1986

The social welfare losses of conscription: an evaluation for the 1980s.

Crouch, Michael S.

NAVAL POSTGRADUATE SCHOOL
Monterey, California

THESIS

THE SOCIAL WELFARE LOSSES OF CONSCRIPTION:
AN EVALUATION FOR THE 1980S

by

Michael S. Crouch

December 1986

Thesis Advisor: Professor David R. Henderson

Approved for public release; distribution is unlimited

REPORT DOCUMENTATION PAGE

1a REPORT SECURITY CLASSIFICATION UNCLASSIFIED	1b RESTRICTIVE MARKINGS
2a SECURITY CLASSIFICATION AUTHORITY	3 DISTRIBUTION/AVAILABILITY OF REPORT Approved for public release; distribution is unlimited.
2b DECLASSIFICATION / DOWNGRADING SCHEDULE	
4 PERFORMING ORGANIZATION REPORT NUMBER(S)	5 MONITORING ORGANIZATION REPORT NUMBER(S)
6a NAME OF PERFORMING ORGANIZATION Naval Postgraduate School	6b OFFICE SYMBOL (If applicable) 54
7a NAME OF MONITORING ORGANIZATION Naval Postgraduate School	
6c ADDRESS (City, State, and ZIP Code) Monterey, California 93943-5000	7b ADDRESS (City, State, and ZIP Code) Monterey, California 93943-5000
8a NAME OF FUNDING / SPONSORING ORGANIZATION	8b OFFICE SYMBOL (If applicable)
9 PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER	
8c ADDRESS (City, State, and ZIP Code)	10 SOURCE OF FUNDING NUMBERS PROGRAM ELEMENT NO / PROJECT NO / TASK NO / WORK UNIT ACCESSION NO

11 TITLE (Include Security Classification)
THE SOCIAL WELFARE LOSSES OF CONSCRIPTION: AN EVALUATION FOR THE 1980S

12 PERSONAL AUTHOR(S)
Crouch, Michael S.

13a TYPE OF REPORT	13b TIME COVERED	14 DATE OF REPORT (Year, Month, Day)	15 PAGE COUNT
Master's Thesis	FROM ________ TO ________	1986 December	65

16 SUPPLEMENTARY NOTATION

17 COSATI CODES			18 SUBJECT TERMS (Continue on reverse if necessary and identify by block number)
FIELD	GROUP	SUB-GROUP	conscription, social welfare loss, draft, deadweight loss, reular military compensation

19 ABSTRACT (Continue on reverse if necessary and identify by block number)

This thesis estimates the social welfare losses that would result from a hypothetical draft in the United States in the 1980s. A previously developed mathematical model is used to estimate: (1) expenditures on draft avoidance, (2) the excess economic cost which results when a degree of randomness is introduced into the selection process, and (3) the conscription tax - the tax imposed on individuals who either reluctantly volunteer to serve or are inducted into the military. These first two estimates represent social welfare losses. The conscription tax is estimated in order to evaluate the relative efficiency of conscription as a means of taxation.

My finding was that when conscription is used to procure military manpower, the social welfare losses that result are significant ($1 billion to $5 billion). I also found conscription to be a very inefficient form of taxation.

20 DISTRIBUTION / AVAILABILITY OF ABSTRACT ☒ UNCLASSIFIED/UNLIMITED ☐ SAME AS RPT ☐ DTIC USERS	21 ABSTRACT SECURITY CLASSIFICATION unclassified
22a NAME OF RESPONSIBLE INDIVIDUAL Professor David R. Henderson	22b TELEPHONE (Include Area Code) 408- 646-2524 — 22c OFFICE SYMBOL 54Ht

DD FORM 1473, 84 MAR — 83 APR edition may be used until exhausted. All other editions are obsolete

Approved for public release; distribution is unlimited.

The Social Welfare Losses of Conscription: An Evaluation for the 1980s

by

Michael S. Crouch
Lieutenant Commander, U. S. Navy
B.S., United States Naval Academy, 1973

Submitted in partial fulfillment of the
requirements for the degree of

MASTER OF SCIENCE IN MANAGEMENT

from the

NAVAL POSTGRADUATE SCHOOL
December 1986

ABSTRACT

This thesis estimates the social welfare losses that would result from a hypothetical draft in the United States in the 1980s. A previously developed mathematical model is used to estimate: (1) expenditures on draft avoidance, (2) the excess economic cost which results when a degree of randomness is introduced into the selection process, and (3) the conscription tax - the tax imposed on individuals who either reluctantly volunteer to serve or are inducted into the military. These first two estimates represent social welfare losses. The conscription tax is estimated in order to evaluate the relative efficiency of conscription as a means of taxation.

My finding was that when conscription is used to procure military manpower, the social welfare losses that result are significant ($1 billion to $5 billion). I also found conscription to be a very inefficient form of taxation.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ACKNOWLEDGEMENTS

The author wishes to acknowledge the contributions of Lt. James Moody, USN, Defense Manpower Data Center, Professor Mark J. Eitelberg and Professor Donald Danielson, Naval Postgraduate School, Ronald W. Hansen, and Richard V. L. Cooper, for their assistance.

I. INTRODUCTION

A. BACKGROUND

During the 1900s, methods of procuring military manpower in the United States have fluctuated among all-volunteer, conscription, or some combination of the two. In addition, several systems of conscription have been employed--ranging from the pre-lottery system which offered a wide assortment of deferments, to the lottery system, which essentially decreased the number of deferments. The arguments most commonly used to support the use of conscription are that (1) it allows the government to mobilize a relatively large military manpower force in a short period of time and, (2) it permits the government to establish a military wage which is lower than that established by an all-volunteer force, thereby lowering budget expenditures.

The use of conscription to procure military manpower involves many social and economic issues. This study addresses the economic issue of what the true cost of conscription is to society. The purpose here is to evaluate the economic cost of peacetime conscription and to quantify the social welfare loss or "deadweight" loss to the U. S. public from a hypothetical draft in the 1980s. This will be done using a mathematical model of the military labor market.

Except for several periods during the 1900s (1946-1947, 1948-1950, and 1954-1964), the general trend in the U. S. has been to use conscription during periods of conflict and to switch to a scaled down all-volunteer force following the conflict. [Ref. 1: p. III-1-29] This most recently occurred in 1973 when the draft was terminated and all-volunteer recruitment was substituted. Recognizing the potential need for conscription during wartime, the focus of this study will be on which procurement policy is appropriate during peacetime.

The draft bypasses standard market allocating mechanisms and interrupts the normal supply and demand forces present in the labor market. As a result, inefficiencies and a misallocation of society's resources occur. These inefficiencies take the form of a "conscription tax" and the costs of collecting that tax, a redistribution of income, restrictions on labor mobility, and excessive personnel turnover rates. Sjaastad and Hansen describe conscription in the following way: [Ref. 2: p. IV-1-1]

> By use of coercion the government acquires the personal services of large numbers of individuals under terms very favor-

able to the general taxpayer but rather unfavorable to the individuals rendering those services.

Draftees and draft-motivated volunteers are subjected to a conscription tax which is discriminatory in the sense that only some are required to serve. Since not everyone is required to serve, draft eligible people have incentives to undertake activities to avoid being inducted. Although these activities have value to the individual, they are socially useless. The costs incurred to avoid being drafted represent a part of what is referred to in public finance terms as the costs of collecting the conscription tax. They represent one component of social welfare losses. A more detailed discussion and the development of a model to predict these costs follows in the next chapter.

Social welfare losses also occur as a result of who is selected to serve. If a conscription policy selects individuals according to what their alternative wage (supply price) is in the private sector (i.e. the lowest supply priced individuals are selected first), then the effect will be to decrease social welfare losses. If, however, a conscription policy randomly selects individuals without regard to their supply price, then some higher supply priced individuals will be inducted. The productive output foregone by these individuals is higher and this has the effect of increasing social welfare losses. A model for predicting these costs is also developed in the next chapter.

Factors related to demand also have an effect on social welfare losses. Assuming that the military can pay a lower wage under the draft, it will be encouraged to use more labor resources than are socially optimal. This overutilization of manpower will produce a social welfare loss. This study assumes that the size of the military labor force is predetermined by other factors and is a given constraint. Thus, the military, under this assumption, will not take advantage of lower wages and overutilize military labor.

B. BUDGET COSTS VERSUS ECONOMIC COSTS

Two categories of cost to be considered in evaluating manpower procurement policies are budget costs and economic costs. Budget costs are the highly visible and relatively easily measured costs that taxpayers bear to support a military labor force. Economic cost is the opportunity cost to society. It reflects the foregone productive capacity of labor resources employed by the military. It is a less visible cost which represents the value of this labor as it could be used in other activities.

Budget costs, in this case, are more of a measure of government policy toward conscripts than a measure of value. In a competitive market, budget costs and economic costs will be equal on the margin. When there is intervention in the form of a draft, labor market supply and demand forces are interrupted and these two measures of cost can diverge.

The traditional belief is that, holding a number of other factors constant, the use of conscription allows the government to pay a lower military wage, thereby lowering budget costs.

C. REVIEW OF LITERATURE

Sjaastad and Hansen [Ref. 2] developed one of the first widely used models to predict social welfare losses under conscription. These losses are related specifically to draft avoidance and to enforcement. Their study develops the concept of a discriminatory conscription tax--a tax which is borne by draftees and draft-motivated volunteers under a system of conscription. The costs of collecting this tax --which include the resources expended to avoid the draft--are socially useless and represent deadwight losses. Although it is extremely difficult to quantify the economic costs of a draft, they incorporate the supply and demand forces of the military labor market into their model and use this model to predict the behavior of those affected.

Sjaastad and Hansen estimate the costs of collection of a 2.5 million man force, in 1969 dollars, to range from $1.75 billion to $3.63 billion. They recognize that the magnitude of social welfare losses will depend on the specific type of conscription used.

The principal conclusions reached in their study are that conscription under Selective Service is a very inefficient taxation device and that the tax itself is substantial. Their results showed that under varying circumstances, the costs of collection exceed the tax itself by 50 to 100 percent.

Oi [Ref. 3] also addresses the concept of an implicit conscription tax. He recognizes that not only does conscription impose a tax on draftees and draft-motivated volunteers-- it also imposes an additional tax on true volunteers. In the absence of the draft, persons who are true volunteers at current wages would receive an economic rent because the military wage would have to be increased to attract the required number of recruits. The use of coercion under conscription reduces rent received by true volunteers. Oi also recognizes that the draft is not efficient in the sense that it selects individuals with the lowest supply price. Finally, he acknowledges the costs incurred by individuals attempting to avoid the draft but makes no attempt to measure these costs.

Hansen and Weisbrod [Ref. 4] evaluate the economic impact of the draft in terms of "distributive" and "allocative" effects. Distributive effects are measured by how the burden (e.g. conscription tax) of maintaining a military is distributed to various members of society. Allocative effects refers to the efficiency with which labor resources are allocated under a draft.

Hansen and Weisbrod develop a model which is used to predict the additional costs resulting from increased turnover, and increased uncertainty in the private sector under conscription, holding the number of effective labor units constant. Using the 1963 population of 650,000 draftees and "draft-affected" enlistees and assuming a random selection process within each education group, they estimate the distributive effects to be $960 to $990 million and the allocative costs (social welfare loss) to be $870 to 1,180 million.

Cooper, [Ref. 5] using an extension of the model developed by Sjaastad and Hansen, addresses issues dealing with the budget costs and economic costs of various procurement policies. He, like many others, believes that conscription allows the general public to pay less, in actual budget expenditures, for military manpower. He suggests that the draft affords society the opportunity to bypass the standard labor market allocating mechanism and, in so doing, creates inefficiencies. These inefficiencies, some of which are significant, take on many forms and must be considered when selecting a procurement policy.

Cooper argues that not only supply, but also demand related factors have an effect on social welfare losses. The military will tend to overutilize labor resources under conscription because of lower wages. Labor that has higher-valued alternative uses in the private sector ends up being used for military purposes under the draft. He estimates that under certain assumptions, the military could demand as many as 55 percent more first term personnel than are socially optimal.

By using the model developed by Sjaastad and Hansen, Cooper is able to calculate the social welfare losses for the pre-Vietnam year of 1964 that result from three factors. He estimates the first component of welfare losses , draft avoidance costs, to range from $0.7 billion to $3.7 billion depending on the type of conscription used (pre-lottery or lottery) and depending on the assumption about the slope (increasing, constant, decreasing) of the supply curve. The social welfare loss due to the overemployment of labor, the second factor, was estimated to be $700 million for 1964.

Cooper expands on the model to consider the social welfare losses that result when a degree of randomness is introduced into the draft selection process. These additional costs are based on who actually serves and are calculated to range from $850 million to $1,350 million. Although he does not calculate a specific value, Cooper mentions one additional factor, labor turnover, as a cause of welfare losses. He suggests that because conscripted forces generally have shorter tours of duty than all-volunteer forces, they tend to require more personnel to realize a given amount of labor input. This increases not only economic costs but also budget costs which results in a social welfare loss.

Cooper concludes his study with an evaluation of how the costs of military manpower procurement policies vary as the proportion of the eligible population that is required to serve varies. He states that [Ref. 5: p. 91]

> The undesirable economic consequences of conscription, vis-a-vis other procurment policies, are largely mitigated when a large fraction of the manpower pool must serve.

When evaluating alternative policies, a comparison must be made of the economic rent provided under an all-volunteer poicy and the excess economic costs incurred under conscription.

Borcherding [Ref. 6] was the first to recognize that social welfare losses may be present with a volunteer military as well. These losses are a result of the underemployment of labor in the military, given the upward-sloping nature of the military labor supply curve. He suggests that it is very difficult to determine before the fact which welfare loss is greater-- that associated with the overemployment of labor under the draft or the underemployment of labor with an all-volunteer military. As the size of the military labor force varies, Borcherding's arguments become increasingly relevant.

Recognizing Borcherding's contribution, Cooper [Ref. 7] develops a simple model of military supply and demand to calculate the social welfare losses that result because of the over- or underutilization of labor resources by the military. The low wages of a draft encourage the military to use more labor resources than that which is socially optimal. In an all-volunteer environment, the military will tend to underutilize labor resources because of high wages. Cooper confines his study to this one area of social welfare loss. He compares the losses present both with and without a draft. The losses associated the draft are shown to be several times larger than those associated with a volunteer military-- $2.4 billion per year for the draft in 1973 dollars versus $1.5 billion per year for a volunteer force. Cooper argues that the model he uses will tend to underestimate the social welfare loss under the draft and will overestimate the loss with a volunteer military. The model underestimates the losses under a draft because it fails to capture fully the social costs of the draft since most systems of conscription select individuals without regard for supply price. For example, if an individual with a high supply price is selected for induction, the social welfare loss will be greater than the loss associated with the induction of a low supply-priced individual. This is true because the difference between the civilian wage and the military wage for a high supply-priced individual is greater than the difference for a low supply-priced individual. Additionally, his model does not account for draft avoidance expenditures and reduced employment opportunities. It tends to overestimate social welfare losses of a volunteer military because it fails to recognize the military services as discriminating or constrained monopsonists. For example, the military discriminates according to supply price by paying enlistment bonuses to high school graduates who score above average on mental aptitude examinations. These individuals would, most likely, have higher reservation wages. To the extent that the military acts as a discriminating or constrained monopsonist, the model overestimates welfare losses. Additionally, his model does not account for draft avoidance expenditures and reduced employment opportunities.

An All-Volunteer (AVF) Task Force, [Ref. 8] under the chairmanship of Secretary of Defense Weinberger, concluded in 1982 that the AVF is working and can continue to meet its recruiting goals through Fiscal Year 1987. However, it states that an increase in military compensation relative to civilian wages is necessary to achieve this goal. Options for a draft or national service analyzed include a minimal active force draft, draft with discouragement of volunteers, draft to improve accession qualifications, draft without volunteers, draft for Reserves, universal military training, universal national service, national service linked to prospective draft, broad-based national service draft, and benefit-conditional national service. Of the above, the last four would have a budget cost in excess of $40 billion, while the additional budget cost of the others would be less than $1.5 billion. The Task Force concluded that if conscription is selected as the method to procure military manpower, the minimal active duty force draft, the draft to reserves, and the draft with discouragement of volunteers are the most viable alternatives.

In a recent study conducted on the draft, Morris and Arnold [Ref. 9] come to the somewhat surprising conclusion that a return to conscription in the U. S. would actually increase budget costs for military labor. For example, a draft with draftees and other new service members receiving half the basic pay they currently receive would cost $1.5 billion more than an AVF. Their results contradict studies done before the end of the draft that consistently predicted that an AVF would cost more than a draft.

The major assumption that Morris and Arnold make is to keep force effectiveness constant. Previous AVF cost reports maintained a constant total strength but allowed force effectiveness, or the quality of the force, to vary. This report proposed to maintain the same level of effectiveness in the military by increasing enlistments to keep the career force at the present size. The number of new service members under the draft would have to increase because fewer members would elect to make a career of the military.

Morris and Arnold point out that recent economic and social changes in the 1980s have brought on renewed interest in a return to conscription. These include: (1) strong popular support and political pressure to reduce the Federal budget deficit; (2) an improving economy that is better able to provide satisfactory employment opportunities to enlistment-age individuals; (3) a shrinking national manpower pool of 17- to 23-year-olds through the mid-1990s; and (4) rapid technological changes mandating the accession and retention of sufficient numbers of individuals in critical military skill areas. In addition to cost, the focus should also be on readiness and force effectiveness.

The study developed a model termed the Enlisted Accession and Career Entry Model that calculates service-specific accession requirements, reenlistment bonus policies, and the subsequest personnel flows that would result if first-term pay was reduced. The model predicts personnel flows for each service that satisfy two objectives: (1) The first term force effectiveness under conscription equals the first term force effectiveness currently under the AVF, and (2) The number of personnel entering the career force is the same under all scenarios. Under varying assumptions, the model predicts the number of draftees (ranging from 24,000 - 235,000), the number of draft motivated volunteers, and the number of true volunteers.

The study considers a number of other factors which affect budget costs. Factors that will increase budget costs when moving from an AVF to a draft include increased training requirements, increased reenlistment bonuses after the first term, additional costs of operating the Selective Service System to support the draft, possible increases in educational benefits, and a reduction in tax receipts. Factors that will decrease costs include reduction in recruiting personnel required, reduction in advertising costs, and an elimination of enlistment bonuses.

The study assumes two scenarios; (1) a 50 percent reduction in base pay for first term enlisted and, (2) an 80 percent reduction in base pay for first term enlistees. In both cases all other pays and allowances were held constant. Morris and Arnold estimated that the 50 percent reduction would cost the government between $371 million and $2.5 billion more than the present system, with the most likely cost of $1.5 billion. The 80 percent reduction would produce between a $924 million savings and an additional cost of $2 billion. The estimates varied as a result of changing assumptions about the supply elasticity and reenlistment bonus elasticity. A significant result was that with a 50 percent reduction in base pay, the draft was always more costly than an AVF.

The results predicted by the EACEM model appear to contradict those of the Gates Commission and other DOD studies completed in the 1970s. As mentioned earlier, these studies failed to hold force effectiveness constant. As a result, most studies predicted a lower cost using conscription but this was at the expense of degraded effectiveness. External factors such as unemployment, relative military and civilian compensation, patriotism, and enlistment availability and eligibility will most likely have a significant effect on the differential costs of conscription.

D. RESEARCH OBJECTIVES

The objective of this study is to estimate the social welfare loss of a hypothetical draft in the United States during the 1980s. A mathematical model is used to estimate losses which result from two factors: draft avoidance and random selection. The study uses 1985 data for active enlisted service members only. Officers and members of the reserves are not considered. The effect of varying assumptions on total welfare losses is also calculated.

E. SUMMARY OF RESULTS

The results of this study indicate that social welfare losses under conscription are significant. The total losses resulting from draft avoidance and random selection vary from $1 billion to in excess of $5 billion depending on the assumptions made.

Additionally, when the costs of collection are compared to the conscription tax levied on draftees and reluctant volunteers, it is clear that conscription is a very inefficient means of taxation. In every case evaluated, the cost of collection exceeded the amount of the conscription tax.

II. MODEL

This chapter reviews the model of participation in the military and draft avoidance under conscription. This model was originally developed by Sjaastad and Hansen [Ref. 2] and applied by Cooper. [Ref. 5] The model estimates: (1) who serves under the draft based on the characteristic of supply price, (2) the total amount spent (social welfare loss) by those attempting to avoid induction, and (3) the excess economic cost (also a social welfare loss) of conscription, based on who actually serves. The data developed in the next chapter will be applied to this model to estimate the social welfare loss of a hypothetical draft for the United States in the 1980s. While other causes of social welfare losses (e.g. turnover, overutilization of labor) exist under conscription, this model estimates losses which result only from draft avoidance activities and from random selection.

A. SUPPLY PRICE OF LABOR

The economic cost of military labor resources can be defined as the opportunity cost for those individuals employed in the military. This definition can be interpreted in either of two ways: (1) The opportunity cost to the civilian economy, or (2) the opportunity cost to the individual serving in the military.

According to the first interpretation, if an individual is employed by the military, he is no longer available to the private sector. The civilian economy suffers a loss equal to the amount of productive output he could have achieved had he not been in the military. This loss can be measured by the individual's civilian wage, assuming that this wage represents the value of his output to the civilian economy.

The second interpretation is evaluated with respect to the individual. Not only does an individual forgo his civilian wage while serving in the military but he also may give up additional nonmonetary benefits (e.g. freedom to choose where he lives). This interpretation of opportunity cost is more encompassing than the first interpretation. It is represented by an individual's "supply price" or "reservation wage"--the wage that an individual would have to be paid to join the military. Simply stated, some individuals must be paid a premium for working in the military. On the other hand, others may be willing to accept a smaller wage than they could have earned as a civilian because of their positive perception of life in the military.

Supply price, rather than alternative civilian wage, is the preferred measure of economic cost for a variety of reasons. First of all, it represents the mechanism by which labor resources are allocated in a free market. Second, supply price is a broader definition in that it includes the nonpecuniary aspects of serving in the military.

B. MEASUREMENT OF ECONOMIC COST - RANDOM SELECTION

A standard labor supply model provides the framework to measure the economic cost of conscription. The supply curve, SS′, in Fig. 2.1 arrays individuals according to their supply price. The military wage (first term compensation) is measured on the vertical axis and the proportion of the total manpower pool which is required to serve in the military is measured on the horizontal axis. For any given wage, the supply curve shows the number of individuals who will voluntarily join the military.

The model is based on the assumption that the size of the required military labor force (and required accessions) is determined beforehand by other factors. Cooper [Ref. 7] argues that this may not be a valid assumption. He contends that the military will tend to overuse labor because the military wage during conscription is set artificially low. In this case military labor is cheap with respect to capital, so more labor will be used. To the extent that this is true, the social welfare loss computed here is underestimated.

In Fig. 2.1, the accession requirements are shown as the distance OB out of the total eligible manpower pool. Since SS′ represents the voluntary supply of military labor, the military can attract OB true volunteers by paying a wage, W1. The economic cost of military labor in this case is the sum of individual supply prices for those serving in the military or, alternatively, the area under the supply curve from 0 to B. Cooper states, [Ref. 5: p. 71]

> Since the supply curve represents the mechanism by which labor resources are allocated in a competitive market, this area is the appropriate measure of economic cost which should be used to evaluate various methods of manpower procurement. Moreover, this area represents the smallest possible economic cost when 0B labor resources are demanded by the military.

During a draft, the economic cost of military manpower is much more difficult to quantify because of who actually serves. Under conscription, the government can establish a military wage, W0, which is lower than the market wage needed to attract the required number of volunteers. If the military wage under conscription is set at

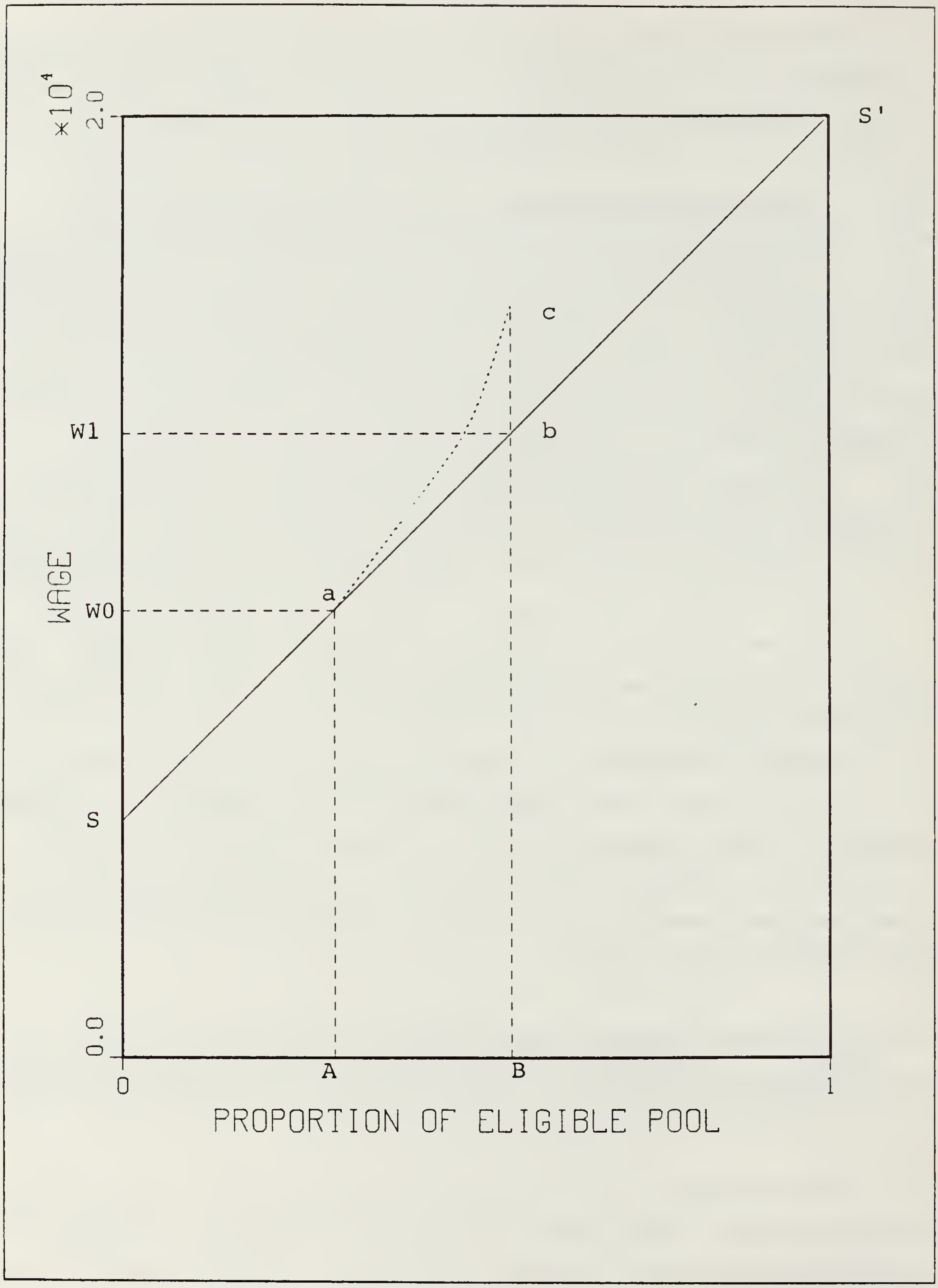

Figure 2.1 Economic Cost of Manpower.

W0, only 0A volunteers will join the military. Therefore, the number of draftees and draft-motivated volunteers must correspond to the distance, AB. The economic cost of this manpower depends critically on *who* is selected.

To illustrate the point, Cooper [Ref. 5: pp. 72-73] examined two extreme cases. The first case is very similar to the conscription policy that was used in 1917. The draft was structured by the use of exemptions and other policies, to conscript the lowest supply-priced individuals first. The individuals selected are those who are arrayed on the Sb portion of the supply curve. The result is that the 0B accession requirement is filled with the same individuals who would volunteer if the wage was set at W1. The economic cost in this case is the same as the cost of a volunteer military because the supply curve and the area below it are the same. This policy was criticized as being socially repressive because it drafted first those who were less well off. Efforts were subsequently made to establish a more random selection process.

A completely random draft selection process presents the other extreme case. The lottery draft used during the latter stages of the Vietnam War exemplifies this case. Because of the randomness of the selection process, some individuals on the bS′ portion of the supply curve in Fig. 2.1 are inducted. The result is that the ab portion of the supply curve shifts toward ac. The opportunity costs of the higher supply-priced individuals randomly selected from bS′ are higher than those of people selected from ab. The shift of the supply curve from ab to ac causes the economic cost, represented by the area under the supply curve, to increase. Although the same number of individuals are selected to serve, the composition of the group has changed.

The increase in the economic cost of this random selection policy, over a volunteer policy, results in a social welfare loss. The magnitude of this loss corresponds to the area abc. The private economy suffers a loss because some higher supply-priced individuals are now required to serve in the military. The outcome of this is that the more random the selection process, the further to the left the line ac will shift, producing an even greater social welfare loss.

C. DRAFT AVOIDANCE COSTS

As mentioned earlier, the draft results in a tax being levied on those who are required to serve in the military. This is the conscription tax discussed by Sjaastad and Hansen [Ref. 2] and also by Oi. [Ref. 3] Whenever the government imposes a tax, certain costs are incurred while collecting it. Included among these costs of collection are the costs incurred by those attempting to avoid payment. These costs represent actual resources expended, and because they do not benefit society, they are social welfare losses.

The amount of costs incurred by those attempting to avoid the tax are, in general, a function of (1) the amount of the tax itself and (2) the difficulty of escaping payment. In the first case, as the tax increases, one would expect more to be spent in trying to avoid payment of it. The second case is not as straightforward. When it is very difficult to avoid the tax, fewer will make an attempt to avoid it. Those who do, however, can be expected to spend more in their attempt. It makes sense to incur tax avoidance costs only when there is a reasonable chance to avoid the tax.

It is difficult to quantify the total amount spent on draft avoidance activities, but economic theory provides a way to model the problem. The objective is to identify who will engage in draft avoidance activities, and of those who do, to determine how much they will spend.[1] The model that follows attempts to do these two things for both a prelottery and a lottery type draft.

D. MATHEMATICAL MODEL

The following assumptions are made in this model:

- Individuals attempt to maximize expected income,
- Constant marginal utility of income,
- Supply price to the military just equals civilian income foregone,[2] and
- The probability of being inducted is a declining function of the cost incurred to avoid induction.

Expected income, y, is equal to (1) the probability of not having to serve times the amount they could earn in civilian employment less what they spend on avoiding induction plus (2) the probability of having to serve times military pay less the amount

---

[1]To gain a perspective on the number of people who actually engage in draft avoidance activities, the following Vietnam era (August 1964 - March 1973) figures are provided. Out of the total draft eligible (ages 19 - 25 inclusive) pool of 26,800,000 men, 8,720,000 enlisted and 2,215,000 were drafted. 570,000 were classified as apparent draft offenders (those who were eligible but were not deferred, exempted, or disqualified) while 15,410,000 were deferred, exempted or disqualified. The most commonly used means of escaping induction were: (1) physical and mental exemptions (4,935,000), (2) escape from the lottery (4,009,000), (3) marriage or fatherhood (2,420,000), (4) occupational deferments (483,000), and (5) student deferments (317,000). [Ref. 10: p. 5]

[2]As discussed earlier, this may or may not be a valid assumption based on how the individual views the nonmonetary benefits of civilian life relative to the military. Those on the upper reaches of the supply curve will likely place a higher premium on those benefits while those on the lower end of the curve may actually perceive that the military offers greater nonmonetary benefits relative to the civilian community.

spent attempting to avoid induction.

$$y = (1 - p)(w - c) + p(1 - c) \qquad \text{(eqn 2.1)}$$

where p = the probability of being inducted

c = the costs spent attempting to avoid induction, and

w = the individual's alternative civilian earnings opportunity (where the military wage equals one).

By cancellation,

$$y = w - c - pw + p \qquad \text{(eqn 2.2)}$$

Expected income, y, is a function of the amount spent on trying to avoid the draft, which is represented by c. Individuals attempt to maximize y by their choice of c.

Those who make less than the military wage as civilians will not spend anything on draft avoidance because they would not be maximizing expected income and would be worse of for doing so. For those whose civilian wage exceeds the military wage (which equals 1 in this case), the optimum amount for c can found by differentiating y with respect to c and setting it equal to 0:

$$\partial y/\partial c = \partial p/\partial c\,(1 - w) - 1 \qquad \text{(eqn 2.3)}$$

$$\partial p/\partial c = 1/(1 - w) \qquad \text{(eqn 2.4)}$$

The relationship between p and c determines how much a person will spend on draft avoidance. A simple but realistic model is one in which the probability of being inducted is a declining function of the amount spent on draft avoidance. Sjaastad and Hansen [Ref. 2: p. IV-1-6] suggest a "plausible" relationship of

$$p(c) = 1/\, e^{mc} \qquad \text{(eqn 2.5)}$$

where m is a variable subject to the control of the Selective Service System. Although it is simple, this functional form seems realistic when one considers that if a person spends nothing on draft avoidance, his probability of being drafted is 1. Conversely, if he spends a large amount, the probability will decrease toward 0.

The Selective Service System determines how difficult it will be for an individual to avoid the draft. By establishing draft selection policies, it determines the value of m in Eq. 2.5. For example, when many forms of deferments are offered to potential inductees, this increases the value of m and makes draft avoidance expenditures more cost effective. When the selection process is made more random, as in a lottery, the value of m decreases. In other words, a given amount spent on avoiding the draft will decrease the probability of being inducted more with a large value of m than with a smaller value.

Given Eq. 2.5,

$$\partial p/\partial c = -m/e^{mc} = -mp \qquad \text{(eqn 2.6)}$$

Substituting Eq. 2.6 and Eq. 2.3,

$$p = 1/m(w-1) \qquad \text{(eqn 2.7)}$$

becomes the marginal condition. Eq. 2.7 cannot be satisfied when $w < (1+m)/m$ because the probability would exceed 1. Sjaastad and Hansen offer the following explanation, [Ref. 2: p. IV-1-7]

> The appropriate interpretation of cases where 2.7 implies $p > 1$ is that of a corner solution; persons who cannot satisfy condition 2.7 are those for whom the gains associated with reducing the probability of induction are so small that no expenditure to do so is justified. These persons will simply permit themselves to become drafted, or they may even volunteer but they would not do so in the absence of conscription. Persons able to satisfy 2.7 enter the military only as draftees.

By setting $p = 1$, in Eq. 2.7,

$$w^* = 1 + 1/m \qquad \text{(eqn 2.8)}$$

represents the supply price below which individuals will spend nothing on draft avoidance.

This is illustrated in Fig. 2.2. Individuals on the supply curve above w* will expend resources to avoid the draft. Everyone on the supply curve below w* will, in general, serve in the military. Some are true volunteers, some are draft-motivated volunteers, and others are inductees. The probability that individuals lying above w* on the supply curve will serve depends, among other things, on the amount spent attempting to avoid the draft, and this depends on the individual's supply price. Higher supply-priced individuals will spend more on draft avoidance because they have more to gain by not being drafted. Because they spend more, their chance of being inducted is smaller.

The amount that an individual (assuming he lies on the supply cure above w*) will spend can be determined by equating Eqs. 2.5 and 2.7:

$$e^{mc} = m(w - 1), \quad \text{for } w > w^* \qquad \text{(eqn 2.9)}$$

Taking logarithms of both sides of the equation,

$$c = \{\ln m + \ln(w - 1)\}/m, \quad \text{for } w > w^* \qquad \text{(eqn 2.10)}$$

If s* represents the proportion of the eligible manpower pool who have supply prices below w*, then the total amount spent on draft avoidance by all individuals is:

$$\text{Total Cost} = \int_{s^*}^{1} c\{w(s)\}ds \qquad \text{(eqn 2.11)}$$

C{w(s)} is defined in Eq. 2.10 and w(s) is the supply of labor to the military.[3]

I chose a constant elasticity supply function to describe the relationship between wages, w, and the proportion of the population, s. [Ref. 2: p. IV-1-29] Given one point on the function (which is determined in the following chapter), and the assumption about constant elasticity, the relationship can be expressed by the following:

---

[3]The elasticity of military labor supply with respect to military pay is assumed to be 1.00 for this study. A justification for this assumption is given in the next chapter.

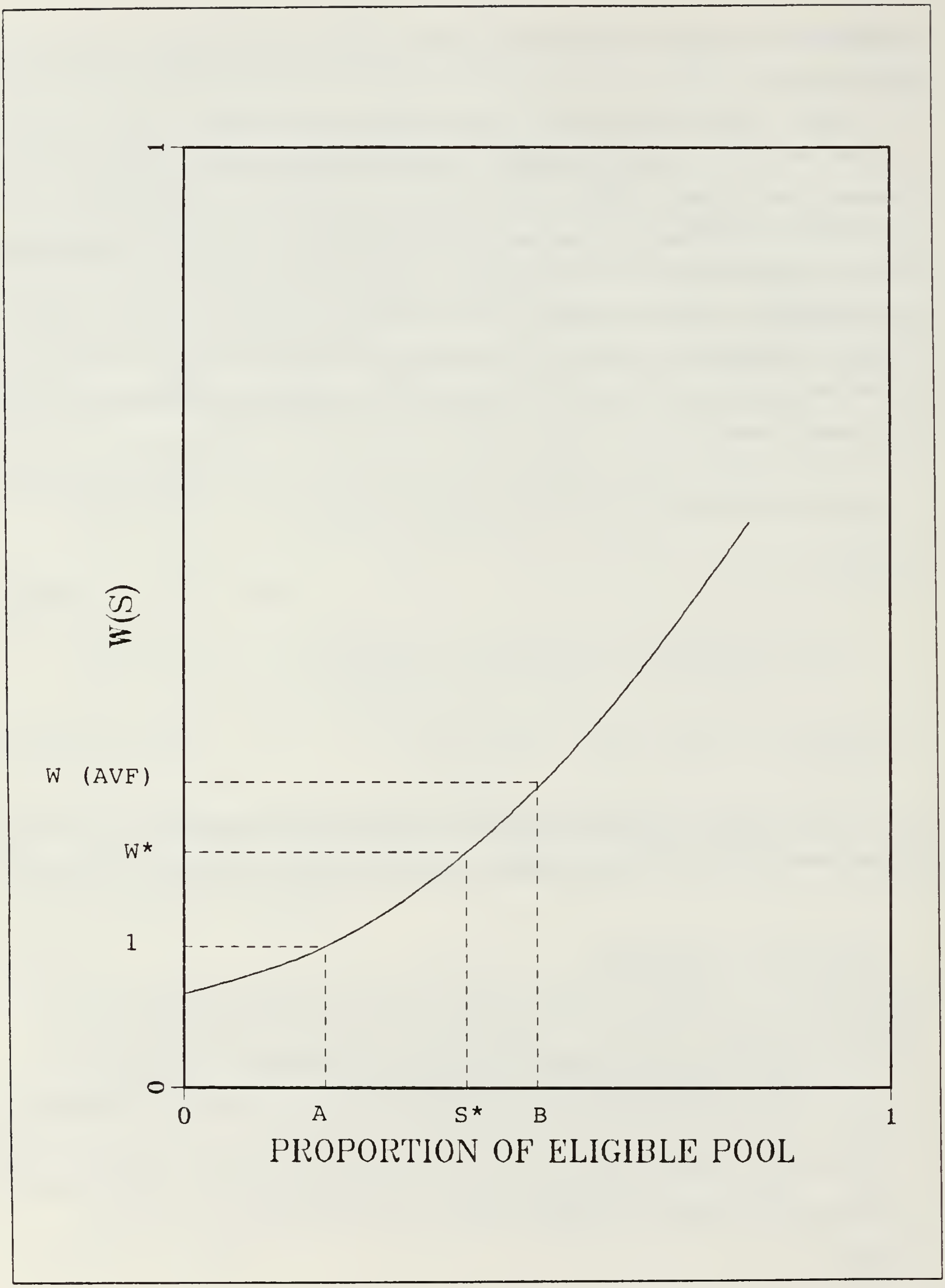

Figure 2.2 Draft Avoidance Costs.

$$w(s) = \gamma s^v \qquad \text{(eqn 2.12)}$$

The value of γ can be determined given a point on the function and the value of v is dependent on the value of elasticity chosen (e.g. v = 1 when elasticity = 1.00).

Eq. 2.11 can be modified to account for different types of conscription. For example, the costs of collection under a pre-lottery draft can be stated by the following:

$$\text{Total Cost} = N\int_{s^*}^{1} 1/m\{\ln m + \ln(w(s)-1)\}ds \qquad \text{(eqn 2.13)}$$

where N equals the number of individuals in the eligible manpower pool.[4]

Eqs. 2.1 through 2.14 comprise the model developed by Sjaastad and Hansen to predict who will serve in the military and how much will be spent on draft avoidance. The model is illustrated in Fig. 2.2. The distance 0A corresponds to the number of true volunteers that are willing to join at the current military wage (designated as 1 in this case). Persons on the supply function between points a and b will not be willing to incur costs to avoid being drafted, and will be inducted. Everyone above b on the supply curve (s* to 1) will incur draft avoidance costs and will generally not be inducted.

From Fig. 2.1 the economic cost of an all volunteer force (or a draft that conscripted the lowest supply-priced individuals first) corresponds to the area below the supply curve, SS', from 0 to B. The total cost, exclusive of draft avoidance costs, can be computed using the following equation,

$$E_v = \int_0^B w(s)ds \qquad \text{(eqn 2.14)}$$

where w(s) = supply of military labor, and

B = proportion of the manpower pool required to serve.

[4] N refers to the number of annual (gross) additions to the pool of eligible persons who meet all for the following criteria: (1) male, (2) 18 years of age in 1985, (3) high school graduate, and (4) included in AFQT categories I - IIIA. A more detailed explanation of this is given in the following chapter.

The economic cost of a pre-lottery draft can be computed according to the equation,

$$E_{pld} = N\int_0^1 p(s)w(s)ds \qquad \text{(eqn 2.15)}$$

where $p(s) = 1$, when $w < (1+1/m)w^*$
and $p(s) = 1/m(w - 1)$, when $w > (1+1/m)w^*$

The economic cost of a lottery draft is calculated according to the equation,

$$E = N\{\int_0^A w(s)ds + (B - A)/(1 - A)\int_A^1 w(s)ds\} \qquad \text{(eqn 2.16)}$$

The excess economic costs due to random selection for each type of draft can be calculated by subtracting the economic cost of an AVF (Eq. 2.14) from the respective economic cost of each policy (Eq. 2.15 or Eq. 2.16).

The conscription tax - the tax imposed on those who either reluctantly volunteer or are drafted - is defined as the sum of the differences between the supply prices and the military wage for those affected. [Ref. 2: p. IV-1-8] The tax is represented by the area abc in Fig. 2.2. For those individuals on the supply curve above point b, the expected conscription tax to be paid is equal to the amount of the tax times the probability of paying it, or $p(w - 1)$. From Eq. 2.7, the conscription tax is equal to $p(w - 1) = 1/m(w - 1) \times (w - 1) = 1/m$. That is, across individuals the expected tax remains constant. For individuals on the supply curve above b, as the amount of tax increases, the probability of paying it decreases. This is consistent with the model in that as the individual's supply price increases, it is to his advantage to incur cost avoidance costs, and this decreases his probability of being drafted.

The conscription tax, T, is calculated for a pre-lottery draft as

$$T = N\int_A^1 p(s)\,(w(s) - 1)ds \qquad \text{(eqn 2.17)}$$

where $p(s) = 1$, for $w < (1 + 1/m)$, and
$p(s) = 1/m(w - 1)$.

III. DATA

A. INTRODUCTION

In this chapter, specific data will be developed in the following areas: (1) military wage, (2) supply elasticity of military labor, and (3) the total number of individuals eligible to be inducted.

B. MILITARY WAGE

1. Regular Military Compensation

Military compensation currently consists of pays, allowances, and benefits based on a member's pay grade, years-of-service, and special skills. Members are paid bi-monthly as a salary. The military compensation system is usually broken down into the following: (1) regular military compensation, (2) pays and allowances, and (3) other compensation elements.

Regular military compensation is defined as the total of the following elements that a member of a uniformed service receives every payday: basic pay, basic allowance for quarters (including any variable housing allowance), basic allowance for subsistence, and a federal tax advantage that accrues because these allowances are not subject to a federal income tax. [Ref. 11]

The computed military wage is based on 1985 pay and allowance rates for enlisted service members in the U. S. Navy. Pay and allowance rates are essentially the same for other services but annual amounts received may differ because of differences in promotion rates. First term compensation, consisting of regular military compensation for the first two years, will be computed.

a. Basic Pay

Basic pay is the primary compensation received by all military personnel. Every member of the military is entitled to the continuous receipt of basic pay while on active duty. Basic pay rates are determined by a service member's pay grade and length of service.

This study assumes that enlisted service members are promoted according to the schedule in Table 1. The times in pay grade listed are minimum times required. Most service members are promoted automatically after meeting these and other minimum requirements.

TABLE 1

TIME IN PAY GRADE REQUIREMENTS FOR ENLISTED PROMOTION

Pay Grade	*Time in Pay Grade*
E-1	6 months
E-2	6 months
E-3	9 months

Source: Department of the Navy BUPERS Instruction 1430.16B

Increases in basic pay automatically occur at promotion and at designated longevity steps. Longevity step increases are designed to recognize additional experience. Because the first longevity step occurs at the two year mark, it has no effect on wages computed here.

Adjustments to the basic pay rate levels are set annually in the defense appropriations process. In order to attract and retain required manpower, the military sets the growth of pay rates at roughly the same rate as wages in the private sector. Table 2 lists the enlisted basic pay rates for E-1 through E-4.

TABLE 2

ENLISTED BASIC PAY TABLE FOR 1985

	Paygrade			
Time in Service	*E-1*	*E-2*	*E-3*	*E-4*
Under 4 months	573.60			
Over 4 months	620.40			
Less than 2 years		695.40		
Less than 2 years			723.00	
Less than 2 years				767.40

Source: Navy Pay and Personnel Procedures Manual *b. Basic Allowance For Quarters*

When a service member is not provided adequate government housing, he is eligible to receive a monthly cash allowance for quarters. This Basic Allowance for Quarters (BAQ) payment amount varies by pay grade and also by whether the member has dependents. When adequate government housing is available, the enlisted service member does not receive a BAQ payment. Because there is a shortage of government housing, and because we wish to quantify the housing benefit received, this study assumes the member receives a BAQ payment. The combination of BAQ and VHA payments is approximately equal to the value of comparable government housing in all areas of the country. Therefore, the assumption does not bias the estmate of the military wage in either direction. Table 3 lists the BAQ rates for E-1 through E-4.

TABLE 3

ENLISTED BASIC ALLOWANCE FOR QUARTERS FOR 1985

(PER MONTH)

Pay Grade	*Without Dependents*	*With Dependents*
E-1	133.50	238.50
E-2	146.40	238.50
E-3	172.50	238.50
E-4	177.60	259.50

Source: Navy Pay and Personnel Procedures Manual

c. Variable Housing Allowance

In 1980 Congress enacted legislation implementing the Variable Housing Allowance (VHA). It was designed to make additional compensation to service members who lived in high cost areas such as Hawaii and California. VHA payment amounts vary by geographic location. VHA is received only by members who are eligible to receive BAQ. The combination of BAQ and VHA ideally provides the member with enough funds to meet average housing costs in the local area.

A survey was made of 15 locations in the United States where enlisted service members may be required to serve. The survey included areas where members from each of the services (Army, Navy, Air Force, and Marines) are stationed. It also included the lowest cost area, Johnstown Pennsylvania, and the highest cost area, Honolulu, Hawaii, in the United States. A simple average was computed for the 15 locations. No attempt was made to weight the average in relation to the number of enlisted members stationed at a particular location. VHA rates also depend on whether a member has dependents. Table 4 lists the computed means of the VHA rates for the 15 locations surveyed. The locations surveyed and the rates for those locations appear in Appendix B.

TABLE 4

AVERAGE 1985 ENLISTED VARIABLE HOUSING ALLOWANCE BY PAYGRADE

	PAYGRADE			
	E-1	*E-2*	*E-3*	*E-4*
With Dependents	95.41	90.13	86.75	93.51
Without Dependents	53.33	55.08	62.71	63.82

Source: Joint Travel Regulations and Appendix B

d. Basic Allowance for Subsistence

Basic Allowance for Subsistence (BAS) is a cash allowance intended to cover some part of an enlisted member's subsistence costs. All active duty members receive the allowance. The BAS amount is the same for all pay grades, S156.30, except for E-1s with less than four months of service, who receive S144.60.

e. Federal Income Tax Advantage

Military members accrue an income tax advantage because federal income taxes are not paid on BAQ, VHA, and BAS. This tax advantage can represent a significant percent of total compensation. The total benefit is equal to the amount of taxes which would have been owed on this additional income (allowances) had they been taxed at the member's normal tax rate.

A tax advantage or savings was computed for single and married enlisted service members for each of the first two years of service. Using 1985 Internal

Revenue Service tax tables, tax savings were calculated by computing the amount of tax owed on gross income (including all allowances) minus personal exemptions ($1040 per individual and per qualified dependent). The same calculation was made on gross income minus the BAQ, VHA, and BAS allowances. Because less tax is owed on the smaller of the two incomes, the tax savings is the difference in the taxes owed on the two amounts.

Table 5 shows the computed tax savings for single and married enlisted members. The tax savings computation was made using the following assumptions: (1) a single enlisted member with no dependents, no outside income and no major tax deductions, and (2) a married member with 2 children, no other income, and no major tax deductions.

TABLE 5

TAX ADVANTAGE FOR SINGLE AND MARRIED ENLISTED MEMBERS

(SAVINGS PER YEAR)

SINGLE

YEAR	SUM OF TAX FREE ALLOWANCES BAQ+BAS+VHA	TAX SAVINGS
1	4,337.00	663.00
2	4,901.00	802.00

MARRIED

YEAR	SUM OF TAX FREE ALLOWANCES BAQ+BAS+VHA	TAX SAVINGS
1	5,983.00	736.00
2	6,046.00	771.00

Source: Computed by author using Form 1040 and 1985 IRS tax tables.

f. Total RMC

Regular Military Compensation is the sum of basic pay, allowances for subsistence and quarters, and a federal tax advantage. Assuming a promotion schedule previously mentioned in this chapter, I computed an RMC value for married and single enlisted members. These figures appear in Table 6. The breakdown of RMC by individual components appears in Appendix A.

TABLE 6
1985 REGULAR MILITARY COMPENSATION VALUES

Year	*Single*	*Married*
1	$12,708	14,427
2	14,512	15,626

Source: Appendix A

Marital status affects the amount of payment a service member receives for BAQ and VHA. It also influences how much is paid in federal income taxes. Married members receive a greater amount for these two allowances to cover additional living expenses. Also, married members filing jointly will pay a lesser tax than a single member for the same amount of taxable income.

In an attempt to compute one single RMC value, I weighted RMCs by the percentage of members who were married and by the percentage of those who were single. Data on marital status by paygrade was obtained for each of the four services. Table 7 lists the percent married and percent single by paygrade. RMC by paygrade was computed by using the following formula:

For each paygrade:

$$\text{RMC} = (\%\ \text{married}) \times (\text{married RMC}) + (\%\ \text{single}) \times (\text{single RMC})$$

Table 8 shows the desired first term compensation estimate of $27,776.

2. **Educational Benefits**

During the 1900s, the givernment has provided financial assistance for education to military veterans under several different programs. Included among these were the G.I. Bill, the Veteran's Educational Assistance Program (VEAP), the New G.I. Bill, and the Army College Fund. Because the monetary value of the educational benefits offered can be substantial, and also because similar benefits are not received by

TABLE 7

PERCENT MARRIED BY PAYGRADE

Paygrade	*Percent Married*
E-1	8.32%
E-2	15.46%
E-3	26.12%
E-4	45.93%

Source: Defense Manpower Data Center

TABLE 8

ESTIMATE OF REGULAR MILITARY COMPENSATION - FIRST TWO YEARS

Paygrade	*Time in Paygrade*	*RMC*
E-1	6 months	6,042
E-2	6 months	6,866
E-3	9 months	10,976
E-4	3 months	3,892
TOTAL		$27,776

Source: Computed by author

most civilian workers, the value of these benefits was considered in this study. If significant, the monetary value of the benefits would be added to RMC to produce the military wage.

a. Veteran's Educational Assistance Program

Enlisted service members who came on active duty between January 1, 1977 and June 30, 1985 are eligible to receive benefits under VEAP. Those entering between July 1, 1985 and June 30, 1988 are eligible for the New G. I. Bill. VEAP was used in this study to compute the value of educational benefits because it had been in effect for six months during 1985 and because data on enrollment and usage was available.

VEAP was a voluntary program which required both the service member and the government to contribute funds to be used for education. To qualify, one had to be on active duty for at least 24 months. Under VEAP, service members contributed as little as $25 or as much as $100 per month to a VEAP account. At the end of 12 consecutive months of contribution, the member was considered to be established in the program and the government contributed $2 for every $1 saved by the member.

Contributions were limited to $2,400 for a two year enlistment and $2,700 for a three or more year enlistment. Thus, the maximum total contribution from the government was $5,400. Service members could decide to drop out of the program at any time (disenroll) and their contributions were refunded by the Veterans Administration. Because of this option, the number of members who have actually received benefits under VEAP has been relatively low.

The objective here was to calculate an average monetary value of benefits for an individual joining the military. The approach used was to determine: (1) how many members were enrolling under VEAP, (2) how many members were disenrolling, (3) how many veterans were receiving benefits, and (4) the monetary value of the benefits received.

VEAP data for fiscal year 1986 are summarized in Appendix C. The data reveal several somewhat surprising results: (1) over half of those established in the program (542,561 of a total of 1,106,727) received disenrollment refunds during FY 1986, (2) the total number of people established decreased by almost 250,000 during the year, (3) the number of people who actually received benefits during the year was an extremely low percentage of the number established (2.84%), and (4) the total dollar benefits paid during the year was less than 1% of gross contributions.

Based on the above results and because the military member receives no benefits for at least two years after induction, this study concluded that the value of educational benefits received under VEAP was an insignificant part of the military wage. VEAP benefits paid were small because of the disenrollment option and because of the low usage rate by veterans.

3. Other Pays

Two additional general categories of pay exist in the military: special pay (e.g. proficiency pay) and incentive pay (e.g. hazardous duty pay). [Ref. 11:: pp. 191-227] Although some small percentage of the total number of enlisted service members with less than two years of service may qualify for one or more of these pays, the majority do not. One reason for this is the large amount of time spent by new members in a training environment. Most have not gained the necessary skills to qualify for additional pay.

4. Other Military Benefits

All military members receive the benefits listed in Table 9 as part of their total military compensation. Although these benefits may be substantial, the monetary value was not computed. Benefits received from civilian employment were assumed generally to equal other military benefits.

TABLE 9

MILITARY BENEFITS

Air travel overseas for member and dependents
Annual Leave (30 days a year for all pay grades)
Burial Allowance
Commissary Stores (groceries at cost plus 5%)
Death gratuity (six times monthly pays)
Dependency and Indemnity Compensation ($622 to $726)
Disability Retired Pay
Disability Severance Pay
Government Contributions to Social Security
Low-Cost Vacation Resorts and Recreation Areas
Medical Care (members and dependents)
Military Exchange Privileges
Mortgage Insurance Premiums
Nondisability Retired and Retainer Pay
Nondisability Severance Pay
Retired Members Medical Care
Survivor Benefit Plan
Unemployment Compensation

Source: Navy Milpers Manual 5030240, 4210160, 6230120, 4210260, 3855180, and 3860440

C. SUPPLY ELASTICITY

The number of volunteers who join the military is a function of first-term military compensation. The concept of elasticity of supply of military manpower attempts to quantify this relationship. The interpretation of an elasticity value of 2.00, for example, is that if first-term compensation increases by 10 percent, the number of volunteers would increase by 20 percent.

An estimate of pay elasticity for military manpower supply is needed to compute draft avoidance costs and excess costs due to random selection using the model described in the previous chapter. Numerous studies predicting elasticity values have been conducted using both cross-section and time series regression analyses. Goldberg [Ref. 12: p.10] averages the computed values of several studies conducted in the AVF era (1970s).

TABLE 10

AVERAGES OF ELASTICITIES FROM AVF ERA STUDIES

Service	*Type of Study*	*Relative Pay*
Army	Time-series	1.22
Army	Cross-section	0.88
Navy	Time-series	0.64
Navy	Cross-section	0.32
Air Force	Time-series	1.09
Air Force	Cross-section	0.19
Marine Corps	Time-series	0.46
Marine Corps	Cross-section	0.16
DOD	Time-series	1.02
DOD	Cross-Section	0.18

Source: Goldberg
[Ref. 12: p. 10]

Table 10 presents a summary of his results; it indicates a wide dispersion between elasticity values computed for each service. The values also vary considerably according to the type of analysis used. Goldberg [Ref. 12: p. 9] points out that pay elasticities from cross-section studies are substantially biased downward because poor measures of civilian earnings were used. Instead of using civilian earnings for *youth*, researchers used average earnings for *all* production workers, and this measure resulted in a biased estimate of elasticity.

In a study conducted on recruiting and enlistment supply, Dertouzos [Ref. 13: p. 19] estimates a supply elasticity of high-quality enlistments (AFQT categories I-IIIA) with respect to civilian wages, to be -1.014. This means that as civilian wages go up 1%, high-quality enlistments will go down by 1.014%.

Based on the data presented in Table 10, and on Dertouzos' results, I determined a supply elasticity of 1.00 to be the most representative value. I used this value in the model. Sjaastad and Hansen used values of 1.00 and 1.25 in their study. [Ref. 2: p. IV-1-20]

D. ELIGIBLE POOL

An estimate of the total number of eligible inductees in the United States in 1985 was calculated based on a peacetime conscription policy. This figure was used with the cost of collection model developed in the previous chapter to compute the related social welfare loss. To be included in the pool, each person must have met *all* of the following criteria: [Ref. 2: p. IV-1-29]

- 18 years of age as of 1985
- High school graduate
- Armed Forces Qualification Test (AFQT) categories I - IIIA[5]
- Male, non-prior service

Because the estimate is based on a policy of peacetime conscription, only 18 year olds were considered as part of the eligible pool. Based on historical trends in the U. S., this group contains a sufficient number of potential inductees to meet the military accession requirements during peacetime. This implies that individuals are eligible to be drafted for only one year. Once they turn 19, they are no longer eligible.

Sjaastad and Hansen [Ref. 2: p. IV-1-29] estimate that the bulk of the conscription tax is paid by individuals who are both high school graduates and in AFQT categories I-III. For this reason, only Cat. I - IIIA high school graduates are

[5]During the 1960s, all the Services employed the AFQT to determine general mental ability. In addition, each Service generally administered its own vocational aptitude examinations, which were used for occupational assignment. In the early 1970s, the AFQT was dropped (except by the Marine Corps), and each Service used its own exam to classify individuals according to mental ability. Finally, the Services have recently returned to a single examination battery, ASVAB (Armed Services Vocational Aptitude Battery), so that better indicators of relative mental aptitude can be made across the Services. [Ref. 5: p. 127] Four of the ten ASVAB subtests-- Word Knowledge, Paragraph Comprehension, Arithmetic Reasoning, and Numerical Operations-- are currently combined to produce the AFQT score. [Ref. 5: p. 127]

considered in computing social welfare losses. The estimates may be biased downward (social welfare losses underestimated) because those who do not meet these criteria are excluded from the analysis. Since these individuals are assumed to have low supply prices, the effect is assumed to be minimal. The estimates of losses also may be biased upward if the mix between Cat. I - IIIA HSGs and non-Cat. I - IIIA HSGs changes. Specifically, if the military lowers its aptitude standards, and inducts more non-Cat. I -IIIA HSGs, fewer Cat. I - IIIA HSGs will be required to serve and the estimates of losses calculated in this study will be biased upward. I am assuming the mix remains constant in this study. Although non-high school graduates and persons in category IV have been inducted into the U. S. military,[6] the services prefer to induct high school graduates in categories I - IIIA. [Ref. 14]

TABLE 11
ARMED FORCES QUALIFICATION TEST PERCENTILES

CATEGORY	PERCENTILE	CATEGORY	PERCENTILE
I	93-100	IVA	21-30
II	62-92	IVB	16-20
IIIA	50-64	IVC	10-15
IIIB	31-49	V	0-9

Source: Cooper [Ref. 5]

Table 11 provides a breakdown of AFQT categories by percentile.

Finally, although the number of females in the military has been increasing, in this model only males were considered to be eligible for induction. The effect of excluding females from the model biases the computed estimates upward. To the extent that females have lower supply prices than males, the estimates of social welfare losses associated with draft avoidance and with the selection process are overestimated. First, many females would volunteer to serve at the draft wage, so fewer draftees would

[6]The current minimum aptitude standards for enlistment of males in the U. S. Navy, for example, are: (a) High school graduates - AFQT of 17 (category IVB); (b) GED - AFQT of 31 (category IIIB); and (c) Non-high school graduates - AFQT of 38 (category IIIB). Persons below AFQT category IV are generally not permitted to enter the armed forces.

be needed. Second, many relatively low supply-priced females would be selected for induction from the eligible pool. The excess economic cost associated with these individuals would, therefore, be less.

Appendix D provides a breakdown of percentages of the population by education level, sex, age, and AFQT category. The figures given are percentages of the total U. S. population in 1980. They were obtained from data collected during the Profile of American Youth study sponsored by the Department of Defense and conducted by the National Opinion Research Center (NORC). The study sampled approximately 12,000 American youth from ages 16 to 23. From the appendix, the percentage of 18 and 19 year old, male, high school graduates in mental categories I -IIIA was 25.3%. Although small differences may exist in the percentages between age groups, they were assumed to be the same. In other words, 25.3% of all 18 year olds were assumed to have met the criteria, along with 25.3% of all 19 year olds.

TABLE 12

TOTAL U. S. MALE POPULATION BY AGE AS OF APRIL 1980

YEARS OF AGE	TOTAL NUMBER
12	1,813,000
13	1,866,000
14	1,933,000
15	2,060,000
16	2,133,000
17	2,163,000
18	2,220,000
19	2,245,000
20	2,246,000
21	2,246,000
22	2,271,000
23	2,228,000
24	2,184,000

Source: U. S. Bureau of Census, Current Population Reports

One final assumption made was that the percentage of the population that met the required criteria remained constant between 1980 and 1985. Therefore, since 25.3% of the population met the criteria in 1980, the same percentage represented the eligible pool in 1985.

Using the 13 year old population of males in 1980 from Table 12 (1,866,000) as a representation of the 18 year old population in 1985,[7] and applying the 25.3% figure from Appendix D, the total eligible pool in 1985 was 472,000. This was the figure used in the draft avoidance cost model to estimate social welfare losses.

---

[7] Available statistics indicate that approximately one half of one percent of all males in the U. S. fail to survive from age 13 to age 18. Therefore, the effect of this assumption is negligible. [Ref. 16]

IV. ANALYTICAL RESULTS

A. INTRODUCTION

Using the Sjaastad and Hansen model developed in Chapter II and the data from the previous chapter, I calculated several estimates of social welfare losses resulting from random selection and from draft avoidance, as well as an estimate of the conscription tax. The analysis was limited to the losses which result from an effective peacetime force equal in size to that which existed in the United States in 1985 (approximately 1.8 million). The estimates obtained refer only to first-term enlisted male service members. Non-career officers were not considered.

B. MODEL VARIABLES

Estimates were calculated using a number of different scenarios. The variables used in the model and the particular values of those variables are described in the following paragraphs. The model provides a method for computing random selection and draft avoidance costs for both a pre-lottery and lottery draft.

1. Elasticity of Supply Function

I selected a constant elasticity supply function to use with the model. As discussed in the previous chapter, the most representative value of elasticity was determined to be 1.00. This value was used in the model. Sjaastad and Hansen determined that a greater value of elasticity of supply will decrease the estimates for avoidance costs and for the conscription tax. [Ref. 2:: p. IV-1-33]

2. Number of Accessions

Two assumptions were made regarding the number of accessions that the military required to maintain a given force size. I initially assumed that the required number of accessions of AFQT Categories I - IIIA high school graduates under a draft equalled the number of accessions of AFQT Categories I - IIIA high school graduates under an AVF-- 139,000. Although the age range of Cat. I -IIIA HSG accessions in 1985 was 17 to 38 years old, I am assuming that all inductees will be 18 years old under a draft. The reason: because the military will most likely set the first term military draft wage at a lower level than the AVF wage, fewer older high quality recruits will be attracted and more 18 year old volunteers will be accessed. I am also assuming that the military allows all willing Cat. I - IIIA HSGs to enlist. Secondly, I assumed that required accessions under a draft would be in the same proportion to the number required for an AVF as those computed by Sjaastad and Hansen for the 1964 draft (about 1.24 : 1). [Ref. 2: p. IV-1-24] In other words, more accessions would be required under a draft than under an AVF. The primary reason for the increase in accessions under a draft is that the average length of service of draftees tends to be shorter than other enlistees. This leads to higher turnover and, hence, more required accessions. The second value was computed to be 171,600.

3. Draft vs. AVF Wage

Under conscription, the use of coercion allows the government to set a military wage that is lower than the wage under an all-volunteer system. For example, during the most recent transition from conscription to an AVF in the U. S. (1970-1971), Regular Military Compensation for first term enlisted service members increased by over 51 percent-- from $3,509 to $5,313. [Ref. 5] For this reason, and also because I wanted to see what effect the variation in draft wage had on the estimates of social welfare losses, I used two scenarios. Given the AVF wage, I assumed the draft wage to be 80% of the AVF wage in the first case, and 50% of the AVF wage in the second. Morris and Arnold [Ref. 9] assumed similar scenarios of 50% and 80% reductions in basic pay in their recent study on the comparison of budget costs between conscription and an all-volunteer system.

4. Value of m

The particular assumptions made in each case determine the value of m. A sample calculation of the value of m is illustrated at the end of this chapter.

For the purposes of estimating excess costs for a lottery draft, the model assumes that everyone who has a supply price greater than w* stands an equal chance of serving. This, however, does not substantially bias the results. [Ref. 5: p. 100] This assumption implies a zero value of m because no matter how much one spends on draft avoidance, he still has the same chance of being inducted. No expenditure on draft avoidance will decrease his probability of serving. The value of m will never reach zero in actual practice because there will always be ways in which one can avoid induction (e.g. disabling oneself, leaving the country, or serving a prison sentence).

Theoretically for a true lottery, avoidance costs will be zero because the value of m is zero. In actual practice, there will always be some individuals who will incur costs to avoid the draft; either legally or illegally. Instead of using the model, I looked at what took place with the lottery draft used during the latter part of the Vietnam War, and tried to evaluate draft avoidance costs directly.

5. Military Wage

From the previous chapter, the computed first term military wage was rounded to $27,800.

C. ESTIMATES OF SOCIAL WELFARE LOSSES AND CONSCRIPTION TAX

The computed estimates of social welfare losses resulting from random selection (Excess Cost) and draft avoidance (Collection), along with estimates of the conscription tax, appear in Tables 13 , 14 , and 15.

The following assumptions pertain to the tables:

- Required Accessions = 139,000
- Required Accessions = 171,600
- Draft wage = 80% AVF wage
- Draft wage = 50% AVF wage

I computed the value of m in each case given the mathematical relationships of the model and given the assumptions about required accessions and the relationship between the draft wage and the AVF wage.

TABLE 13

EXCESS ECONOMIC COST AND COSTS OF COLLECTION: 1985

($ billions - 1985)

PRE-LOTTERY

ASSUMPTIONS	EXCESS COST	COLLECTION	TOTAL
a, c, m = 21	0.30	1.25	1.55
a, d, m = 4.2	0.82	2.97	3.79
b, c, m = 7.8	0.64	2.33	2.97
b, d, m = 2.5	1.10	3.90	5.00

Source: Computed by author

The results in Table 13 indicate that decreasing the draft wage has the obvious effect of increasing collection costs. With a lower draft wage, more individuals have an incentive to engage in draft avoidance. Also, lowering the draft wage increases the excess economic cost of the draft. A greater proportion of high supply-priced individuals are being inducted and this increases the excess economic cost of the draft.

TABLE 14
EXCESS ECONOMIC COST: 1985

(S billions - 1985)

LOTTERY

ASSUMPTIONS	EXCESS COST
a, c	0.92
a, d	2.31
b, c	1.81
b, d	3.07

Source: Computed by author

Table 14 shows the estimates of excess costs under a lottery system. As in the pre-lottery case, the excess cost estimate increases when the draft wage is lowered. Also, as the proportion of the population that is required to serve goes up, the excess cost estimate rises. Once again, higher supply-priced individuals are replacing lower supply-priced individuals.

The lottery draft used in the latter part of the Vietnam War reduced draft avoidance costs (compared to the pre-lottery draft) for 3 reasons; (1) The lottery allowed individuals to better understand their probability of being drafted-- those with high lottery numbers did not have to incur draft avoidance costs, (2) Individuals were eligible to be drafted only for one year instead of for several years, and (3) The lottery drafted younger people who, on the average had lower supply prices. [Ref. 7: p. 19.] In spite of these reasons, draft avoidance under the lottery was still present. Although no statistics were found that separated lottery and pre-lottery avoidance activities, a few examples are given of the numbers of men who engaged in draft avoidance activities during the Vietnam War. Of the 26.8 million men who were draft eligible (18 to 26 years old) during the Vietnam War (1964-1973), 16 million men escaped the draft. Four million received high lottery numbers and were not required to serve. According to a Notre Dame survey, three-quarters of those who never served admitted that they tried to avoid the draft. For example, the survey found that over one million men manipulated their health in some way to avoid the draft. Also, over 171,000 applied for Conscientious Objector status and 570,000 were classified as apparent draft offenders. Most of these draft offenders fled the U. S. to avoid induction. [Ref. 10] Millions of American men spent substantial sums of money or elected not to pursue careers that they normally would have had the draft not been present.

TABLE 15

CONSCRIPTION TAX AND THE COSTS OF COLLECTION: 1985

($ billions - 1985)

ASSUMPTIONS	CONSCRIPTION TAX	COLLECTION COSTS
a,c	0.38	1.25
a,c	1.31	2.97
b,d	1.01	2.33
b,d	2.16	3.90

Source: Computed by author

The results in Table 15 indicate that conscription is a very inefficient means of taxation. In every case, the cost of collecting the tax exceeds the amount of the tax itself. In other words, for every dollar of tax collected, it costs more than a dollar to collect it-- an inefficient system of taxation by any measure.

Also from the table, as the draft wage is lowered, the conscription tax paid by reluctant volunteers and by inductees increases significantly. The greater the decrease in the draft wage, the greater will be the proportion of the population who have supply prices greater than the draft wage. Since more people are paying the tax, the total tax increases.

D. SAMPLE COMPUTATION

The following is an illustration of the calculations of draft avoidance costs (Collection Costs) and the loss that results when individuals are selected without regard for supply price (Excess Costs). I will use the model developed in Chapter II and assume the same conditions as those in the first case in Table 13 of this chapter. The assumptions are:

- Pre-lottery draft
- Constant elasticity supply function
- Supply elasticity = 1.00
- Required accessions = 139,000
- Draft wage = 80% of AVF wage

The constant elasticity supply function takes the form:

$$w(s) = \gamma s^{v}$$

Since we assume a supply elasticity of 1.00, v takes on the value of 1. If, for example, a supply elasticity of 1.25 was chosen, v would take on the value of 0.8. Given the supply function and one specific point which lies on the function, other points on the function can be found.

As a starting point, the model assumes that the military wage is equal to 1. Using our assumption about the relationship between the draft wage and the AVF wage, we have:

$$W(Draft) = 1 = (0.8)\,(W(AVF))$$

$$\text{or, } W(AVF) = 1.25$$

Since we know the AVF wage ($27,800) and we assume required accessions in this case are 139,000 (s = Required accessions/Eligible pool = 139,000/472,000 = .294), we now know one point on the function.

$$W(AVF) = 1.25 = \gamma s^{1}$$

$$\text{or, } 1.25 = \gamma(.294)$$

$$\gamma = 4.24$$

The supply function, therefore, is

$$w(s) = 4.24s$$

Given the assumptions about required accessions and the relationship between the draft wage and the AVF wage, the following is an illustration of the calculation of m:

$$\int_0^1 p(s)ds = .294$$

$$\int_0^{s^*} 1\ ds + \int_{s^*}^1 1/(m(4.24s - 1))\ ds = .294$$

$$s^* + 1/m \int_{s^*}^1 1/(4.24s - 1)\ ds = .294$$

$$w^* = 4.24s^*, \quad w^* = 1 + 1/m, \quad \text{so } s^* = (1 + 1/m)/4.24$$

$$(1 + 1/m)/4.24 + (1/4.24m)\left(\Big|_{(1+1/m)/4.24}^{1} \ln(4.24s - 1)\right) = .294$$

$$1/4.24(1 + 1/m + 1/m(\ln 3.24 - \ln(4.24(1 + 1/m)/4.24 - 1)) = .294$$

$$1/4.24(1 + 1/m(1.176 - \ln(1/m)) = .294$$

$$1 + 1/m + 1/m(1.176 - \ln(1/m)) = 4.24(.294)$$

$$1/m\,(2.176 - \ln(1/m)) = .247$$

m = 21 satisfies this equation.

To solve for s*,

$$w^* = 1 + 1/m = 1 + 1/21 = 1.048, \quad s^* = 1.048/4.24 = .247$$

1. Collection Costs

For a pre-lottery draft, the costs of collection, C, were estimated as

$$C = N\int_{s^*}^1 1/m(\ln(m) + \ln(w(s) - 1))ds$$

$$C = N(1/21)\int_{.247}^1 (3.045 + \ln(w(s) - 1))ds$$

$$C = N(.048)\left(\Big|_{.247}^{1} 3.045s + \Big|_{.247}^{1} (4.24s + (-1))/4.24\,(\ln(4.24s - 1)) - s\right.$$

$$C = N(.119)$$

The eligible pool, N is 472,000; the AVF wage is \$27,800,[8] so the draft wage is \$27,800/1.25 or \$22,240.

$$C = (472{,}000)(22{,}240)(.119) = \$1.25 \text{ billion}$$

2. Excess Costs

The excess economic cost of a pre-lottery draft is calculated by subtracting the minimum economic cost, E_v, from the economic cost of a pre-lottery draft, E_{pd}.

$$E_v = N\int_0^B w(s)\, ds$$

where B equals required accessions - .294 in this case.

$$E_v = 10.50 \text{ billion} \int_0^{.294} 4.24s\, ds$$

$$= 10.50 \text{ billion} \left(\Big|_0^{.294} 2.12s^2 \right)$$

$$= \$1.924 \text{ billion.}$$

The economic cost of a pre-lottery draft is caluculated as follows:

$$E_{pd} = N \int_0^1 p(s)\, w(s)\, ds$$

where $p(s) = 1$, for $s = 0$ to s^*,

and $= 1/(m(w - 1))$, for $s = s^*$ to 1.

$$E_{pd} = N(\int_0^{.247} 4.24sds + 1/21\int_{.247}^{1} 1/(4.24s\text{-}1)4.24sds$$

$$= 10.50 \text{ billion} \left(\Big|_0^{.247} 2.12s^2 + 1/6(\Big|_{.247}^{1} s/4.24s + 1/4.24s^2 \ln 4.24s\text{-}1 \right)$$

$$= \$2.228 \text{ billion}$$

$$E_{pd} - E_v = \$0.30 \text{ billion.}$$

[8] I decided not to discount the estimate of the military wage because my objective was to compute the steady state cost of the draft at a particular point in time, and not to compute the cost of the draft to the individual. This is also the approach used by Sjaastad and Hansen. [Ref. 2]

V. CONCLUSIONS AND RECOMMENDATIONS

A. CONCLUSIONS

The model used in this study is a very simplified representation of what occurs under conscription. It does, however, provide a rough estimate and indicates the potential magnitude of the losses that result when a draft is used to procure military manpower. The model also shows the relationships between the economic costs of conscription and various input variables.

A principal conclusion of this study is that the social welfare losses associated with draft avoidance and the selection of individuals without regard to supply price were large under both a pre-lottery and lottery draft. The estimates provide some measure of the economic costs of conscription that are not reflected in actual budget expenditures. I did not consider the additional social welfare losses that would occur because of overutilization of labor resources and increased turnover caused by conscription. To the extent that these losses are present, the social welfare losses computed in this study are underestimated.

Changing the assumption about what the military wage will be under conscription has a significant effect on both types of welfare losses. The assumption about required accessions affects the magnitude of both types of losses, but to a lesser degree.

Two final points. The results of the study indicate that conscription is a very inefficient taxation device. The costs of collection exceed the conscription tax in most cases. Also, the estimates for total welfare losses are less for a lottery draft than for a pre-lottery draft primarily because avoidance costs are smaller.

B. RECOMMENDATIONS

I assumed an overly simplified constant elasticity supply function (elasticity = 1.00) to use with the model. This function seems unlikely to accurately describe the military labor market over its entire range. Different supply functions, which perhaps more closely resemble the actual market, should be applied to the model. Also, the effect of changing the constant elasticity value should be investigated.

When alternative manpower procurement methods are evaluated, the evaluation should include the consideration of the economic costs and of the social welfare losses caused by conscription. Any movement away from the current AVF policy should consider the large increase in economic costs and in inefficiencies that conscription would introduce.

APPENDIX A

REGULAR MILITARY COMPENSATION

Using the times in paygrade listed in Table 1, RMC values were computed by paygrade for enlisted service members with and without dependents. This was done for the first two years of service.

TABLE 16

REGULAR MILITARY COMPENSATION WITHOUT DEPENDENTS

	E-1 (6 months)	E-2 (6 months)
Base Pay	$ 3,535	$ 4,172
BAS	978	1,030
BAQ	801	878
VHA	320	330
Tax Benefit	332	332
TOTAL	$ 5,966	$ 6,742

	E-3 (9 months)	E-4 (3 months)
Base Pay	$ 6,507	$ 2,302
BAS	1,544	515
BAQ	1,553	533
VHA	564	191
Tax Benefit	602	201
TOTAL	$ 10,769	$ 3,742

Source: Navy Pay and Personnel Procedures Manual, Author

TABLE 17

REGULAR MILITARY COMPENSATION
WITH DEPENDENTS

	E-1 (6 months)	E-2 (6 months)
Base Pay	$ 3,535	$ 4,172
BAS	978	1,030
BAQ	1,431	1,431
VHA	573	541
Tax Benefit	368	368
TOTAL	$ 6,885	$ 7,541

	E-3 (9 months)	E-4 (3months)
Base Pay	$ 6,507	$ 2,302
BAS	1,544	515
BAQ	2,147	779
VHA	781	280
Tax Benefit	578	193
TOTAL	$ 11,557	$ 4,069

Source: Navy Pay and Personnel Procedures Manual, Author

APPENDIX B

SURVEY OF VARIABLE HOUSING ALLOWANCE RATES

TABLE 18

SURVEY OF VARIABLE HOUSING ALLOWANCE RATES

(PER MONTH)

LOCATION		PAYGRADE			
		E-1	E-2	E-3	E-4
San Diego Ca.	Married	141.72	133.82	135.90	145.50
	Single	79.25	82.19	98.23	99.61
Great Lakes Il.	Married	120.03	111.47	111.65	115.90
	Single	67.12	68.46	80.70	79.15
C. Christi Tx.	Married	139.56	133.03	129.19	139.61
	Single	78.10	81.70	93.39	95.58
Jacksonville Fl.	Married	95.23	87.97	79.82	86.45
	Single	53.25	54.03	57.70	59.18
Johnstown Pa.	Married	0	0	0	0
	Single	0	0	0	0
Lakehurst N.J.	Married	68.85	71.35	82.81	84.10
	Single	68.85	71.35	82.81	84.10
Portland Ma.	Married	125.03	118.12	112.91	115.29
	Single	69.92	72.55	81.61	75.93
Camp Lejeune N.C.	Married	35.17	33.53	28.01	24.35
	Single	19.57	20.59	20.25	17.02

TABLE 18

SURVEY OF VARIABLE HOUSING ALLOWANCE RATES (CONT'D.)

Fort Rucker Al.	Married	33.70	23.71	15.13	14.33
	Single	18.54	14.56	10.94	9.81
Honolulu Ha.	Married	281.76	297.50	315.63	353.16
	Single	157.56	182.78	228.15	241.78
Ft. Benning Ga.	Married	16.59	7.34	0	0
	Single	9.28	4.51	0	0
Vallejo Ca.	Married	99.75	91.59	81.99	89.53
	Single	55.78	56.43	59.26	61.30
Las Vegas Nv.	Married	113.16	106.39	100.47	110.12
	Single	63.28	65.34	72.63	75.39
Albuquerque N.M.	Married	72.24	62.05	54.41	57.79
	Single	40.40	38.11	39.33	39.57
Ft. Knox Ky.	Married	34.11	30.23	21.64	27.61
	Single	19.08	13.56	15.64	18.90
Computed Means	Married	95.41	90.13	86.75	93.51
	Single	53.33	55.08	62.71	63.82

Source: Joint Travel Regulations

APPENDIX C

VETERAN'S EDUCATIONAL ASSISTANCE PROGRAM

TABLE 19

VEAP STATUS REPORT AS OF SEPTEMBER 30, 1986

(Totals for Fiscal Year 1986)

Active Participants (contributing)	294,907
Inactive (not contributing)	269,259
Disenrollment Refunds	542,561
Total Established	1,106,727
Gross Contributions	$ 1,252,278,410
Disenrollment Refunds	585,345,761
Net Contributions	666,932,649
Current FY Benefits:	
No. Received Training	63,221
Total $ Benefits	$ 128,087,758

Source: Veterans Administration

APPENDIX D

ELIGIBLE MANPOWER POOL

TABLE 20

PERCENTAGE OF 1980 U.S. POPULATION BY AFQT CAT. AND BY SEX

Non-High School Graduate
Age 18 & 19

AFQT CAT	MALE	FEMALE	TOTAL
I	2.5%	1.2%	1.8%
II	11.1%	8.5%	9.8%
IIIA	6.3%	5.8%	6.1%
IIIB	10.4%	10.7%	10.6%
IVA	7.3%	7.9%	7.6%
IVB	4.4%	3.8%	4.1%
IVC	5.0%	4.4%	4.7%
V	9.4%	6.6%	8.0%
TOTAL	56.5%	48.9%	52.7%

Source: Defense Manpower Data Center

TABLE 21

PERCENTAGE OF 1980 U.S. POPULATION BY AFQT CAT. AND BY SEX

General Educational Development - GED
(High School Equivalency)
Age 18 & 19

AFQT CAT	MALE	FEMALE	TOTAL
I	0.0%	0.0%	0.0%
II	0.7%	0.7%	0.7%
IIIA	0.5%	0.5%	0.5%
IIIB	1.0%	0.7%	0.9%
IVA	0.6%	0.6%	0.6%
IVB	0.1%	0.2%	0.2%
IVC	0.0%	0.0%	0.0%
V	0.2%	0.0%	0.1%
TOTAL	3.2%	2.6%	2.9%

Source: Defense Manpower Data Center

TABLE 22

PERCENTAGE OF 1980 U.S. POPULATION BY AFQT CAT. AND BY SEX

High School Graduates
Age 18 & 19

AFQT CAT	MALE	FEMALE	TOTAL
I	3.3%	4.2%	3.7%
II	15.7%	15.0%	15.3%
IIIA	6.3%	8.6%	7.5%
IIIB	7.1%	11.1%	9.0%
IVA	2.6%	4.8%	3.7%
IVB	2.0%	1.8%	1.9%
IVC	1.5%	1.3%	1.4%
V	1.2%	1.3%	1.2%
TOTAL	39.5%	48.1%	43.7%

Source: Defense Manpower Data Center

APPENDIX E

FISCAL YEAR 1985 ACCESSIONS

TABLE 23

FY 85 DOD ACCESSIONS WITH HSD AND CAT I - IIIA BY AGE

AGE	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
17	8128	8128	5.844	5.844
18	49522	57650	35.605	41.448
19	27169	84819	19.534	60.982
20	16884	101703	12.139	73.121
21	10954	112657	7.876	80.996
22	7863	120520	5.653	86.650
23	5685	126205	4.087	90.737
24	4023	130228	2.892	93.629
25	2719	132947	1.955	95.584
26	1943	134890	1.397	96.981
27	1276	136166	0.917	97.898
28	869	137035	0.625	98.523
29	593	137628	0.426	98.950
30	475	138103	0.342	99.291
31	348	138451	0.250	99.541
32	227	138678	0.163	99.705
33	219	138897	0.157	99.862
34	152	139049	0.109	99.971
35	39	139088	0.028	99.999
38	1	139089	0.001	100.000

Source: Defense Manpower Data Center

LIST OF REFERENCES

1. Studies Prepared For The President's Commission on an All-Volunteer Force, Volume II, November 1970.

2. Sjaastad, Larry A., and Hansen, Ronald W., "The Conscription Tax: An Empirical Analysis," in *Studies Prepared for the President's Commission on an All-Volunteer* Force, Vol. II, Washington D. C.: U. S. Government Printing Office, 1970.

3. Oi, Walter Y., "The Economic Cost of the Draft," *American Economic Review Proceedings*, 57 (May 1967), pp. 39-62.

4. Hansen, W. Lee, and Weisbrod, Burton A., "Economics of the Military Draft," *Quarterly Journal of Economics*, 81 (August 1967), pp. 395-421.

5. Cooper, Richard V. L. *Military Manpower and the All-Volunteer Force*, R-1450-ARPA. Santa Monica, CA.: The Rand Corporation, September 1977.

6. Borcherding, Thomas E., "A Neglected Social Cost of a Volunteer Force," *American Economic Review*, 61 (March 1971), pp. 195-196.

7. Cooper, Richard V. L. *The Social Cost of Maintaining a Military Labor Force*, R-1758-1-ARPA. Santa Monica, CA.: The Rand Corporation, August 1975.

8. Weinberger, Casper W. (Chairman). *Military Manpower Task Force: A Report to the President on the Status and Prospects of the All-Volunteer Force.* U. S. Department of Defense, Revised Edition, November 1982.

9. Morris, Steven M., and Arnold, Andrew L., The Differential Budget Costs of Conscription-Based Alternatives to the All-Volunteer Force", Syllogistics, Inc., F49642-84-D0038, July 23, 1986.

10. Baskir, Lawrence M. and Strauss, William A., *Chance and Circumstance, The War and the Vietnam Connection*, New York: Random House, 1978.

11. United States Code, Title 37, Vol. 14, Section 101, Washington D. C.: U. S. Government Printing Office, 1983.

12. Goldberg, Lawrance, *Enlisted Supply: Past, Present, and Future*, CNS 1168-Vol. 1, September 1982.

13. Dertouzos, James N., *Recruiter Incentives and Enlistment Supply*, R-3065-MIL. Santa Monica, CA.: The Rand Corporation, May 1985.

14. Eitelberg, Mark J., *Screening for Service: Aptitude and Education Criteria for Military Entry*, Human Resources Research Organization, Office of Assistant Secretary of Defense (Manpower, Installations and Logistics), September 1984.

15. Department of Defense, *Profile of American Youth: 1980 Nationwide Administration of the Armed Services Vocational Aptitude Battery*, Washington D. C.: Office of the Assistant Secretary of Defense (Manpower, Reserve Affairs, and Logistics), March 1982.

16. U. S. Department of Health, Education and Welfare, *Vital Statistics of the United States, 1977 - Life Tables*, Vol. II - Section 5, 1980.

17. "Return to Draft Would Cost More, Study Says," *Army Times*, (September 15, 1986).

18. "Commander's Guide to the New G.I. Bill + The New Army College Fund," HQDA (SAPA-CI-PMA), Washington, D. C.

19. "Some Democrats Weigh Reviving Draft to Bolster Armed Services and Make Their Mark on Defense," *Wall Street Journal*, (November 17, 1986).

20. Frazier, Larry, *Script User's Guide for NPS*, Naval Postgraduate School, Monterey, CA., March 1986.

21. Frazier, Larry, *Thesis9*, Naval Postgraduate School, Monterey, CA., July 1986.

22. *Thesis Manual*, Naval Postgraduate School, Monterey, CA., November 1985.

23. United States Navy, *Naval Military Personnel Manual*, NAVPERS 15560, October 1981.

24. Department of the Navy, BUPERS Instruction 1430.16B March 1983.

25. United States Department of Defense, *Military Pay and Allowances - Entitlement Manual*, 1 April 1985.

26. Haeussler, Ernest F. and Paul, Richard S., *Introductory Mathematical Analysis For Students of Business and Economics*, Reston Publishing Co., 1983.

27. U. S. Bureau of the Census, *Current Population Reports*, Series P-25, No. 985, April 1980.

INITIAL DISTRIBUTION LIST

		No. Copies
1.	Defense Technical Information Center Cameron Station Alexandria, Virginia 22304-6145	2
2.	Library, Code 0142 Naval Postgraduate School Monterey, California 93943-5002	2
3.	Professor David R. Henderson, Code 54Ht Naval Postgraduate School Monterey, California 93943-5000	2
4.	Mr. Steve Cylke Chief of Naval Operations OP-01B3 Washington, D.C. 20350	2
5.	LCDR Michael S. Crouch 4018 Cool Brooke Way Alexandria, Virginia 22306	2
6.	Professor Ronald W. Hansen College of Pharmacy Ohio State University 500 W. 12th Ave. Columbus, Ohio 43210-1291	1
7.	Dr. Richard V. L. Cooper 7100 Heathwood Court Bethesda, Maryland 20817	1