER FORCE

The findings of this Study provide a basis for determining the cost of eliminating the draft. Briefly, if one wished to determine the additional cost to the Department of Defense of procuring its officers without the help of the draft, one must determine (1) the difference between required and actual accessions in the no-draft world; (2) the pay increase required to overcome the accession deficiency; and (3) the cost of such an increase. To determine the accession deficiency, we first estimate the supply of accessions with a continued draft. This supply may then be adjusted downward by our estimates of the impact of the draft on officer-accessions. The estimates of no-draft officer supply are then subtracted from accession requirements to produce the estimated accession deficiency. The pay increase required to overcome this deficiency may be computed from our estimate of pay-elasticity, and its costs calculated on the basis of the 1964 force level.

The costs of maintaining an all-volunteer officer force in 1972 were estimated. We assumed that active force strength would return to pre-Vietnam levels of 2.65 million officers and enlisted men and that the state of cold-war tension would also return to pre-Vietnam levels.

Officer-accessions with a continued draft were projected to fiscal years 1971 through 1973 by assuming that draft pressure, cold war conditions, and relative military pay would remain at the fiscal year 1964 level. Thus, the only variable capable of influencing accessions would be eligible population. It was further assumed that commissioning programs operating under quota constraints would not be affected by population, but would expand in accordance with service plans. The programs affected by population are ROTC and Officer Candidate programs

(which produced almost three-fourths of the newly commissioned officers in 1964). Table 15 contains a summary of these projections.

Table 15

PROJECTED ANNUAL NUMBER OF POTENTIAL OFFICER-ACCESSIONS FOR FISCAL YEARS 1971-1973 WITH A CONTINUING DRAFT[a]

Service	Number (in thousands)
Army	19.2
Navy	11.7
Marine Corps	2.8
Air Force	13.8
TOTAL	47.5

a. Sources and details are contained in Appendix I.

The Services have met their required officer-accessions with little difficulty in the past. Given a continuing draft and stable relative pay, population growth will enable the Services to continue to meet the officer-accession requirements to maintain a 2.65 million man total force. Obviously, the Services will take only the number of new officers required. This projection of potential officer-accessions, then, provides a base from which we can estimate actual officer-accessions in the absence of a draft.

Projections in the absence of a draft were derived by reducing the projections of potential officer-accessions on the basis of the estimated draft effect.[5] In reducing the projections-with-draft, we assumed that officer-accessions from the Service Academies, Regular ROTC, Warrant Officer, and "Other" accession programs were not affected by the elimination of the draft.[6] The projected no-draft accessions were 27 percent short of required accessions (Table 16). Required officer-accessions were estimated to be the annual total officer losses expected during these years. These expected losses were generated from estimates of loss rates in an all-volunteer force

5. See supra, Table 9, Column 1.

6. While these programs also produce some draft-motivated officers, we assumed that the excess supplies of applicatnts to these programs will more than offset the decline in applicants due to the abolition of the draft.

Table 16

PROJECTED ACTUAL AND REQUIRED OFFICER-ACCESSIONS IN THE ABSENCE OF A DRAFT, ANNUAL AVERAGES FOR FISCAL YEARS 1971-1975[a]

Service	Actual (in thousands)	Required (in thousands)	Act./Req.
Army	9.6	13.0	.74
Other Services	16.7	23.0	.73
TOTAL	26.3	36.0	.73

a. Sources and details are contained in Appendix J.

which were derived from responses to a question about retention plans of officers, cross-classified by whether they were draft-motivated or voluntary.[7] Required accessions were reduced because of the lower loss rates of volunteer officers. However, a full reduction was not assumed to occur immediately because of the remaining draft-motivated officers who entered service before the draft was eliminated. Obviously, if we had made such a full reduction in losses (or requirements), the estimated accession deficiency would have been smaller, and the costs of the all-volunteer force that might be obtained over a period of years would have been lower than those estimated.[8]

If the draft were eliminated and relative military pay were maintained at the 1964 level, projected accessions would have to be raised by 37 percent to maintain a 2.65 million man total force in 1971-1973. The pay increase required to overcome projected officer recruitment deficits in 1970-1971 were derived from the elasticity estimated from the logarithmic Eq. 2. This assumes that the elasticity derived from the cross-section data is also applicable to the time-series data. The shortage of 9.7 thousand officers is about 60 percent of what we considered pay-sensitive

7. DoD Survey of Active Military Personnel as of 31 October 1964.

8. One estimate of the full effects of reduced requirements of new officers made after this study, reduces accessions required for a theoretical stable force to 28.4 thousand, resulting in a shortage of only 1.1 thousand officers. W. Y. Oi, "The Economic Cost of the Draft," American Economic Review, LVII, (May 1967) No. 2, pp. 39-62.

officer-accessions[9] and could be eliminated by raising first-term military pay by 30 percent ($1443 annually for first-term officers).[10]

The total cost of this pay increase depends upon how it is allocated. In analyzing alternative methods of allocation, we ignore the possible affects of changes in the structure of military pay on retention rates. One method of allocation is to offer the increase as an enlistment bonus to be paid at the rate of $120 per month over the first two years of obligated service. This would not interfere with the current pay structure and would be flexible (i.e., the bonus can be varied according to the needs of the Service). An alternative method is to raise the base pay of officers with less than two years of service by $120 per month. This requires an increase in the base pay of officers with more than two years of service to maintain a positive relation between base pay, pay grade, and years of service. The costs of these pay increases are summarized in Table 17. It would cost from $68 to $363 million to raise pay enough to produce an all-volunteer force. Increasing base pay would cost from three to five times the cost of paying recruiting bonuses. The costs of the base pay increases could be reduced by allocating them without attempting to maintain the structure of the current base pay profile.[11]

Table 17

ESTIMATES OF THE COSTS OF RAISING PAY BY THE AMOUNT REQUIRED TO SHIFT TO AN ALL-VOLUNTEER OFFICER FORCE[a]

Method of Pay	Cost (in millions of dollars)
Recruitment Bonus	68.0
Increase Base Pay[a]	
Method I	213.8
Method II	363.8

a. Details are discussed in Appendix K.

9. It should be noted that this estimate assumes that the supply of officers from the Academy, ROTC-Regular, Warrant Officer, Direct Appointment and "All Other" programs would not be influenced by pay changes because they are already constrained by demand. We also excluded 844 Army officers commissioned from the OCS program who were assumed to be prior-service enlisted men.

10. This assumes a one percent increase in civilian pay has the same effect on officer supply as a one percent decrease in military pay and that potential officers consider only first-term pay as we have measured it in deciding whether to enter military service.

11. Details of the cost estimating procedure are contained in Appendix K.

This cost does not account for the increases in retirement costs that will result from having to pay retirement on a larger base pay to a larger number of officers. Offsetting this, it does not account for the saving which will result from the lower turnover of an all-volunteer force. The first two factors do not affect our estimates of the costs of shifting to an all-volunteer force by means of a recruiting bonus.

These estimates represent the increased budgetary costs of the Department of Defense. They are based on a large number of assumptions. In particular, we assumed that the cross-section estimates of the responsiveness of the supply of officer-accessions were good approximations of the time-series estimates. Our cost estimates are biased if this assumption is not valid. For example, if the estimated responsiveness from time-series experience was lower, the cost estimates would be higher. Unfortunately, available time-series data are not adequate for estimating a response coefficient for military pay. In addition, we assumed that the supply of officer-accessions was influenced only by first-term pay and that first-term officer retention would be influenced by first-term pay only to the extent that it changes the distribution of first-term accessions between voluntary and draft-motivated accessions. Altering the pay of first-term officers relative to career officers may have further effects on retention behavior. No attempt has been made to estimate the overall costs and benefits to the entire economy of shifting to an all-volunteer force.[12] Under most conditions a shift to an all-volunteer force should produce net benefits.

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12. These costs and benefits have been discussed at great length in a number of places. See, for example, S. H. Altman and A. E. Fechter, "The Supply of Military Personnel in the Absence of a Draft," American Economic Review, LVII (May 1967) No. 2, pp. 19-31, esp. p. 31; W. Y. Oi, op. cit., loc. cit.; W. L. Hansen and B. A. Weisbrod, "Economics of the Military Draft," Quarterly Journal of Economics, LXXXI (August 1967) No. 3, pp. 395-421; H. Gilman, "Military Manpower Utilization," in S. Enke, ed., Defense Management, (Englewood Cliffs, New Jersey: Prentice-Hall, January 1967), pp. 246-266.

Appendix A

COMMISSIONED OFFICER ACCESSIONS BY SOURCE
1957, 1960-1965, AND PROJECTIONS FOR 1966
AND 1967

Table A1

COMMISSIONED OFFICER-ACCESSIONS BY SOURCE

	Actual							Programmed	
	FY 1957	FY 1960	FY 1961	FY 1962	FY 1963	FY 1964	FY 1965	FY 1966	FY 1967
ARMY									
Academies	406	503	487	537	465	494	524	565	565
ROTC	7,930	6,252	6,901	11,992	10,578	10,837	9,886	11,248	10,400
OCS	658	729	565	608	781	1,688	2,277	6,527	5,537
AD for Res	1,548	525	180	1,343	906	1,042	595	1,611	1,868
Dir Apt MC/DC/VC	1,950	1,418	1,406	2,339	1,778	2,473	1,664	3,529	2,130
Other[a]	1,101	486	524	781	797	621	600	1,494	1,074
All Others[b]	203	364	521	555	663	602	792	1,105	1,576
TOTAL	13,796	10,277	10,584	18,155	15,968	17,757	17,338	26,079	23,150
NAVY									
Academies	568	648	664	625	722	837	714	826	831
ROTC-Regular	1,064	1,012	894	793	974	810	900	891	785
-Contract	966	949	815	644	775	800	676	687	352
OCS/AOC	4,802	2,852	2,577	4,541	4,687	4,093	3,877	2,950	2,931
ROC	214	188	147	129	132	265	283	335	378
NAVCAD	1,546	522	415	355	361	783	361	361	365
AD fr Res	--	110	60	139	106	64	515	583	405
Dir Apt MC/DC/	1,524	1,038	1,025	1,285	1,093	1,067	966	1,849	1,954
Other[c]	439	217	228	360	186	340	463	552	555
All Others[d]	2,027	1,824	787	1,103	1,079	859	2,215	1,286	2,174
TOTAL	13,150	9,360	7,612	9,974	10,115	9,518	10,970	10,320	10,655
MARINE CORPS									
Academies	62	70	69	70	82	78	78	93	96
ROTC-Regular	188	195	169	166	166	126	159	220	190
-Contract	160	108	157	81	37	59	103	60	50
OCC	640	441	593	1,024	686	332	439	830	1,920
Plat Ldrs Cl	548	585	567	591	547	733	854	614	748
AVCAD	304	183	137	113	226	236	184	170	170
AD fr Res	192	108	146	212	82	64	59	120	120
Dir Apt[e]	34	66	38	44	57	26	43	300	600
All Others[f]	53	40	45	69	109	85	55	81	54
Temporary Officers[g]	--	--	--	--	--	--	--	1,161	1,450
TOTAL	2,181	1,796	1,921	2,370	1,992	1,739	1,974	3,646	5,398
AIR FORCE									
Academies	341	325	316	430	587	564	579	490	557
ROTC	6,306	3,978	3,096	3,502	3,590	3,695	3,836	4,600	4,440
OCS (Enl)	447	422	394	471	257	--	--	--	--
OTS/AECP (Coll)[h]	--	322	616	2,255	5,269	4,721	3,656	2,585	4,030
AVCAD	1,583	1,608	2,194	534	383	290	159	--	--
Dir Apt-MC/DC	3,445	2,149	2,272	2,938	2,183	2,562	2,548	3,010	2,839
All Others[i]	1,039	529	320	781	644	423	262	351	275
TOTAL	13,161	9,333	9,208	10,911	12,913	12,255	11,040	11,036	12,141
GRAND TOTAL	42,288	30,766	29,325	41,410	40,988	41,269	40,322	51,081	51,344

Source: ASD (Manpower), 26 January 1966.
See pages 56 and 57 for explanatory notes.

NOTES ON OFFICER-ACCESSION SOURCES

General — Officer-procurement totals include all commissioned officer-accessions from civilian life or enlisted status, excluding Warrant Officers and changes in status (e.g., reserve to regular).

Army

a. "Other Direct Appointments" include direct appointment and voluntary active duty programs for professional corps officers (Chaplain, Judge Advocate General, Medical Service Corps, and Women's Army Corps). It also includes a small number of Regular Army appointments from civilian life, largely former regular officers returnning to duty.

b. "All Others" include Nurses and Medical Specialists and a "Miscellaneous" group which includes inter-service transfers, recall of retired officers, and a few reserve officers serving temporary tours of active duty in specialized assignments.

Navy

c. "Other Direct Appointments" include, for the most part, appointments from civiliar professions (i.e., Chaplain, Judge Advocate General, Civil Engineer, Nurse Corps, Supply Corps and WAVES).

d. "All Others" include appointments from the enlisted ranks in Limited Duty Officer grades, the Navy Enlisted Scientific and Education Program (NESEP), and Medical Service Corps from OCS and enlisted ranks. It also includes graduates of the Merchant Marine OCS program, inter-service transfers, a few appointments from other Services, and a small number recalled from the temporary disability retirement list.

Marine Corps

e. "Direct Appointments" include a few skills appointed directly from college, meritorious NCO's who attend OCS, a few appointments from other Services and, in 1963, 16 appointed in a temporary specialist program.

f. "All Others" include the Women Marine's OCS program, inter-service transfers, the NESEP program, and a small number recalled from the retired list.

g. Temporary officer program for appointment of Warrant Officers and Non-commissioned Officer to Second Lieutenant in accordance with 10 USC 5.596.

Air Force

h. The Airman Education and Commissioning Program, leading to a baccalaureate degree for selected enlisted men, is included in the OTS category since the ACEP's attend OTS after graduation from college.

i. "All Others" include direct appointments, similar to the Army program, in the Chaplains, Judge Advocate General, and Women's Air Force programs. Unlike the Army, however, the Air Force includes all medical personnel (such as medical service corps, nurses, and medical specialists) in the "Direct Appointment, Medical" category. This category also includes interservice transfers, recalls of retired officers and volunteers for active duty.

Appendix B

NAVY REGULAR ROTC PROGRAM

TABLES

Table B1

NAVY REGULAR ROTC APPLICANTS AND AVAILABLE PLACES AND MALE HIGH SCHOOL GRADUATES, 1954-1964[a]

Year of Enrollment	Applicants	Places	Male High School Graduates (thousands)[b]	Applicants Per 100 High School Graduates
1954	22,341	2,000	612	3.6
1955	22,254	2,000	648	3.9
1956	27,826	2,000	682	4.1
1957	24,435	2,200	696	3.5
1958	23,057	2,000	729	3.2
1959	22,879	1,600	790	2.9
1960	19,500	1,700	898	2.2
1961	20,305	1,700	958	2.1
1962	18,272	2,300	941	1.9
1963	20,747	1,700	959[b]	2.2
1964	23,716	1,700	1129[c]	2.1

a. Number of applicants: Bureau of Naval Personnel; unpublished tabulations. Number of male high school graduates: U.S. Office of Education, "Projections of Educational Statistics to 1974-75" (1965 edition), Circular 790, 20.
b. Odd years are linear interpolations.
c. Preliminary estimate.

Table B2

PROPORTION OF NAVY REGULAR ROTC APPLICANTS TESTED AND FOUND ELIGIBLE, AND RETENTION RATE

Application	Percent of Applicants Tested	Percent Tested Who Were Eligible[b]	Percent Appointed Who Graduate
1954	87.4	31.5	77.7
1955	88.0	40.6	62.4
1956	88.5	36.0	61.2
1957	88.5	32.7	66.5
1958	87.4	37.3	61.1
1959	85.4	39.0	58.5
1960	84.1	33.5	61.9
1961	85.5	39.1	59.6
1962	86.1	38.0	
1963	86.8	43.6	
1964	85.5	42.6	
1965	85.3	37.5	

a. Number tested divided by number of applicants.
b. Number certified divided by number of applicants.
c. Number graduating, year t-4; divided by number appointed, year t.

Appendix C

SCHOOLS WHICH HAVE CHANGED THE STATUS OF THEIR ROTC PROGRAMS

Table C1

SCHOOLS WHICH HAVE CHANGED ROTC STATUS, WITH BRANCHES OF ROTC OFFERED AND MALE FRESHMAN ENROLLMENT

Year of Change	Nature of Change	Institution	Programs Offered	Freshman Mal Enrollment Fall, 1963
1954-1955	E to R[a]	Catholic University	AF[b]	320
	E to R	Florida State University	A-AF	800
	R to E	Wake Forest College	A	452
1956-1957	R to E	Grinnell College	AF	161
1957-1958	R to E	Providence College	A	597
	R to E	Utah State University	A-AF	1,425
1958-1959	R to E	Occidental College	AF	203
	R to E	M.I.T.	A-AF-N	871
	R to E	A & M College of Texas	A-AF	1,596
1959-1960	R to E	Colby College	AF	218
	E to R	University of Mississippi	A-AF-N	517
	E to R	University of Southern Mississippi	A	684
	E to R	South Dakota School of Mines and Technology	A	299
	R to E	Lawrence College of Wisconsin	AF	202
1960-1961	R to E	Rutgers University	A-AF	2,981
	R to E	Cornell University	A-AF-N	1,727
	R to E	St. Joseph College (Pa.)	AF	741
	R to E	University of Puerto Rico	A-AF	1,945
	E to R	A & M College of Texas	A-AF	1,596
	R to E	University of Wisconsin	A-AF-N	4,634
1961-1962	R to E	Bradley University	AF	558
	R to E	Drake University	AF	875
	E to R	Eastern Kentucky State College	A	1,093
	R to E	St. Olaf College	AF	300
	R to E	New York University	A-AF	886
	R to E	Ohio State University	A-AF-N	4,607
	R to E	Bucknell University	A	450
	R to E	Lehigh University	A-AF	776
	R to E	Willamette University	AF	197
	R to E	University of Puget Sound	AF	248
1962-1963	R to E	University of California	A-AF-N	4,413
	R to E	Colorado State University	A-AF	1,291
	R to E	University of Connecticut	A-AF	1,191
	R to E	Catholic University	AF	320
	R to E	State University of Iowa	A-AF	1,016
	R to E	Iowa State University of Science and Technology	A-AF-N	1,780
	R to E	University of Maryland	AF	1,894
	R to E	Michigan State University	A-AF	3,205
	R to E	University of Michigan	A-AF-N	1,836
	R to E	College of St. Thomas	AF	522
	R to E	Oregon State University	A-AF-N	1,522
	R to E	University of Oregon	A-AF	1,132
	R to E	University of Washington	A-AF-N	1,849
	R to E	Washington State University	A-AF	990
1963-1964	R to E	University of Idaho	A-AF-N	798
	R to E	University of Kentucky	A-AF	1,621
	R to E	University of Maine	A	777
	R to E	University of Massachusetts	A-AF	1,286
1964-1965	R to E	University of Illinois	A-AF-N	4,696
	R to E	Pennsylvania State University	A-AF-N	3,001

a. E refers to ROTC as an elective; R, required.
b. AF = Air Force ROTC, A = Army, N = Navy.

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Appendix D

ENROLLMENT IN FIRST-YEAR ROTC CLASSES (ROTC-I)

TABLES

Table D1

ROTC-I AND MALE FRESHMEN ENROLLMENTS IN INSTITUTIONS OFFERING ROTC 1955-1963[a]

School Year	All Institutions			Compulsory Institutions			Voluntary Institutions		
	Male Freshmen	ROTC-I	ROTC-I Per 100 Male Freshmen	Male Freshmen	ROTC-I	ROTC-I Per 100 Male Freshmen	Male Freshmen	ROTC-I	ROTC-I Per 100 Male Freshmen
1955-56	227,171	121,692	53.6	128,707	91,559	71.1	98,454	30,133	30.6
1956-57	236,602	128,613	54.4	133,003	97,639	73.4	103,599	30,974	29.9
1957-58	230,414	125,245	54.4	128,848	97,940	76.0	101,566	27,305	26.9
1958-59	240,543	133,738	55.6	131,558	106,126	80.7	108,985	27,612	25.3
1959-60	250,660	142,353	56.8	141,077	114,340	81.0	109,583	28,013	25.6
1960-61	269,140	152,556	56.7	140,612	120,418	85.6	128,528	32,138	25.0
1961-62	284,642	161,354	56.7	143,375	120,283	83.9	141,267	41,071	29.1
1962-63	282,355	143,321	50.8	120,643	98,330	81.5	161,712	44,991	27.8
1963-64	276,811	134,893	48.7	110,527	97,533	88.2	166,284	37,360	22.5

a. Constructed from data supplied by the various service ROTC program components.
b. Compulsory institutions are schools which require all eligible freshmen males to enroll in an ROTC-I course. Voluntary institutions offer ROTC as an elective only.

Table D2

ARMY ROTC-I AND MALE FRESHMEN ENROLLMENTS IN INSTITUTIONS OFFERING ARMY ROTC, 1954-1963

School Year	All Institutions			Compulsory Institutions			Voluntary Institutions		
	Male Freshmen	ROTC-I	ROTC-I Per 100 Male Freshmen	Male Freshmen	ROTC-I	ROTC-I Per 100 Male Freshmen	Male Freshmen	ROTC-I	ROTC-I Per 100 Male Freshmen
1954-55	177,232	60,609	34.2	110,583	46,119	41.7	66,649	14,490	21.7
1955-56	185,871	65,794	35.4	115,400	51,360	44.5	70,471	14,434	20.5
1956-57	193,623	69,774	36.0	119,257	54,697	45.9	74,366	15,077	20.3
1957-58	187,913	69,203	36.8	114,673	54,913	47.9	73,240	14,290	19.5
1958-59	196,435	74,433	37.9	117,972	60,261	51.1	78,463	14,172	18.1
1959-60	201,909	79,096	39.2	123,922	64,699	52.2	77,987	14,397	18.5
1960-61	221,198	86,133	38.9	125,790	68,417	54.4	95,408	17,716	18.6
1961-62	233,761	95,534	40.9	131,447	74,447	56.6	102,314	21,087	20.6
1962-63	227,257	83,792	36.9	107,180	63,535	59.3	120,077	20,257	16.9
1963-64	225,781	78,217	34.6	100,768	60,341	59.9	125,013	17,876	14.3

Table D3

NAVY CONTRACT ROTC-I AND MALE FRESHMEN ENROLLMENTS IN INSTITUTIONS OFFERING NAVY ROTC, 1954-1963

School Year	All Institutions			Compulsory Institutions			Voluntary Institutions		
	Male Freshmen	ROTC-I	ROTC-I Per 100 Male Freshmen	Male Freshmen	ROTC-I	ROTC-I Per 100 Male Freshmen	Male Freshmen	ROTC-I	ROTC-I Per 100 Male Freshmen
1954-55	66,489	3,219	4.8	33,371	1,162	3.5	33,118	2,057	6.2
1955-56	68,332	3,270	4.8	35,652	1,273	3.6	32,680	1,997	6.1
1956-57	70,952	3,583	5.1	35,431	1,459	4.1	35,521	2,124	6.0
1957-58	68,580	2,387	3.5	34,254	874	2.6	34,326	1,513	4.4
1958-59	70,089	2,786	4.0	33,256	1,111	3.3	36,833	1,675	4.6
1959-60	72,429	2,570	3.6	35,347	1,027	2.9	37,082	1,543	4.2
1960-61	80,477	2,678	3.3	35,364	1,108	3.1	45,113	1,570	3.5
1961-62	89,338	2,962	3.3	35,448	1,016	2.9	53,890	1,946	3.6
1962-63	84,091	1,936	2.3	21,382	5539	2.5	62,709	1,397	2.2
1963-64	85,553	1,710	2.0	19,571	438	2.2	65,979	1,272	1.9

Table D4

AIR FORCE ROTC-I AND MALE FRESHMEN ENROLLMENTS IN INSTITUTIONS OFFERING AIR FORCE ROTC, 1954-1963

School Year	All Institutions			Compulsory Institutions			Voluntary Institutions		
	Male Freshmen	ROTC-I	ROTC-I Per 100 Male Freshmen	Male Freshmen	ROTC-I	ROTC-I Per 100 Male Freshmen	Male Freshmen	ROTC-I	ROTC-I Per 100 Male Freshmen
1954-55									
1955-56	165,578	52,628	31.8	98,458	38,926	39.5	67,120	13,702	20.4
1956-57	170,844	55,256	32.3	99,952	41,483	41.5	70,892	13,773	19.4
1957-58	166,237	53,655	32.3	97,743	42,153	43.1	68,494	11,502	16.8
1958-59	171,910	56,579	32.9	97,218	44,754	46.0	74,692	11,765	15.8
1959-60	180,985	60,687	33.5	104,834	48,614	46.4	76,151	12,073	15.9
1960-61	195,036	63,745	32.7	102,208	50,893	49.8	92,828	12,852	13.8
1961-62	203,402	62,858	30.9	100,818	45,327	45.0	102,584	17,531	17.1
1962-63	201,652	57,593	28.6	76,593	34,256	44.7	125,059	23,337	18.7
1963-64	199,908	54,966	27.5	69,627	36,754	52.8	130,281	18,212	14.0

Table D5

ROTC-I ENROLLMENT RATES IN INSTITUTIONS WHICH HAVE NOT CHANGED ROTC ENROLLMENT POLICIES,[a] 1954-1963

School Year	Army		Navy		Air Force	
	Compulsory	Voluntary	Conpulsory	Voluntary	Compulsory	Voluntary
1954-55	49.0	17.8	4.5	6.2		
1955-56	53.0	17.7	5.0	6.1	40.7	22.3
1956-57	51.4	18.1	4.6	6.0	41.1	22.2
1957-58	48.9	17.1	3.2	4.4	41.4	19.4
1958-59	54.0	18.3	4.2	4.6	44.0	19.8
1959-60	55.5	18.6	4.2	4.2	45.1	19.8
1960-61	58.5	18.0	4.2	3.8	48.2	18.4
1961-62	61.3	17.9	4.1	3.9	45.2	18.8
1962-63	60.0	15.5	3.0	2.9	46.2	18.3
1963-64	60.5	13.5	2.4	2.2	48.6	16.5

a. Enrollment rates are defined as enrollments in ROTC-I per 100 male freshmen.

Appendix E

ROTC RETENTION RATES

Appendix E

ROTC RETENTION RATES

We were unable to obtain information that would indicate the number of ROTC officers commissioned with regard to each school's ROTC enrollment policies.[1] We therefore limited our analysis to overall attrition rates. The decreasing number of schools requiring ROTC enrollment will therefore result in an upward bias in retention rate movements.

A further problem in analyzing ROTC retention rates results from their uses as a mechanism to obtain the limited number of commissions established by quotas. This results in a negative relationship between retention rates and enrollments in ROTC-I.[2] Enrollments in ROTC-I have been increasing in the Army and the Air Force; therefore one should expect decreasing retention rates in these programs. This trend should not be taken as a reflection of supply phenomenon, but rather as a reflection of demand limitation.

Table E1, "ROTC Retention Rates" is found on page 76.

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1. Retention rates were available for the Army ROTC program in 126 compulsory and voluntary institutions for 4 years:

Year of Enrollment in ROTC-I	Army ROTC Retention Rates	
	Voluntary	Compulsory
1954	.239	.184
1955	.275	.168
1956	.226	.143
1957	.247	.132

2. The retention rate, R, may be defined as $\frac{C}{E}$, where C represents the number of commissions produced from an initial input, E. If C is fixed at C^{o}, then an increase in E will result in a decrease in R.

Table E1

ROTC RETENTION RATES
1954-1960

Year of Initial Enrollment, t	Army			Navy (Contract)			Air Force		
	Enrollment ROTC-I	Number Commissioned, Year t+4	Retention Rate	Enrollment ROTC-I	Number Commissioned, Year t+4	Retention Rate	Enrollment ROTC-I	Number Commissioned, Year t+4	Retention Rate
1954	60,609	12,803	.211	3,219	859	.267	na	na	na
1955	65,794	12,333	.187	3,270	1,152	.252	52,628	4,301	.082
1956	69,774	12,121	.174	3,583	1,124	.314	55,256	3,978	.072
1957	69,203	11,577	.167	2,387	926	.388	53,655	3,096	.058
1958	74,433	11,243	.151	2,789	742	.266	56,519	3,502	.062
1959	79,096	11,440	.145	2,570	603	.235	60,687	3,590	.059
1960	86,133	11,798	.137	2,678	859	.321	63,745	3,695	.058

Appendix F

DISTRIBUTION OF JUNIOR OFFICERS BY THEIR REASONS FOR ENTERING SERVICE

TABLES

Table F1

DISTRIBUTION OF JUNIOR OFFICERS BY REASON FOR ENTERING SERVICE

(Retirement Survey of Active Duty Officers)[a]

Branch of Service and Source of Commission	Number of Respondents[b]	Percent Classified				Number Not Classified[g]
		Draft-Motivated[c]	Training and Experience[d]	Other Economic Reasons[e]	Other Non-Economic Reasons[f]	
Army						
Academy	54	5.6	9.3	3.7	81.5	12
ROTC	1,237	69.0	9.2	4.3	25.5	87
OCS	113	37.2	3.5	9.7	49.6	10
Direct Appointments	250	68.4	8.4	13.2	10.0	30
Other[h]	349	38.4	4.3	20.6	33.5	32
Navy						
Academy	76	10.5	2.6	7.9	78.9	18
ROTC[i]	194	47.4	5.2	4.1	43.3	44
OCS	621	61.0	9.5	3.1	25.8	42
Cadets	95	14.7	6.3	5.3	73.7	2
Direct Appointments	94	55.3	6.4	7.4	28.7	11
Other[j]	248	29.0	6.9	13.7	50.4	21
Marine Corps						
Academy	14	7.1	7.1	7.1	78.6	3
ROTC[k]	101	47.5	9.9	1.0	41.6	6
OCC	104	52.9	9.6	1.0	34.6	11
Cadets	42	16.7	4.8	2.4	76.2	1
Other[h]	84	28.6	1.2	7.1	63.1	10
Air Force						
Academy	19	5.3	5.3	10.5	78.9	7
ROTC	357	42.3	8.7	8.4	40.6	23
OTS	109	56.0	11.0	9.2	23.9	15
Cadets	52	15.4	0.0	13.5	71.2	0
Direct Appointments	197	50.3	7.6	19.3	17.8	16
Other[j]	306	49.7	12.1	9.2	29.1	28

Source: Special tabulation made for the Military Manpower Policies Study from Retirement Survey of Active Duty Officer Personnel, Department of Defense RCS OSD-(OT)-1168, conducted April 30, 1964, question 15.

See following page for footnotes.

Footnotes for Table F1

a. Respondents were asked to choose from the following their most important original reason for entering service:

1. Can't remember my original reason.
2. Wanted to follow the military profession.
3. Travel, adventure, and new experiences.
4. Wanted to join the service of my choice.
5. Military service opportunities looked better to me than those in civilian life.
6. Military pay and fringe benefits (other than retirement).
7. Wanted to acquire training and experience to use later in civilian life.
8. Patriotic feelings and national defense.
9. Interested in outdoor, active life.
10. Interested in aviation and flying.
11. Interested in sea and ships.
12. Security of military life (steady job).
13. Military retirement benefits.
14. Called to active duty from reserve status.
15. Was drafted.
16. Opportunities for military advancement.
17. To complete obligated service.
18. Because of needs of family and other dependents.
19. None of the above.

b. Included only officers with 2 years or less active commissioned duty.
c. Includes respondents who chose reasons 4, 14, 15, or 17 listed in Note a.
d. Includes respondents who chose reason 7 listed in Note a.
e. Includes respondents who chose reasons 5, 6, 12, 13, 16, or 18 listed in Note a.
f. Includes respondents who chose reasons 2, 3, 8, 9, 10 or 11 listed in Note a.
g. Includes respondents who chose reasons 1 or 19 listed in Note a.
h. Includes direct appointments from the ranks of enlisted men or warrant officers, appointment from reserve components, and other sources of commissions.
i. Includes officers commissioned from both the contract and the regular ROTC programs.
j. Includes direct appointments from the ranks of enlisted men, appointments from the reserves, and other sources of commissions.
k. Includes officers commissioned from ROTC and Platoon Leaders Corps (PLC).

Table F2

DISTRIBUTION OF JUNIOR OFFICERS BY THEIR CAREER PLAN SOURCE OF COMMISSION, AND BRANCH OF SERVICE (Retirement Survey of Active Duty Officers)[a]

Branch of Service and Source of Commission[d]	Number of Respondents[b]	Percent Classified Who Planned to Serve		Number Not Classified[c]
		Only One Tour	More than One Tour	
Army				
Academy	42	4.8	95.2	25
ROTC	709	70.4	29.6	612
OCS	89	12.3	87.7	34
Direct Appointment	170	78.8	21.2	109
Other	324	24.4	75.6	53
Navy				
Academy	62	9.7	90.3	31
ROTC	112	66.1	33.9	124
OCS	303	74.6	25.4	360
Cadets	42	28.5	71.5	53
Direct Appointment	55	72.7	27.3	47
Other	229	11.4	88.6	40
Marine Corps				
Academy	11	0.0	100.0	6
ROTC	48	62.5	37.5	58
OCC	59	62.7	37.3	55
Cadets	23	8.6	91.4	20
Other	91	2.2	97.8	3
Air Force				
Academy	14	7.1	92.9	12
ROTC	136	39.8	60.2	244
OTS	53	20.8	79.2	71
Cadets	30	13.3	86.7	22
Direct Appointment	90	73.2	26.8	113
Other	126	43.7	56.3	207

Source: Ibid, question 16.

See following page for footnotes.

Footnotes for Table F2:

a. The choice of career plans included:
   1. Intended to make the military service my career.
   2. Intended to stay in the military service a while longer than my obligated tour.
   3. Intended to serve only my obligated tour.
   4. Hadn't thought about it.
   5. Was undecided and waited to see how well I'd like the military service.

b. Includes only those respondents with two years or less of active duty.

c. Includes respondents who chose answer 4 or 5 listed in Note a.

d. See notes to Table F1 for a detailed description of the sources of commission of the respondents in this table.

Table F3

DISTRIBUTION OF JUNIOR OFFICERS BY THEIR REASONS FOR ENTERING MILITARY SERVICE

(Survey of Military Service Plans)[a]

Branch of Service and Source of Commission	Number of Respondents Classified[b]	Percent				Number Not Classified[g]
		Draft-Motivated[c]	Training and Experience[d]	Other Economic Reasons[e]	Other Non-Economic Reasons[f]	
Army						
Academy	136	5.9	25.6	17.0	51.5	30
ROTC	1,377	66.5	1.9	4.8	27.0	79
OCS	42	57.2	2.4	4.8	35.8	0
Direct Appointment	328	73.7	12.5	4.2	9.4	20
Other[h]	286	24.9	12.9	13.8	48.3	29
Navy						
Academy	196	7.3	27.6	18.3	46.7	36
ROTC[i]	214	43.5	22.0	2.3	32.1	35
OCS[j]	766	62.5	5.6	1.5	30.6	33
Direct Appointment	147	62.6	11.6	4.7	21.1	15
Other	382	15.8	12.4	22.7	49.2	18
Marine Corps						
Academy	14	0.0	28.5	0.0	71.5	3
ROTC[k]	94	43.7	4.2	7.3	44.5	14
OCC[j]	202	47.1	8.4	1.0	43.6	13
Direct Appointment	--	--	--	--	--	--
Other	117	17.0	3.3	11.1	68.4	9
Air Force						
Academy	147	13.6	28.6	8.9	49.0	17
ROTC	885	39.4	12.3	9.6	38.8	70
OTS[j]	1,047	53.4	8.3	6.4	31.9	37
Direct Appoint ment	335	60.9	14.4	6.6	18.3	19
Other[h]	475	35.1	12.3	8.2	45.9	23

Source: Special tabulations for the Military Manpower Policies Study from Survey of Military Service Plans, Experience, and Attitudes, Commissioned and Warrant Officers, Department of Defense, RCS DD-M(OT) 6437, conducted October 13, 1964.

See following page for footnotes.

Footnotes for Table F3:

a. These estimates are based on the distribution of respondents to the question: "As best you can remember, what was the single most important reason for your first entry into active military service?" The reasons listed were:

1. Career opportunities looked better than in civilian life.
2. For the travel, excitement, and new experiences.
3. To become more mature and self-reliant.
4. To learn a trade or skill that would be valuable in civilian life.
5. Such things as aircraft, guns, ships, rockets, interested me.
6. Wanted my choice of service rather than be drafted.
7. To serve my country.
8. To fulfill my military obligation at a time of my choice.
9. Opportunity for advanced education, professional training.
10. Wanted to leave some personal problems behind me.
11. Had a chance at officer's commission instead of being drafted.
12. I was drafted or called, and had no choice.
13. None of the above.

b. Includes only those officers who are on their initial tour of obligated duty.
c. Includes respondents who chose reason 6, 8, 11, or 12 listed in Note a.
d. Includes respondents who chose reason 4 or 9 listed in Note a.
e. Includes respondents who chose reason 1 listed in Note a.
f. Includes respondents who chose reason 2, 3, 5, 7, or 10, listed in Note a.
g. Includes respondents who chose reason 13 listed in Note a.
h. Includes respondents who enlisted for active service as a regular or a draftee, volunteered for induction, enlisted in the Reserve or National Guard for two years of active duty, or were involuntarily called to active duty from the Reserve National Guard by presidential order or act of Congress.
i. Includes respondents commissioned from both regular and contract ROTC programs.
j. Includes both officer candidates and cadets.
k. Includes ROTC and Platoon Leaders Corps graduates.

Table F4

DISTRIBUTION OF FIRST-TERM OFFICERS BY WHETHER THEY WOULD HAVE ENTERED SERVICE IN THE ABSENCE OF A DRAFT[a]

Branch of Service and Source of Commission[b]	Number of Respondents[c]	Percent Who Would Not Have Entered	Percent Who Would Have Entered	Number Not Classified[d]
Army				
Academy	159	9.4	90.6	8
ROTC	1,384			72
OCS	41	41.5	58.5	1
Direct Appointment	337	66.5	33.5	13
Other	305			8
Navy				
Academy	224	9.4	90.6	9
ROTC	238	44.1	55.9	16
OCS	777	58.7	41.3	24
Direct Appointment	154	49.4	50.6	9
Other	380	41.1	58.9	14
Marine Corps				
Academy	17	0.0	100.0	0
ROTC	105	28.6	71.4	4
OCC	207	38.6	61.4	7
Direct Appointment	--	--	--	-
Other	118	10.2	89.8	8
Air Force				
Academy	160	15.6	84.4	6
ROTC	905	32.4	67.6	40
OTS	1,009			67
Direct Appointment	325	53.8	46.2	18
Other	459	26.8	73.2	28

Source: Ibid.

a. These estimates are based on the distribution of respondents to the question: "If there had been no draft and you had not had any military obligation at the time you first entered active military service, do you think you would have entered the service?"

b. See notes to Table F3 for a detailed description of the sources of commission of the respondents in this table.

c. Includes only those officers who are on their first tour of obligated duty.

d. Includes those responderts who had no idea what they would have done.

Appendix G

ESTIMATES OF VARIABLES USED IN REGRESSION ANALYSIS

Appendix G

ESTIMATES OF VARIABLES USED IN REGRESSION ANALYSIS

In addition to median income, the independent variable that is our major concern, a number of additional independent variables were added to the regression equation (Eq. 1) to control for factors which, indeperdent of income, affect the enrollment rate. Estimates of these variables appear in Table G1. NSF disclosure rules prevent us from presenting the income data by school. The most important of these was the kind of programs available at a given institution. The Army and Air Force typically have large and unlimited programs; the Navy has a small and selective program. Thus, for a given median income, enrollment rates should be higher in institutions having either Army or Air Force programs than they are in institutions which have a Navy program. We included three dummy variables D-A, D-N, and D-AF to measure program mix. These variables had a value of one if the program was present, and a value of zero if the program was not offered. Other variables which have been alleged to be important in determining military supply are "region" and "urbaneness." It is asserted that Southerners and people who come from rural areas or small cities are more likely to enroll in ROTC, other things equal, than are individuals from other regions or cities. To determine whether region is a significant variable in determining enrollments a dummy variable, R, was placed in the regression equation which took on the value of one for institutions located in the South, and zero for institutions located outside of the South.[1] The urbaneness of the students was measured

1. It would have been more desirable to measure the proportion of the male freshman class who came from the South. Unfortunately, such statistics were not available. Since most institutions obtain their enrollments largely from surrounding states, the dummy variable is likely to serve as a reasonable proxy for regional background of the students.

Table G1

ESTIMATES OF VARIABLES USED IN REGRESSION ANALYSIS

School 1	Male Freshman Enrollment 2	Army ROTC-I Enrollment 3	Navy ROTC-I Enrollment 4	Air Force ROTC-I Enrollment 5	Enrollment Rate 6	Percent Who Have Taken No Further Course Work Beyond the Bachelor's Degree 7	Percent of Graduates Who Lived in Towns with under 10,000 Population 8	[illegible]-A 9	[illegible]-S 10	[illegible]-AF 11	R 12	Percent of Graduates Whose Fathers are Professional or Managerial Workers 13
Calif. State Polytechnic	1428	235			16.5	64.0	42.3	1	0	0	1	39.0
Fresno State College	0503			054	10.7	64.8	65.2	0	0	1	1	30.2
San Diego State College	0946			115	12.2	62.1	14.3	0	0	1	1	23.5
San Jose State College	1112	114		133	22.2	43.7	28.1	1	0	1	1	50.0
University of California	4704	458	031	168	14.0	46.4	23.8	1	1	1	1	64.3
Colorado State University	1291	134		330	35.9	62.0	39.2	1	0	1	1	32.1
University of Colorado	1286	076	036	118	17.9	51.6	26.6	1	1	1	1	63.8
Trinity College	0256			035	13.6	52.0	04.0	0	0	1	1	83.3
University of Connecticut	1191	242		224	39.1	57.4	14.0	1	0	1	1	35.2
Yale University	1038	042	013		05.3	30.5	18.0	1	1	0	1	89.2
Georgetown University	0792	149		129	35.2	35.7	07.1	1	0	1	0	88.8
Catholic University	0320			093	29.1	20.0	17.4	0	0	1	0	51.0
University of Miami (Fla.)	1009	119		224	31.5	68.6	04.3	1	0	1	0	82.4
University of Idaho	0798	097	034	069	25.0	58.5	61.0	1	1	1	1	48.8
Bradley University	0558			154	27.6	57.7	32.0	0	0	1	1	56.0
Northwestern University	2041		012		00.6	46.0	23.9	0	1	0	1	60.3
Ball State Teachers College	0981			385	39.3	13.6	31.8	0	0	1	1	45.0
DePauw University	0342			047	13.7	23.1	07.7	0	0	1	1	61.5
Evansville College	0479			095	19.8	95.2	90.5	0	0	1	1	10.0
University of Notre Dame	1489	234	076	171	32.3	37.0	20.0	1	1	1	1	74.0
Iowa State University of S&T	1780	195	033	178	22.9	57.7	72.7	1	1	1	1	25.7
University of Kansas	1151	060	023	151	20.3	46.6	51.7	1	1	1	1	43.7
University of Wichita	0898	214		271	54.2	45.7	20.0	1	0	1	1	37.2
University of Kentucky	1621	155		203	22.1	71.6	74.0	1	0	1	0	37.9
University of Louisville	0662		021	101	18.4	44.0	12.0	0	1	1	0	40.9
Tulane University of Louisiana	0639	100	022	131	39.6	40.0	06.9	1	1	1	0	58.6
Bowdoin College	0206	105			51.0	34.8	34.8	1	0	0	1	77.3
Colby College	0218			050	22.9	88.9	11.5	0	0	1	1	80.8
University of Maine	0777	155			19.9	63.3	56.9	1	0	0	1	50.0
Boston College	1198	322			26.9	48.4	01.7	1	0	0	1	75.5
Boston University	1509	118		133	16.6	41.2	05.9	1	0	1	1	56.2
College of Holy Cross	0493		018	070	17.8	15.6	00.0	0	1	1	1	78.8
Harvard University	1163	039	005	026	10.4	19.0	19.2	1	1	1	1	80.6
Northeastern University	5077	942			18.6	69.6	19.5	1	0	0	1	37.6
Tufts University	0510		015	072	17.1	23.4	14.9	0	1	1	1	71.7
University of Massachusetts	1286	254		285	41.9	65.7	26.9	1	0	1	1	38.7
Michigan State University	3205	404		296	21.8	74.2	20.4	1	0	1	1	73.3
University of Michigan	1836	120	027	122	14.7	34.1	20.6	1	1	1	1	71.9
Western Michigan University	0990	398			40.2	23.1	61.5	1	0	0	1	36.3
Saint Olaf College	0300			082	27.3	30.0	61.9	0	0	1	1	52.3
University of Minnesota	6790	157	019	302	07.0	61.5	43.2	1	1	1	1	33.8
Dartmouth College	0824	115	025	060	24.3	49.3	19.1	1	1	1	1	57.9
Princeton University	0822	051	014	041	12.9	28.8	17.8	1	1	1	1	83.6
Rutgers University	2981	360		297	21.4	63.3	23.1	1	0	1	1	54.9
Seton Hall University	0644	320			49.7	57.8	33.8	1	0	0	1	21.0
City College of New York	5852	216		026	04.1	42.5	00.0	1	0	1	1	37.5
Colgate University	0387		023		05.9	42.9	20.0	0	1	0	1	62.8
Cornell University	1727	153	046	085	16.4	42.5	29.5	1	1	1	1	70.9
Fordham University	0891	203		154	40.1	53.8	04.4	1	0	1	1	59.7
New York University	0886	070		109	20.2	45.7	02.6	1	0	1	1	64.7
Syracuse University	1394	213		250	33.2	63.5	28.6	1	0	1	1	58.3
University of Rochester	0593		007	045	08.8	25.0	25.8	0	1	1	1	58.0

Duke University	0710		015	066	11.4	58.9	40.0	0	1	1	0	[illegible]
East Carolina College	0910			265	29.1	66.7	82.1	0	0	1	0	[illegible]
Wake Forest College	0452	136			30.1	14.3	55.9	1	0	0	0	[illegible]
Denison University	0271			083	31.6	19.0	40.0	0	0	1	1	70.0
Kent State University	2568	174		204	14.7	75.4	40.4	1	0	1	1	28.2
Ohio University	2395	159		265	17.7	63.6	38.3	1	0	[illegible]	1	51.3
Ohio Wesleyan University	0338			099	29.3	[illegible]	16.7	0	0	1	1	26.6
University of Cincinnati	3108	221		239	14.8	62.6	08.0	1	0	1	1	58.6
University of Toledo	0623	235			37.7	54.9	24.5	1	0	0	1	52.0
Oregon State College	1522	158		129	18.9	60.6	38.0	1	0	1	1	38.5
University of Oregon	1132	165	038	110	23.7	46.3	29.6	1	1	1	1	55.4
Franklin and Marshall College	0542			057	10.5	52.2	47.8	0	0	1	1	60.8
Gettysburg College	0322	102		095	61.2	73.0	10.5	1	0	1	1	81.1
Lehigh University	0776	120		145	34.1	43.2	19.4	1	0	1	1	69.4
Temple University	1992	188			09.4	36.4	06.1	1	0	0	1	70.2
University of Pennsylvania	2161	101	022		05.7	61.2	05.8	1	1	0	1	64.7
University of Pittsburgh	1649	105		197	18.5	50.6	18.9	1	0	1	1	43.9
Villanova University	1619		082		05.1	47.0	13.7	0	1	0	1	80.0
Brown University	0654		018	057	11.5	41.3	14.6	0	1	1	1	86.4
Vanderbilt University	0583	101	040		24.2	65.9	11.4	1	1	0	0	85.7
Rice Institute	0346	060	014		21.4	00.0	04.8	1	1	0	0	85.7
Texas Technological College	1419	192		326	36.5	71.9	79.7	1	0	1	0	37.7
Brigham Young University	1660			172	10.4	47.5	75.0	0	0	1	1	28.2
University of Utah	1443	079	016	067	11.2	63.0	15.4	1	1	1	1	66.0
Utah State University of A&MS	1425			140	09.8	77.6	93.9	0	0	1	0	38.5
College of William & Mary	0610	125			20.5	65.8	42.1	1	0	0	0	67.5
University of Washington	1849	129	020	141	10.3	53.4	30.4	1	1	1	1	62.5
Washington State University	0990	226		128	35.8	71.0	43.9	1	0	1	1	57.3
Marquette University	0814	077	032		13.4	63.1	20.6	1	1	0	1	56.6
University of Wisconsin	4634	560	037	176	16.7	56.2	33.8	1	1	1	1	64.0

Sources and Notes:

2. U. S. Office of Education, "Opening Fall Enrollment in Higher Education, 1963," Circular No. 728.
3. 4. 5. Unpublished tabulations submitted to IDA by the Services.
6. Columns 3 ÷ 4 ÷ 5 ÷ 2.
7. Unpublished tabulations from the NSF, "Study of College Graduates (June 1958)," conducted by the Bureau of Social Science Research, Inc. in 1963-64.
8. Ibid.
9. = 0 if Army ROTC program is not offered at that institution.
   = 1 if Army ROTC program is offered at that institution.
10. = 0 if Navy ROTC program is not offered at that institution.
    = 1 if Navy ROTC program is offered at that institution.
11. = 0 if Air Force ROTC program is not offered at that institution.
    = 1 if Air Force ROTC program is offered at that institution.
12. = 0 if institution is located in the non-South.
    = 1 if institution is located in the South.
    South includes Delaware, Maryland, District of Columbia, Virginia, West Virginia, Kentucky, Tennessee, North Carolina, South Carolina, Georgia, Florida, Alabama, Arkansas, Mississippi, Louisiana, Texas and Oklahoma.
13. Unpublished tabulations from the NSF, "Study."

by the proportion of the 1958 male graduates who came from cities with populations of less than 10,000 or from rural areas.

Educational plans of the students also may affect enrollments. A student who is planning to continue on for full-time graduate studies is less likely to enroll in ROTC than a student who plans to terminate his full-time schooling with a bachelors degree. An attempt was made to standardize for educational plans by entering the proportion of the 1958 male graduates who have continued on for additional graduate schooling as an independent variable in the regression equation. Finally, it is possible that students from nonprofessional, non-managerial family backgrounds have a stronger tendency to enroll in the program than do students whose family backgrounds are professional or managerial. An independent variable for family background was also tried in the regression equation. It was measured by the proportion of the 1958 male college graduates whose fathers had either managerial or professional occupations.

Appendix H

COMPARISON OF MILITARY AND CIVILIAN EARNINGS

TABLES

Appendix H

COMPARISON OF MILITARY AND CIVILIAN EARNINGS

H.1 ESTIMATION OF EXPECTED MILITARY EARNINGS

It was necessary to limit our estimate of military earnings to the cash components (base pay, actual and expected, quarters and subsistence allowances, and the advantages of these allowances). Income in kind was excluded, even though it is a relevant component of military earnings, because we could not estimate them. Exclusion of this component means that our estimate of military earnings is somewhat understated. The most significant omission is probably training benefits. Officers commissioned from the Service Academies and from the Regular ROTC programs receive a substantial benefit in the form of the college educations they receive without direct cost to them.[1] They do, however, bear part of the opportunity cost of the earnings they forego while enrolled in school.[2] The substantial cost saving that results from obtaining this education through the Service Academies or the Regular ROTC program is actually a portion of the earnings of these officers.

Table H1 contains a summary of annual military earnings including allowances and tax advantage, by branch and years of service. We have presented the first five years in detail since our primary concern is with earnings of first-term officers. Five year averages are presented for the remainder of the pay profile.

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1. The direct cost saving to officers commissioned from these programs ranged between $800 and $3600 in 1964, depending on whether tuition was for public or private institutions. Office of Education, "Digest of Education Statistics," 1965 edition, Bulletin, 1965, No. 4, Table 79.

2. Academy students receive one-half the base pay of Second Lieutenants, or approximately $120 per month in 1964, and ROTC students were given $50 per month.

Table H1

AVERAGE TOTAL OFFICER PAY BY BRANCH AND YEARS OF ACTIVE SERVICE, 1964[a]

Years of Service	Branch of Service			
	Army	Navy	Marines	Air Force
1	$ 4,713	$ 4,857	$ 4,400	$ 4,895
2	5,027	5,166	4,791	5,173
3	6,975	6,634	6,215	7,071
4	7,973	8,321	8.165	9,109
5	8,467	9,413	8,339	9,549
6 - 10[b]	9,571	10,053	9,895	10,742
11 - 15[b]	10,874	11,337	10,600	12,070
16 - 20[b]	11,176	11,842	11,935	12,665

a. Includes base pay, hazardous duty pay, allowances for quarters, subsistence, and clothing, and net tax advantage. Source: One percent pay sample, Office of the Secretary of Defense.
b. Five year average.

Military officers were paid $4,400 to $12,665 in 1964, depending on branch and length of service. First-term officers were paid $4,400 to $4,895 at first and advanced rapidly to the range of $7,973 to $9,109 by their fourth year of service. Major increments from $1,000 to $2,000 occur in the third and fourth year of service as a result of promotions and large incremental steps in the base pay scale. Further annual increases occur after the fourth year, but are considerably smaller.

Interservice differentials in annual earnings increase with years of service and amount to as much as $1,500. The factors underlying these differentials are promotion rates and special pays (e.g., flight pay, jump pay, submarine pay, special pay for medical and dental officers, etc.). However, these differentials in average pay are small enough to allow us to use the average military earnings of all services with little harm to the analysis.

H.2 ESTIMATION OF CIVILIAN EARNINGS

Civilian earnings are affected by a variety of factors, such as educational attainment, age, sex, race, occupation, industry, region

and place of residence, and size of urban place. It would therefore be desirable to compare officer earnings to that of civilians who are roughly comparable to officers in terms of these characteristics. The characteristics that appear to be most relevant to our analysis are education, sex, age, and occupation. Since most new officers are male college graduates,[3] we have confined our analysis to this segment of the civilian labor force. We are able to standardize for age by using data for officers and civilians of roughly comparable ages. Expected civilian earnings were estimated for male college graduates in all occupations, natural scientists, and engineers. These groups were chosen because earnings statistics for them were readily available, and because the labor force for them is largely, if not entirely, individuals with college degrees. In addition, natural scientists and engineers represent skill groups that the services appear anxious to acquire. These groups were not used because we thought them to be the relevant civilian alternatives for military officers. Such a judgment requires a thorough examination of the distribution of potential officers in civilian occupations.

Table H2 contains the earnings statistics for these three occupation groups and average total pay statistics for military officers. The civilian pay statistics measure the mean earnings of male college graduates who had worked at least 50 weeks in the year the earnings were reported, 1961; median earnings of all engineering graduates for the year 1962; and median annual salaries of natural scientists in 1962. These statistics were adjusted to 1964 levels by multiplying them by 108.3, the relative increase in income which was experienced by all male professional and technical workers during this period.[4] There is relatively little unemployment among engineers and natural scientists therefore their earnings reflect what is essentially earnings from

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3. In 1964, over 95 percent of all newly commissioned officers were college graduates.

4. Since there was little change in income of professional and technical workers between 1961 and 1962, we were able to use the same adjustment factor for all civilian incomes.

Table H2

AVERAGE ANNUAL TOTAL PAY OF ACTIVE DUTY OFFICERS, AVERAGE EARNINGS OF MALE COLLEGE GRADUATES, AND MEDIAN SALARIES OF NATURAL SCIENTISTS AND ENGINEERS BY AGE, 1964[a]

Age	DoD Officers[c]	Civilian Occupation[b]		
		Male College Graduates	Natural Scientists	Engineers[c]
22	$ 4,809	$ 5,700	$ 6,498	$ 7,500
27	9,534	7,587	7,581	9,639
32	11,067	9,560	9,747	11,507
37	11,054	10,631	10,830	13,321
42	13,484	11,041	11,913	14,133[d]

a. Sources: DoD Officers--Unpublished tabulations derived from DoD one percent pay sample;
Male college graduates--Unpublished table derived from the U.S. Bureau of the Census, Current Population Survey;
Natural scientists--National Science Foundation, American Science Manpower, 1962, Table 16;
Engineers--Engineers Joint Council, Professional Income of Engineers, 1962, p. 17.

b. Measured levels of civilian occupation earnings have been increased by 8.3% to adjust them to 1964 levels.

c. Age estimates based on the assumption that officers and engineers begin working at the age of 22.

d. Income of engineers in the age group 39 to 42 years.

their full-time employment.[5] Since male college graduates and natural scientists were reported by age and officers and engineers were reported by years of experience, pay was converted to an age classification by assuming that new officers and engineers began working at the age of 22.

5. In 1960, which was a recession year, only slightly over one percent of the male labor force in each of these groups was unemployed. U.S. Bureau of the Census, U.S. Census of the Population: 1960, Occupational Characteristics, PC(2)-7A, Tables 1 and 2.

Our estimates indicate that engineers and scientists are more highly paid than are other college graduates; and first-term officers earn less than any of the comparable civilian groups, while career officers earn more than all male college graduates and natural scientists, but less than engineers. Beginning pay of officers is $900, or 15.6 percent below that of all college graduates, $1,700 or 26.0 percent below that of natural scientists, and $2,700 or 35.9 percent below that of engineers. After five years the annual pay of officers is $1,900 above that of male college graduates and natural scientists, and $100 below that of engineers.

These comparisons must be interpreted cautiously since there are still substantial elements of noncomparability between the groups. The most important of these is the incomplete standardization for educational attainment, especially for male college graduates and natural scientists. Average earnings of the civilian groups have been computed largely from the earnings of individuals who have at least completed college and includes earnings of many with post-graduate degrees. As a result, the earnings statistics for alternative occupations are probably biased downward for the years in which those undergoing post graduate training are still in school, and are biased upward for the years after which they have completed their post graduate training. Since most graduate training is taken immediately after completion of the baccalaureate, the differentials discussed in the preceding paragraph understate the differentials that would have been obtained had we been able to restrict our comparison to males with only bachelors degrees.[6] Engineers had a much lower propensity to pursue graduate studies; only 16 percent of all engineers in 1962 had advanced degrees.[7]

Another element of noncomparability is the inclusion of the

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6. Forty-six percent of the male college graduates in 1960 and roughly three-fourths of the natural scientists in 1962 had five or more years of higher education. U.S. Bureau of the Census, U.S. Census of Population: 1960, Educational Attainment, PC(2)-5B, Table 2; National Science Foundation, op. cit., Table 3.

7. Engineers Joint Council, op. cit., p. 14.

earnings of some females in the pay statistics for natural scientists and engineers. Earnings of females are generally lower than those of comparable males.[8] However, this does not represent a serious problem in this study since there were relatively few female natural scientists and engineers.[9]

Earnings comparisons are generally fraught with dangers since the basis for comparison is usually quite arbitrary. We compared military earnings to the earnings of male college graduates, natural scientists and engineers classified by age or experience. First-term officers initially earn from 16 to 35 percent less than their civilian counterparts. Beyond the fifth year military earnings are considerably higher than earnings of male college graduates and natural scientists, and only slightly below the earnings of engineers. It appears, therefore, that junior officers are substantially underpaid and career officers are well paid in comparison to comparable civilians. A major factor underlying the relative underpayment of first-term officers has been the draft. The Services do not have to rely on the market to supply the number of new officers they require. The threat of the draft provides a large enough supply of new officers so that it is unnecessary to make the military service look financially more attractive during the earlier years.

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8. H. Sanborn, "Pay Differences between Men and Women," Industrial and Labor Relations Review, July 1964, pp. 534-55.

9. In 1962 only 7 percent of the natural scientists and, in 1960, less than one percent of the engineers were females. See National Science Foundation, op. cit., Table 1, and U.S. Bureau of the Census, op. cit., Table 1.

Appendix I

METHOD USED IN PROJECTING THE NUMBER OF OFFICER-ACCESSIONS WITH A CONTINUED DRAFT

TABLES

Appendix I

METHOD USED IN PROJECTING THE NUMBER OF OFFICER-ACCESSIONS WITH A CONTINUED DRAFT

Officer-accessions were grouped into six categories to facilitate computation: academy, ROTC fellowship, ROTC, officer candidate programs, warrant officer and direct appointments. Academy, ROTC-fellowship, warrant officer, and direct appointment accessions were assumed to be limited by demand to service estimates of their needs from these programs. Officer-accessions from ROTC, officer candidate and the NAVCAD program were expanded in proportion to the growth in the populations from which they were drawn, appropriately lagged. Table I1 contains the projected population indexes for 1971 and 1973. The annual number of male graduates receiving bachelors or first professional degrees will have risen by more than 60 percent by 1974. The number of males between the ages of 16 and 29 with some college will have risen by close to 80 percent, and male freshmen in ROTC schools will have risen 36 percent, compared to a 75 percent rise in male freshmen in all schools. The differential growth rate between ROTC-school male freshmen and all male freshmen was estimated to be the average differential growth rate between these groups over the past ten years.

Tables I2 through I5 summarize the projections of officer-accessions by Service and source of commission for the years 1964-1974 under the assumption of no further changes in draft policies, no further changes in relative military pay, and no changes in factors, other than population, that influence the supply of officer-accessions. Because of the differences in the mix of officer-accession groups among the Services, we project differences in growth rates among the Services. The Marine Corps and the Air Force would enjoy the most rapid growth rates, and the Navy and Army would grow at relatively slower rates (Table I6).

Table I1

NUMBER OF MALE FRESHMAN ENROLLMENTS, ROTC SCHOOLS AND ALL SCHOOLS; MALE BACHELORS AND FIRST PROFESSIONAL DEGREES, AND MALE PERSONS AGES 16 TO 19, NOT IN SCHOOL, WITH SOME COLLEGE, BUT NO DEGREE, 1964 (IN THOUSANDS), AND PROJECTIONS, 1965 TO 1974, (1964 = 100)[a]

Year	ROTC	All Schools	Male Bachelors and First Prof.	Male Persons Some College No Degree
		Number		
1964	268	540	296	1,216
		(1964 = 100)		
1964	100.0	100.0	100.0	100.0
1965	105.6	109.6	108.8	105.4
1966	104.9	110.7	108.8	111.1
1967	102.6	111.9	120.3	117.1
1968	125.7	140.2	140.9	124.7
1969	135.1	154.1	152.0	133.8
1970	131.3	153.3	152.7	143.2
1971	130.2	155.6	153.0	151.6
1972	131.0	160.6	156.1	159.3
1973	133.2	167.6	159.5	168.1
1974	135.8	175.0	163.5	178.2

a. U.S. Office of Education, circular 754, Projections of Educational Statistics to 1973-74, Tables 4 and 9.

U.S. Bureau of the Census, Projected Male Population of the United States, ages 16 through 29 as of December 31, 1963-74 (unpublished table).

b. Data are lagged four years; i.e., 1964 entry refers to 1960 enrollments.

Table I2

PROJECTIONS OF OFFICER-ACCESSIONS WITH A CONTINUING DRAFT BY SOURCE OF COMMISSION, ARMY, 1964-1974[a]

Year	Source of Commission						Total (in thousands)
	Academy	ROTC-Fellowship	ROTC[b]	OCS[c]	Warrant Officers	Direct Appointments[d]	
1964	500	500	10,857	1,688	1,700	200	15.5
1965	500	1,100	11,306	1,762	1,200	200	16.1
1966	500	1,100	11,231	1,762	800	200	15.7
1967	600	1,100	10,984	1,859	1,000	200	15.8
1968	600	1,100	13,457	2,032	1,000	300	18.5
1969	700	1,100	14,464	2,127	1,000	300	19.7
1970	700	1,100	14,057	2,132	800	200	19.0
1971	800	1,100	13,939	2,135	800	300	19.0
1972	900	1,100	14,025	2,160	700	200	19.1
1973	900	1,100	14,260	2,189	700	200	19.4
1974	900	1,100	14,539	2,223	600	200	19.5

a. Unpublished tabulations of 1964 officer-accessions and Table K-1.
b. 10837 times male freshmen, ROTC schools, 1964 = 100.
c. Includes 844 officer-accessions from the enlisted ranks and 844 times male bachelors and first professional degrees, (1964 = 100).
d. Excludes medical and dental appointments.

Table I3

PROJECTIONS OF OFFICER-ACCESSIONS WITH A CONTINUING DRAFT BY SOURCE OF COMMISSION, NAVY, 1964-1974[a]

Year	Source of Commission							Total (in thousands)
	Academy	ROTC-Fellowship	ROTC[b]	OCS[c]	Other[d]	Warrant Officers	Direct Appointments[e]	
1964	842	790	800	4,667	1,183	910	338	9.5
1965	768	793	544	5,080	1,204	400	93	8.9
1966	840	943	540	5,083	1,226	400	72	9.0
1967	840	971	528	5,593	1,249	400	120	9.6
1968	840	971	647	6,547	1,278	400	90	10.7
1969	840	971	696	7,100	1,313	400	104	11.4
1970	840	971	676	7,129	1,348	400	92	11.4
1971	840	971	671	7,147	1,381	400	97	11.5
1972	840	971	675	7,298	1,410	400	93	11.7
1973	840	971	686	7,465	1,444	400	95	11.9
1974	840	971	699	7,661	1,483	400	93	12.2

a. Unpublished tabulations of 1964 officer-accessions and Table K1.
b. 1964 accessions multiplied by male freshman enrollments ROTC schools, 1964 = 100.
c. Includes OCS, AOC and ROC commissions. OCS and AOC accessions estimated by multiplying 1964 accessions by male bachelors and first professional degrees, 1964 = 100. ROC accessions estimated by multiplying 1964 accessions by male freshmen enrollments, all schools, 1964 = 100.
d. Includes Limited Duty Officers and NAVCAD. LDO's were projected at 800 per year. NAVCAD accessions were computed by multiplying 1964 accessions by male persons, some college, no degree, 1964 = 100.
e. Excludes medical and dental appointments.

Table I4

PROJECTIONS OF OFFICER-ACCESSIONS WITH A CONTINUING DRAFT BY SOURCE OF COMMISSION, AIR FORCE, 1964-1974[a]

Year	Source of Commission						Total (in thousands)
	Academy	ROTC-Fellowship	ROTC[b]	OTS[c]	Other[d]	Direct Appointments[e]	
1964	600	500	3,695	4,677	300	400	10.2
1965	600	1,100	3,398	5,088	200	400	10.7
1966	500	1,100	3,376	5,088		700	10.9
1967	600	1,100	3,302	5,625		400	11.2
1968	700	1,100	4,045	6,589		400	13.1
1969	700	1,100	4,348	7,110		200	13.4
1970	700	1,100	4,225	7,142		200	13.3
1971	700	1,100	4,190	7,157		400	13.4
1972	1,000	1,100	4,216	7,300		400	13.8
1973	1,000	1,100	4,287	7,458		600	14.3
1974	1,000	1,100	4,370	7,647		400	14.3

a. Unpublished tabulations of officer-accessions and Table K1.
b. Estimated by multiplying 1964 accessions by male freshman enrollments, ROTC schools, 1964 = 100.
c. Estimated by multiplying 1964 accessions by male bachelors and first professional degrees, 1964 = 100.
d. Includes Aviation Cadets. Program is scheduled to terminate in fiscal year 1965.
e. Excludes dental and medical appointments.

Table I5

PROJECTIONS OF OFFICER-ACCESSIONS WITH A CONTINUING DRAFT BY SOURCE OF COMMISSION, MARINE CORPS, 1964-1974[a]

Year	Source of Commission						Total (in thousands)
	Academy	ROTC-Fellowships	ROTC[b]	OCC[c]	Other[d]	Warrant Officers	
1964	78	144	793	361	314	178	1.9
1965	79	205	863	393	338	120	2.0
1966	84	210	913	393	338	174	2.1
1967	89	210	921	434	368	164	2.2
1968	111	210	1,130	509	428	140	2.4
1969	111	210	1,241	549	449	140	2.5
1970	111	210	1,236	551	451	140	2.7
1971	111	210	1,252	553	451	140	2.8
1972	111	210	1,289	564	459	140	2.8
1973	111	210	1,341	576	468	140	2.8
1974	111	210	1,395	590	478	140	2.9

a. Unpublished tabulations of 1964 officer-accessions and Table K1.
b. Includes PLC and ROTC. PLC accessions were estimated by multiplying 1964 PLC accessions by male freshman enrollments, all schools, 1964 = 100. ROTC accessions were estimated by multiplying 1964 ROTC accessions by male freshman enrollments, ROTC schools, 1964 = 100.
c. Estimated by multiplying 1964 accessions by male bachelors and first professional degrees, 1964 = 100.
d. Includes Limited Duty officers and MARCADS. Limited duty officers were estimated from unpublished tabulations of officer projections made by the Marine Corps, MARCAD accessions were estimated by multiplying 1964 MARCAD accessions by male bachelors and first professional degrees, 1964 = 100.

Table I6

PROJECTED GROWTH RATES IN OFFICER-ACCESSIONS BY BRANCH OF SERVICE 1964-1974[a]

Service	Percent Increase 1964-1974
Army	25.8
Navy	28.4
Marine Corps	52.6
Air Force	40.2

a. See Tables I2 through I5.

Appendix J

ESTIMATES OF OFFICER-ACCESSIONS IN THE ABSENCE OF A DRAFT

Table J1

PROJECTIONS OF OFFICER-ACCESSIONS IN THE EVENT THAT THE DRAFT IS ELIMINATED[a]
BY SOURCE OF COMMISSION, 1971-1974

Year	Academy	ROTC Fellowship	ROTC	OCS[b]	Other	Warrant Officer	Direct Appointment	Total (in thousands)
				Army				
1971	800	1,100	5,353	1,477		800	69	9 6
1972	900	1,100	5,386	1,495		700	46	9.6
1973	900	1,100	5,476	1,515		700	46	9.7
1974	900	1,100	5,583	1,538		600	46	9.8
				Navy				
1971	840	971	258	2,784	1,381	400	42	6.7
1972	840	971	259	2,832	1,410	400	41	6.8
1973	840	971	263	2,896	1,444	400	42	6.9
1974	840	971	268	2,972	1,483	400	41	7.0
				Air Force				
1971	700	1,100	2,430	3,292			175	7.7
1972	1,000	1,100	2,445	3,358			175	8.1
1973	1,000	1,100	2,486	3,431			263	8.3
1974	1,000	1,100	2,135	3,518			175	8.3
				Marine Corps				
1971	111	210	657	268	451	140		1.8
1972	111	210	677	274	459	140		1.9
1973	111	210	704	279	468	140		1.9
1974	111	210	732	286	478	140		2.0

a. Based on Tables 9 and I2.
b. OCS accessions = 844 + (Projections in Table I2 - 844) X 0.610 .

Appendix K

ESTIMATION OF PAY-INCREASE COSTS OF ELIMINATING THE DRAFT AS A FACTOR IN OFFICER-PROCUREMENT

Appendix K

ESTIMATION OF PAY-INCREASE COSTS OF ELIMINATING THE DRAFT AS A FACTOR IN OFFICER-PROCUREMENT

Estimation of the annual costs of a recruiting bonus paid at the rate of $120 per month over the first two years of service is fairly straightforward; it is simply the number of commissioned officers with less than two years of service for pay purposes (47,191) on 31 June 1964 multiplied by $1440. The annual costs of an increase of $120 in monthly base pay is more complicated. From Table K-1 it can readily be seen that an increase of $120 in the monthly base pay of officers with less than two years of experience will produce pay inversions in which these officers will be earning as much as $60 per month more than officers with three, but less than four years of experience. In order to prevent such inversions we had to increase the pay of officers with more than two years of service. Our procedure was purely arbitrary and was designed to maintain the shape of the base pay profile of officers with four or more years of experience (Method I) and officers with three or more years of experience (Method II). Table K2 summarizes the monthly base pay increases and the number of commissioned officers to whom they would have applied in 1964.

Table K1

BASIC PAY SCALES BY SELECTED PAY GRADES AND YEARS OF MILITARY SERVICE, 1964

Years of Service	Pay Grade		
	0-1	0-2	0-3
< 2	$ 241.20	$ 281.40	$ 353.70
2 < 3	307.50	384.30	450.90
3 <	384.30	461.40	481.80

Table K2

FACTORS USED IN COMPUTING THE COST OF THE PAY INCREASE REQUIRED TO PRODUCE AN ALL-VOLUNTEER OFFICER FORCE

Years of Service	Number of Commissioned officers[a]	Monthly Pay Increase		
		Bonus	Base Pay	
			I	II
< 2	47,191	+ $120	+$120	+$120
2 < 3	25,563		+ 90	+ 90
3+	248,376		+ 40	+ 90

a. As of 30 June 196.

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11 SUPPLEMENTARY NOTES	12. SPONSORING MILITARY ACTIVITY OFFICE OF THE ASSISTANT SECRETARY OF DEFENSE (MANPOWER)

13 ABSTRACT

This Study examines the effects of population trends, military conscription, and pay on the supply of newly commissioned officers and, based on these factors, estimates the additional budgetary costs that would be incurred by the Department of Defense in eliminating the draft as a procurement factor for officers.

The Study reviews current trends and patterns of officer-procurement; discusses the factors which are thought to be important determinants of officer-supply--eligible population, the draft, and earnings opportunities for potential officers in military and nonmilitary careers; contains estimates of the effect of population trends on the supply of newly commissioned officers; examines the effects of military conscription; investigates the effects on officer supply of military and nonmilitary earnings opportunities; and presents an illustrative example of how the findings may be used to estimate the cost of shifting to an all-volunteer officer force.

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