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Topics

Deferments and the Relative Cost of Conscription

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Abstract

A model of military conscription with costly deferments is developed. Deferments may enable the induction of only those with the lowest reservation wages, avoiding the usual misallocation of resources with conscription versus a volunteer military. With costly deferments, the tradeoff between conscription and a volunteer military involves the cost of deferments with the former and the higher deadweight cost of taxation with the latter. Among the results are: 1) conscription is socially preferable to a volunteer military only if a large percentage of eligible individuals is demanded by the military; 2) if conscription is used when it is socially cheaper than a volunteer military, welfare is improved if deferments have lower social benefits; and 3) ignoring other costs of conscription (e.g., higher turnover and reduced investment in human capital), the U.S. in World War II may have been near the point at which conscription and a volunteer military were of equal social cost.

KEYWORDS: conscription, deferments, volunteer military

1. Introduction

Economists played a major role in ending conscription (the draft) in the U.S. in 1973.[1] The reasons for opposition to conscription by economists during the Vietnam war were similar to the anti-conscription arguments of more recent years.[2] The most important (but not the only) economic objection to conscription involves the implicit tax on draftees as some with reservation wages in excess of the military wage are compelled to serve. When some are drafted who have higher reservation wages than others who do not enter the military, resource misallocation occurs which increases the social cost of the military.

Although a staunch opponent of conscription, Milton Friedman (1967) noted conscription might involve lower social cost than a volunteer military if a large fraction of the relevant population were required for military service. In this case, the deadweight cost of taxation required to finance a military might be so large as to make conscription optimal. This possibility was considered in papers by Johnson (1990), Lee and McKenzie (1992), and Ross (1994). In response, others noted additional costs that made the optimality of conscription more problematic, including the reduced productivity of draftees versus volunteers (Warner and Asch, 1996), and costs to individuals and government due to draft evasion (Warner and Negrusa, 2005).

One feature of conscription that has not been considered is that of individual deferments.[3] As one might expect, when conscription was used in the U.S., deferments have always been allowed for medical reasons. Also available at different times have been deferments based on occupational and educational status. Some deferments are costless: one is already in the medical, occupational, or educational categories that are deferred. Other deferments are costly: one must expend resources to become a member of a deferred group. As will be demonstrated, in one sense, costly deferments function as did the hiring of substitutes and the payment of a fee to avoid service in the Civil War.

Warner and Negrusa (2005) considered the costs to individuals of draft evasion and the costs to the government from attempting to prevent evasion. They added evasion cost to the cost of the wrong people being inducted, and compared these costs to the additional deadweight cost from a volunteer military. Although

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[1] The President's Advisory Commission on an All-Volunteer Force (commonly referred to as the Gates Commission) had fifteen members, three of whom were economists: Milton Friedman, Alan Greenspan, and W. Allen Wallis. Wallis was president of the University of Rochester, and one of his deans, William Meckling (also an economist), was the executive director of the commission. Among the economists who worked on studies for the commission were Robert Barro and Walter Oi. See Henderson (2005).

[2] See Friedman (1967) and Oi (1967) for earlier arguments, and Warner and Asch (1996) and Warner, Miller, and Asch (2010) for more recent analysis of conscription.

[3] Oi (1967) briefly discusses deferments in a footnote (footnote 24, p.55).

deferments are a form of evasion, once offered, they are available to all who qualify. For example, if an occupational category provides a deferment, the deferment is available to all who qualify, and government does not then try to prevent people from entering this occupation, nor does it punish those who do so. Thus, there are no evasion costs with deferments. In contrast, government expends resources to apprehend draft evaders. Also, deferments may have social benefits, education being one example.

Herein, costly deferments are considered. Such deferments function like the buyout available in the U.S. during the Civil War, which was called *commutation*, in that both commutation and costly deferments result in high reservation wage individuals avoiding service. Commutation and costly deferments differ in that the latter involves social cost.[4]

The main objective of this paper is to consider the tradeoff between the additional deadweight loss from taxation with a volunteer military, and the social cost of deferments with conscription. The typical analysis (Johnson, 1990, Lee and McKenzie ,1992, Ross, 1994, and Warner and Negrusa, 2005) involves the tradeoff between additional deadweight loss with a volunteer military, and the cost of the resource misallocation due to the enlistment of some of the "wrong" people with conscription.

To analyze the tradeoff between deadweight loss and the cost of deferments, with conscription, we generally assume the military wage is set so as to just attract the desired number of individuals via volunteers and draftees because this is the case in which there is no misallocation of resources due to enlistment of the wrong individuals.

Mulligan (2008) considers taxation in kind, of which conscription is one example. His analysis differs from that herein because he is interested in how the cost of taxation in kind relative to monetary taxes is affected by issues such as factor supply conditions and whether recruitment is local or national. Also, he assumes a commutation fee exists. However, neither commutation nor substitution has been used in the U.S. since the Civil War, but deferments have been used.

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[4] There were essentially four drafts by the Union in the Civil War. In all four, one could hire a substitute and avoid service for three years, which, given the first draft was in October 1863 and the war ended in 1865, meant no one who hired a substitute was called again in a draft. In the first draft, paying the $300 commutation fee also enabled one to avoid service for three years. In the second draft (March 1864), commutation excused one only for that draft. After the second draft, commutation was abolished except for conscientious objectors. Note substitution and commutation would function identically if the commutation fee were set equal to the equilibrium price of substitutes (Becker, 1957), provided there are no transactions costs involved in finding substitutes. Such costs imply some of the wrong people would be inducted, where commutation could prevent that. For a detailed analysis of Civil War conscription see Perri (2008).

The analysis herein is concerned with conscription as was practiced in the 20th century. We consider costly deferments and the social costs of conscription and a volunteer military. In order to make the best case for conscription, we mostly ignore certain costs associated with conscription, such as higher turnover and reduced enrollment in higher education. A series of papers has demonstrated the negative effects of conscription on education and growth. These papers include Lau and Poutvaara (2004), Cipollone and Rosolia (2007), Poutvaara and Wagener (2007), and Keller, Poutvaara, and Wagener (2009, 2010). These and other issues are discussed in Section 7 as extensions of the basic model herein.

With costly deferments, we determine a simple condition for when conscription is socially preferable to a volunteer military, which, as found previously and suggested by Friedman (1967), occurs only if a large enough fraction of the cohort eligible for military service is to be enrolled. We then examine some evidence and find, in World War Two, the U.S. may have been close to the point where conscription begins to dominate a volunteer military. Again, this ignores other costs of conscription such as higher turnover and reduced human capital investment. Also considered are social benefits from deferments. It is demonstrated a lower social benefit from deferments can actually increase welfare.

Mulligan and Shleifer (2005) consider how fixed costs of conscription affect the likelihood of a draft versus a volunteer military. They discuss different kinds of conscription, both a random draft and a draft designed to attract the same individuals who would enlist with a volunteer military. Herein, the fixed cost of introducing conscription is ignored. The focus is mainly on the case when government chooses either a volunteer military or a draft with deferments in which the wage is set so the same individuals are enlisted as when there is a volunteer military---those with the lowest opportunity cost. In this situation, all who do not volunteer or defer are drafted. In an extension (Section 5), we consider the case when the military wage is set higher than the level required to attract (with volunteers and a draft) the desired number in the military. In this case, not all who are subject to a draft are called, and a random draft occurs involving those who neither volunteer nor defer.

2. Deferments

Consider deferments in the U.S. in the 20th century.[5] In World War One, although some skilled workers were eligible for deferments, the Wilson administration rejected blanket deferments for categories of workers, fearing these exemptions would erode support for the draft.[6] In World War Two, although there were no deferments for occupational groups, the president was allowed to provide exemptions for public health and safety. More importantly, local draft boards had a good deal of discretion, and generally preferred deferring married men and fathers over unmarried essential workers.[7] Also, farm workers received a significant number of draft exemptions, even though group deferments supposedly did not exist. Although 9% of non-farm workers were deferred, 17% of farmers received job deferments.[8] Consequently, many single men left industrial jobs that paid better than farming, but in which one did not have as great a chance of receiving a deferment.[9] In the Korean War, educational and occupational deferments were used in order to continue the flow into scientific and professional jobs.[10] Once again farm workers received a disproportionate number of deferments. In 1951, there were 24,000 deferments for those in key industrial jobs, and 85,000 deferments for farm workers.[11] During the Vietnam War, educational and occupational deferments existed.[12] The latter were based on lists from the Department of Commerce and the Department of Labor, which supposedly included jobs that were critical for the civilian sector.[13]

Deferments are costly if individuals use resources to avoid service when they otherwise would not use these resources. Card and Lemieux (2001) estimate

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[5] The first significant use of conscription in the U.S. was during the Civil War. However, conscription in the Civil War was not designed to directly attract soldiers (only 6% of those called were enlisted), but instead was a means to prod the states and local communities to pay for some of the personnel cost of the war (Perri, 2008). World War One was the first time conscription was used to directly attract soldiers.

[6] See O'Sullivan and Meckler (1974), pp.122 and 124, Chambers (1987), pp.188-192, and Flynn (2002), pp.37-39.

[7] See O'Sullivan and Meckler (1974), p.177, Flynn (1993), p.54, Flynn (2002), pp.59, 100, 127, and 171, and Rostker (2006), p.26.

[8] See Flynn (1993), pp.58 and 65, and Flynn (2002), p.173.

[9] See Flynn (1993), p.68.

[10] See Janowitz (1982), p.406.

[11] See Flynn (1993), pp.111, 118, and 129-130.

[12] Undergraduate student deferments existed throughout the Viet Nam War. Such deferments were no longer issued after September 1971, but one could continue in school with a deferment until age 24. With the significant reduction of inductions after June 1971, most of those who received deferments in 1970 and 1971 (after the draft lottery was introduced) avoided military service (Card and Lemieux, 2001).

[13] See Curtis (1982), p.595.

draft avoidance raised college enrollment by 4-6% in the late 1960s. Kuziemko (2008) finds a 55% increase in the likelihood of enrolling in college moving from the best to the worst lottery number during the Vietnam War. She also finds, for those with low socio-economic status, bad lottery numbers were associated with higher rates of delinquent behavior---the kind that makes one unfit for service. Rohlfs (2005) estimates men in Vietnam were willing to pay between $10,000 and $35,000 (in 2003 dollars) to avoid being drafted.

For those who have decided to enter a deferred occupational or educational category before the draft, and those physically unfit for military service, deferments are costless. Such individuals are already excluded from the potential military labor supply. However, many apparently enter an occupation, enroll in school, or make themselves undesirable for the military in order to avoid service. In the rest of this paper, costly deferments will be considered in order to compare the social cost of conscription and a volunteer military.

3. A model with deferments

A. *Selective deferments*

Suppose there are N individuals who are potentially subject to the draft, with the military's demand for labor fixed[14] at η, $\eta < N$. Let w_R equal an individual's reservation wage and w_M equal the wage paid in the military. With a volunteer military, the wage must equal w^* (Figure One). Denote the opportunity cost of the η lowest reservation wage individuals by O_η (which equals the area under the military labor supply schedule out to η). If the deadweight cost of taxation required to pay military personnel is t times the military payroll, then the social cost of a volunteer military, C_V, is:

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[14] There is evidence the military may be a monopsonist (Asch and Heaton, 2008). By assuming a fixed number demanded by the military, we avoid dealing with the issue of monopsony, and we eliminate one social cost of conscription, that of an inefficiently small capital-labor ratio.
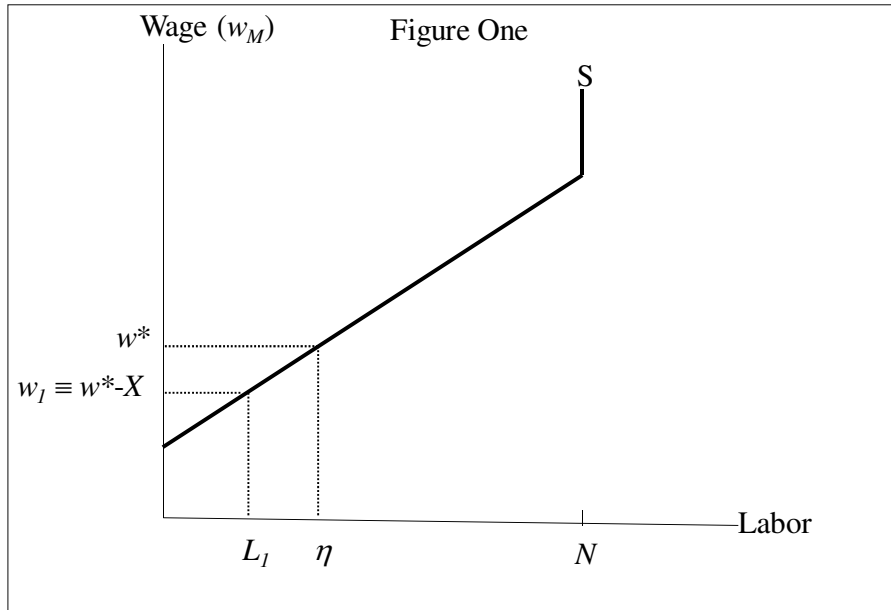
$$C_V = O_\eta + t\eta w^*. \tag{1}$$

After being called in a draft, an individual can avoid service by incurring a (social and private) cost of X.[15] As a benchmark, for now suppose the government can selectively defer those with the highest reservation wages. This case is considered because some assert such a draft occurred in World War One. However, as discussed below, selective deferments are not likely.

Now the military wage, w_M, will equal $w^* - X \equiv w_1$. If $w_M > w_1$, the military pays more than it must to attract η individuals. If $w_M < w_1$, the number who enter the military is less than η. This is because, if $w_M = w_1 - \varepsilon$, $\varepsilon > 0$, those with $w_R - X > w_M$ would (if necessary) incur the cost X to be deferred, so only those with $w_R \le w_M + X = w_1 + X - \varepsilon = w^* - \varepsilon$ would enter the military (those with $w_R \le w_M$ volunteering, and the rest drafted). If government can selectively defer those with $w_R > w^*$, using Figure One, with $w_M = w_1$, L_1 will volunteer and $\eta - L_1$ will be drafted.[16] By setting $w_M = w^* - X$, the government insures no one will

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[15] If bribes were important, then not all of X would be social cost. I know of no evidence suggesting bribes have been a significant problem with deferments in the U.S.

[16] John Warner (Warner and Negrusa, 2005) notes Sherwin Rosen once asked him what determined the military wage with conscription. Warner and Negrusa (2005) model draft evasion, in which case the military wage is chosen to balance evasion and payroll costs. With costly deferments, the military wage is determined by the wage required with a volunteer military and the cost of deferments.

incur the cost of obtaining a deferment. The social cost of the military with conscription, C_C, is:

$$C_C = O_\eta + t\eta w_1 = O_\eta + t\eta(w^* - X). \qquad (2)$$

Thus conscription lowers social cost by the amount $t\eta X$.

It is highly unlikely government can identify and selectively defer those with the highest reservation wages. Ostensibly, this was the objective during World War One. Cooper (1982) argues the World War One draft minimized the cost of those serving in the military because it chose only those with the lowest value elsewhere. Similarly, Warner and Negrusa (2006) argue a draft that targets those with the lowest civilian wages will tend to induct the same people who would volunteer, provided wages and non-pecuniary aspects of military service are unrelated. Some evidence in favor of this argument is the fact that 70% of those drafted in World War One had been manual laborers.[17]

However, there was much room for discretion by local draft boards in World War One. The board members reflected the views of the upper and middle classes on what social and occupational groups were more valuable, which may not have always coincided with the actual value to society of some individuals' occupations.[18] Additionally, for some, civilian earnings and non-pecuniary aspects of the military may have been negatively related. Those with low civilian earnings, but high disutility for military service, could have had high reservation wages, but would not have been deferred because the draft boards observed earnings or occupations and not disutility.

It is possible to attract only the lowest opportunity cost individuals into the military with a draft. Either commutation or costly deferments can achieve this result. The latter is the focus herein.

B. Costly deferments

If government can not selectively defer individuals, it will again set $w_M = w_1$.[19] Now all those with $w_R - X > w_1$, or $w_R > w^*$, will spend X to avoid service. Thus,

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[17] Flynn (2002), p.38.

[18] Chambers (1987), pp.191-192.

[19] We implicitly assume one objective with the draft is to enlist those with the lowest opportunity cost, which occurs if $w_M = w_1$. If $w_M > w_1$, deadweight loss would rise, fewer would defer (so the social cost of deferments would fall), and some of the "wrong" individuals would be in the military---those with higher opportunity cost than some who are not in the military. Thus, it is not necessarily the case social cost is minimized when $w_M = w_1$. For simplicity, we mainly consider the case where $w_M = w_1$ so no misallocation from the wrong people being in the military results, and we can focus on the tradeoff from deadweight loss and deferment cost.

in order to obtain η individuals in the military, all must be called in a draft. If w_M > w_I, a possibility considered in Section 5, the number who do not volunteer or obtain a deferment would exceed the number desired in a draft, and it is assumed a random lottery would be used. If $w_M = w_I$, a random lottery also occurs in the trivial sense that all are called who do not volunteer or defer.

In addition to those expending X each to be deferred, those with $w_R \leq w_M$ will volunteer, and those with $w_M < w_R \leq w^*$ will be drafted. Note, the fact all expend X who do not volunteer or enter service if called in a draft does not bias the result towards conscription being too costly. As will be seen in *ineq.*(4), the level of X does not affect when conscription is cheaper than a volunteer military. Also, other than the expenditure of X by each who defers, there are no other "evasion costs." Government does not try to prevent people from obtaining deferments once they are made available.

As before, only those with the lowest seller reservation wages enter the military, but now $N-\eta$ individuals spend X to be deferred, so:

$$C_C = O_\eta + t\eta(w^*\text{-}X) + (N\text{-}\eta)X. \tag{3}$$

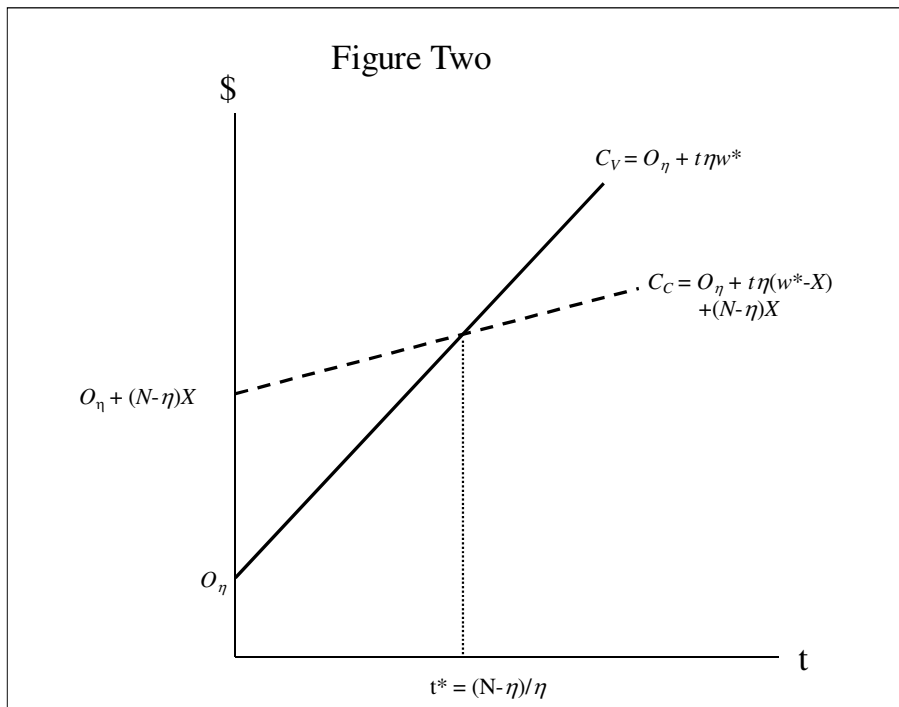Using *eqs.*(1) and (3), conscription involves lower social cost than a volunteer military if:

$$t\eta(\ w^*\text{-}X) + (N\text{-}\eta)X \ < \ t\eta w^*,$$
$$-t\eta + (N\text{-}\eta) \ < \ 0,$$
$$\frac{N-\eta}{\eta} \ < \ t,$$
$$\frac{1}{1+t} \ < \ \frac{\eta}{N} \ . \tag{4}$$

The value of t for which $C_C = C_V$, $\frac{N-\eta}{\eta}$, will be denoted by t^* (see Figure Two). As found previously,[20] and suggested by Friedman (1967), conscription involves a lower social cost than a volunteer military only if the number of individuals demanded by the military is a sufficiently large percentage of those eligible for military service.

There are two differences between previous results and those herein. First, in this paper, there is no resource misallocation due to the "wrong" people being inducted into the military. The tradeoff between a volunteer military and conscription is simply based on higher deadweight cost with the former and the

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[20] See Johnson (1990), Lee and McKenzie (1992), Ross (1994), Warner and Asch (1996), and Warner and Negrusa (2005).

expenditure to obtain deferments with the latter (Figure Two). The reason X has no effect on t^* is, as X increases, the military wage with conscription (w_1) decreases dollar per dollar. The deadweight cost of taxation falls and the number who "purchase" a deferment, $N-\eta$, is unchanged. The reduction in deadweight cost per unit change in X equals $t\eta$, so, if X is positive, conscription is cheaper than a volunteer military if $t\eta$ exceeds $N-\eta$. If X is zero, all would obtain a deferment except those with reservation wages below the military wage, and conscription would not occur: the military wage would have to equal w^* to attract η individuals.

Figure Two

$$\text{\$}$$

$$C_V = O_\eta + t\eta w^*$$

$$C_C = O_\eta + t\eta(w^*-X) + (N-\eta)X$$

$$O_\eta + (N-\eta)X$$

$$O_\eta$$

$$t^* = (N-\eta)/\eta$$

t

The second difference between the results herein and previous papers is the marginal deadweight loss from taxation is the only factor that affects when conscription is cheaper than a volunteer military. Because of tax evasion, the marginal deadweight loss from taxation is a positive function of marginal tax rates and *civilian* labor supply elasticity (Browning, 1987). Ross (1994) finds the total deadweight loss from taxation is inversely related to the elasticity of *military* labor supply---because the wage must be increased more as labor supply elasticity falls to obtain a given increase in the number enlisted.

One might expect a positive relation between civilian and military labor supply, so the impact of labor supply elasticity on total deadweight loss would appear to be ambiguous. However, with costly deferments, military labor supply

elasticity has no impact on the relative social cost of a volunteer military and conscription. The military wage w_M, equals the wage with a volunteer military minus the cost of a deferment, $w^* - X \equiv w_1$. Thus, the more the wage must increase with a volunteer military, the more the wage with conscription must increase: $\frac{\partial w_1}{\partial w^*} = 1$.

The assumption X is social cost and not purely private cost is justified by the fact, since buy outs were ended in the Civil War, the ability to obtain a deferment involves getting an education, choosing an occupation, or having a medical condition that precludes service. For now, ignore any social benefits from deferments (say, for education) because they will be considered in the next section. Also, some may already have a medical condition or plan to obtain an education or choose an occupation independent of the draft. For these individuals, a deferment is costless, and they are not part of the potential military labor supply, N.

If a deferment results in part from bribing government officials, then only a portion, call it δ, of X is social cost, and the condition for conscription to be socially preferable to a volunteer military becomes $t > \frac{\delta(N-\eta)}{\eta}$. The more important are bribes (the smaller is δ), the more likely a draft with costly deferments involves lower social cost than with a volunteer military. If $\delta = 0$, there is no social cost of deferments, and, for any positive deadweight loss rate ($t > 0$), the draft involves lower social cost than a volunteer military because of lower deadweight loss from taxation with the former due to lower payroll cost. In some countries, bribes might be important, and δ would be closer to zero than to one. In the U.S., there is no reason to believe bribes were important when the draft existed, so it seems reasonable to assume δ equals one.

4. Positive social benefits from deferments

Some costly deferments have no social benefit. This would be true if one intentionally injured oneself to avoid service. However, other deferments, such as those for educational or occupational categories, would have some social and private benefit. Let B equal the social and private value of deferments.[21] We could simply let a reduction in X reflect an increase (from zero) in the social benefit from the deferment. However, it is convenient to fix X and allow B to vary, so long as $B < X$. If $B \geq X$, the activity used for the deferment would otherwise be undertaken.

Now one will get a deferment if $w_R + B - X > w_M$, so, to attract η individuals at the lowest possible w_M, the reservation wage of one indifferent to

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[21] By private benefit, we mean in addition to the value to an individual of avoiding military service.

deferring, $w_M + X - B$, must equal w^*. Thus, $w_M = w^* + B - X$. A larger B gives more individuals an incentive to obtain a deferment, which implies the military must pay a higher wage in order to attract the desired number of individuals.

The social cost of conscription is decreased as B increases because the activity associated with deferments has social value, but there is an indirect effect of B on C_C since conscription involves a greater deadweight loss from taxation because of the higher military wage as B increases. Thus:

$$C_C = O_\eta + t\eta(w^* + B - X) + (N - \eta)(X - B). \tag{5}$$

Comparing the social costs of conscription and a volunteer military, *eqs.* (1) and (5), we again find conscription is cheaper only if $(N - \eta)/\eta \equiv t^* < t$. When B increases, the cost of conscription becomes $\hat{C}_C$ in Figure Three. For $t < t^*$, the direct effect of a larger B dominates, and C_C falls. When $t > t^*$, the increased marginal social cost of conscription (the slope of C_C) outweighs the direct effect of B on C_C, and C_C rises. If $B \to X$, $C_C \to C_V$ because $w_M \to w^*$: the net cost of a deferment would approach zero, so conscription would not be possible.

An increase in B is equivalent to a decrease in X, and, since X does not affect the likelihood conscription is socially preferable to a volunteer military, B also does not affect t^*. Using Figure Three, consider the two possible cases when conscription is used.

Figure Three
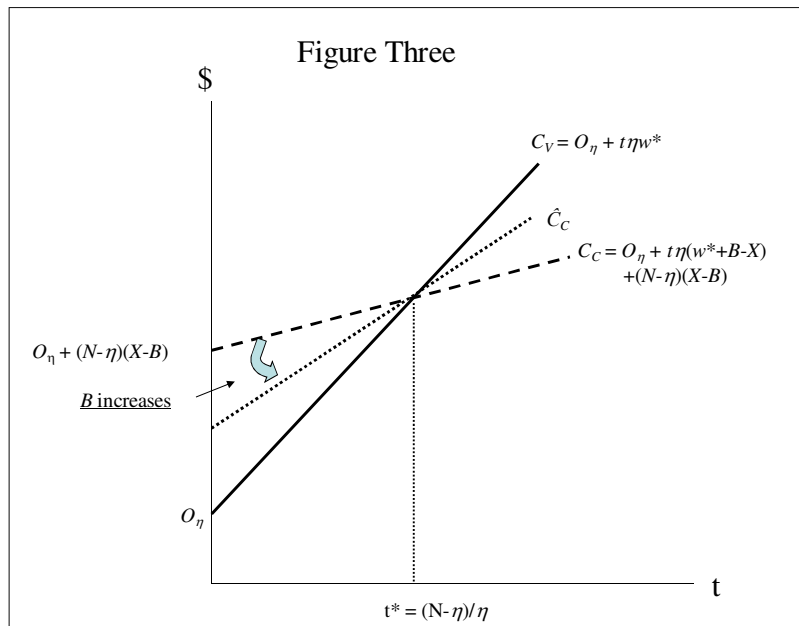
When $t < t^*$, an increase in B implies the social cost advantage of a volunteer military is reduced, but conscription is still the more costly option. A country employing conscription *should* try to defer individuals who engage in activity with a larger social benefit, B, since the social cost of conscription falls as B increases. However, if one objective of the government is to reduce its payroll cost, it will instead try to defer those in activities with lower social benefit since a reduction in B lowers payroll cost. If $t > t^*$, a *decrease* in B would lower both the social and payroll costs of the military, so one might expect deferments would focus on activities with lower values of B.

As suggested in Section 6, since the U.S. Civil War, the most likely war for which t *may* have exceeded t^* is World War Two. In World War Two, there were no occupational deferments, exemptions by the president were allowed, and farm workers received a disproportionate share of job deferments. During the U.S. military involvement in Vietnam, most graduate school deferments were eliminated. From the discussion in Section 6, it does not seem likely t exceeded t^* during the Vietnam conflict. A relatively large number of deferments for farm workers in World War Two and the Korean War, who were not highly skilled, and the elimination of most graduate school deferments during the Vietnam War suggest an attempt to reduce B in order to reduce payroll cost.

One exception to the possible attempts to reduce B is found in World War One. In that conflict, the government explicitly indicated a desire to defer those valuable to both the war effort and non-military production.[22] If, as likely, $t < t^*$ in World War One, the government's objective in that war may not have been to minimize its payroll cost (subject to being able to enlist the desired number of individuals).

It is plausible our first true conscription in the U.S., in World War One, did *not* have the goal of minimizing payroll cost, but conscription changed later in World War Two, Korea, and Vietnam. Although, in World War One, President Wilson initially resisted efforts to impose universal military training and conscription, and never approved the former, domestic political considerations may have induced him to support conscription.[23] With wartime conscription thus

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[22] See O'Sullivan and Meckler (1974), Cooper (1982), Chambers (1987), and Flynn (2002).

[23] Note, in this era, a volunteer military implied the ability to raise volunteer units, which had supplied most of the soldiers in the Civil War, and some of them in the Spanish American War. Former president Theodore Roosevelt had appealed directly to Wilson and the Secretary of War to lead a division of volunteers in World War One. Wilson originally supported volunteer units and opposed conscription. Two historians---John Chambers (1987), who extensively studied U.S. wars and raising of troops, and Patricia O'Toole (2005), a Roosevelt biographer---believe Wilson changed his mind on volunteer units because his party (the Democrats) feared Roosevelt would repeat his military heroics of the Spanish-American War and become a formidable Republican presidential candidate in 1920. One can not rule out the importance of the internationalists (who clamored for conscription and universal military training) for the introduction of conscription.

established, and the political factors Wilson faced no longer relevant in subsequent wars, the ability to reduce payroll cost may have become an important factor in the use of conscription.[24]

5. Early and late deferments

To this point, we have assumed deferments occur after being called in a draft. However, in actuality, some obtain deferments prior to being drafted. In this section, we consider both late and early deferments, and show the presence of the latter is of no consequence for our results. Since the probability of one being drafted (equal to one heretofore) is an issue in this discussion, this is a natural place to discuss when it might be optimal to set the wage higher than necessary to attract the desired number of individuals.

Thus, suppose one may defer at a cost of Z before a draft. We assume $Z < X$ for two reasons. First, deferring late might involve fewer options than early deferment. Second, if $Z \geq X$, no one would defer early when the individual is not sure of being conscripted. Note, the expected cost of late deferment is pX, and the cost of early deferment is Z. Early deferment will only be chosen if $p \geq Z/X$.

All those with $w_R \leq w_M$ volunteer. Those with $w_M < w_R \leq w_M + Z$ will not choose early deferment. For those with $w_R > w_M + Z$, we work backward. If early deferment does not occur, individuals will defer late if $w_R - X > w_M$. Thus, the best option if called in a draft is $max(w_R-X, w_M)$. With p the probability of being called, one will defer early if:

$$w_R - Z \geq p[max(w_R-X, w_M)] + [1-p]w_R. \tag{6}$$

However, universal military training was not adopted, so the question is why was conscription implemented, with no volunteer units, when universal military training was not adopted? At the very least, it appears the Roosevelt factor raised the political cost of a volunteer military sufficiently so conscription was adopted and volunteers units were not employed.

[24] It is often argued the opposition to the draft in Viet Nam was due to the unpopularity of the war. Another reason for more draft opposition during this war, as opposed to during World War Two and the Korean War, was the relatively poor pay for those at the lowest ranks. Consider the change in real pay for military personnel from 1946 to 1966. During that period, median real family income had increased by 69%. The real pay of generals had almost kept pace, increasing by 64%. Senior sergeants' real pay had increased by 48%, but privates' real pay had declined by 24%.This information is contained in a July 1967 memo from Gardner Ackley, the chair of the Council of Economic Advisors, to Secretary of Defense McNamara (Ackley, 1967).

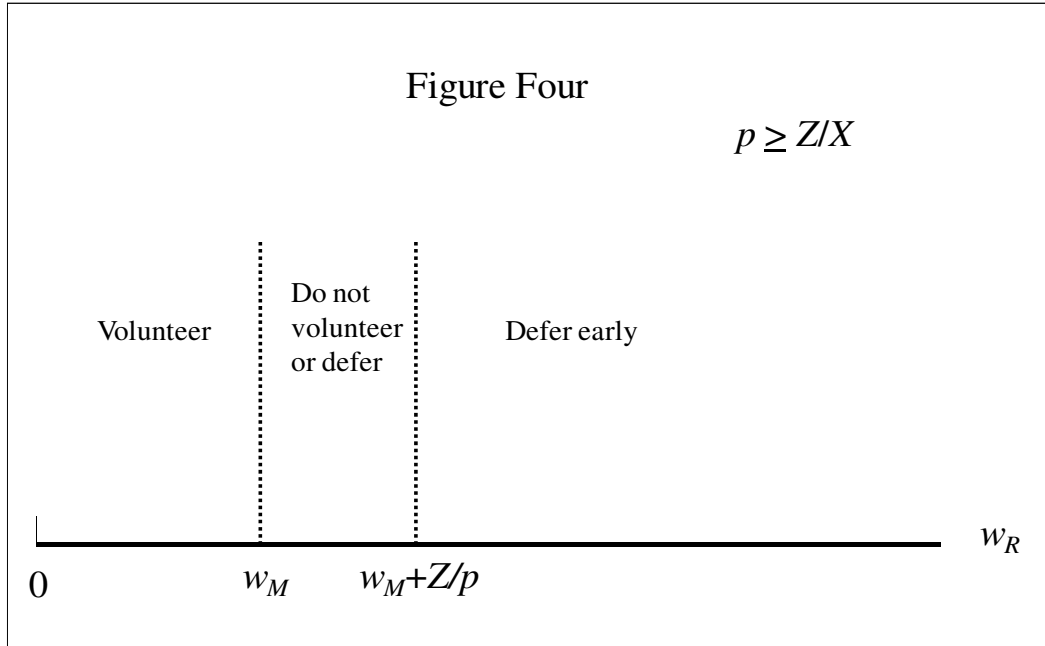Consider those with $w_M + Z < w_R \leq w_M + X$. Using *ineq.*(6), these individuals will defer early if:

$$w_R \geq w_M + Z/p. \tag{7}$$

Thus those with $w_R \in (w_M + Z, w_M + Z/p)$ will not defer early. For others with $w_R \leq w_M + X$, we must have $X \geq Z/p$, or $p \geq Z/X$ for them to defer early. From *ineq.*(6), those with $w_R > w_M + X$ will defer early if:
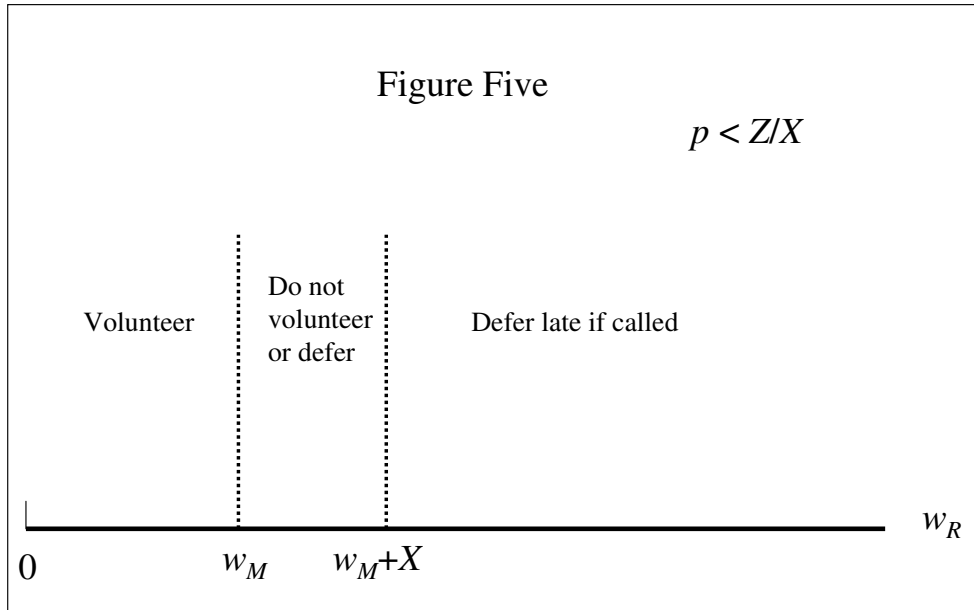
$$w_R - Z \geq p[w_R - X] + [1-p]w_R, \text{ or}$$
$$p \geq Z/X. \tag{8}$$

Thus, for those with $w_R > w_M + Z$, if $p \geq Z/X$, all except those with $w_R \in (w_M + Z, w_M + Z/p)$ choose early deferment (Figure Four). Since those with $w_R \in (w_M + Z, w_M + Z/p)$ have $w_R - X < w_M$, they will not defer late either. With those for whom $w_M < w_R \leq w_M + Z/p$ neither volunteering nor deferring, to get at least η individuals to not defer, we must set $w_M + Z/p \geq w^*$, so $w_M \geq w^* - Z/p$. Now w_M is minimized if p is set as low as possible. However, with $p < 1$, too low a wage may not result in η individuals being enlisted. We will consider $p < Z/X$ below. For early deferments to occur, $p \geq Z/X$. If $p = Z/X$, $w_M = w^* - X$. This will yield η individuals who do not defer, but, with $p < 1$, fewer than η individuals will be inducted.

Thus, we obtain those individuals with the lowest possible reservation wage, so none of the "wrong" individuals is enlisted, and payroll cost is as low as possible (given η individuals are enlisted) if p equals one: all those who neither volunteer nor defer will be drafted as before when only late deferments were considered. With $p = 1$, $w_M = w^* - Z$. Those with $w_R \leq w^* - Z$ volunteer, and those with $w^* - Z < w_R \leq w^*$ are drafted. In this case, the prospect of early deferment that is cheaper than late deferment implies a higher military wage than when only late deferment is possible, $w^* - Z$ versus $w^* - X$, and fewer individuals conscripted.

Figure Four

$$p \geq Z/X$$

Volunteer | Do not volunteer or defer | Defer early

$$0 \qquad w_M \qquad w_M + Z/p \qquad\qquad\qquad w_R$$

From the analysis above, if $p < Z/X$, then those with $w_R > w_M + X$ will choose late deferment, and those with $w_M < w_R \leq w_M + X$ will choose neither type of deferment and be inducted if called (Figure Five). To illustrate what happens if $p < Z/X$, suppose military labor supply is linear with a zero intercept and slope of one. Then $\eta = w^*$, the number who volunteer is w_M, $\eta - w_M$ is the number who must be inducted via conscription, and X is the number who do not volunteer or defer. Thus, the probability of being called times the number who will not defer if called must equal the number desired in the military minus the number who volunteer, so $p = \frac{\eta - w_M}{X}$. For $p < Z/X$, $\eta - w_M < Z$, or $w_M > w^* - Z$. In order to have more who neither volunteer nor defer than the number who must be inducted via conscription ($p \leq Z/X < 1$), a higher military wage must be paid to induce fewer to choose deferment. A government that wishes to minimize its payroll cost, given no misallocation of resources because the wrong individuals are enlisted, would not choose $p < Z/X$, and, as seen in the previous paragraph, p would equal one.

Figure Five

$$p < Z/X$$

	Do not volunteer or defer	Defer late if called
Volunteer		

$$0 \qquad w_M \qquad w_M + X \qquad\qquad\qquad\qquad\qquad\qquad w_R$$

In previous sections in this paper, early deferments were ignored and $p=1$. Allowing for the possibility of early deferment does not change the fundamental results established earlier: if $p = 1$, only the η individuals with the lowest opportunity cost are enlisted. What *would* result in misallocation due to some of the "wrong" individuals being enlisted is if $p < 1$. Our model provides no reason for this to occur. However, we ignore costs of turnover and recruitment. If we allow for these costs, which are both private and social, a higher wage and $p < 1$ *may* be socially optimal. If $p < 1$, we do not draft only the lowest reservation wage individuals of those who do not volunteer, causing social cost to rise. The higher wage also causes deadweight loss from taxation to increase. However, the higher wage lowers turnover cost. When such cost is significant, it would be socially optimal to set the wage higher than required to obtain η individuals in the military so not all who do not volunteer or defer would be drafted ($p < 1$). Thus, turnover and recruitment costs may explain why we do not see the military wage set so all who are subject to a draft are called.

6. Deadweight loss and marginal tax rates

In Section 2, we demonstrated theoretically when the higher deadweight loss (DWL) from a volunteer military would offset the deferment costs associated with conscription (*ineq*.(4)). Browning (1987) found DWL from income taxation of between approximately .3 and .45. Using 1994 data, Feldstein (1999) found a DWL of .32, based on both income and payroll taxes. However, if additional revenue is required to finance more government spending, a more relevant

measure would be DWL from an increase in marginal tax rates (MTRs). Assuming a 10% increase in all MTRs, Feldstein found a DWL of .78.

Using *ineq*.(4), we can use measured DWL to consider whether the ratio η/N might have been large enough in any U.S. war to justify conscription. As a first approximation, consider the percentage of the entire population who served in the military. From Table One, World War Two and the Civil War were unique in the enrollment of a relatively large percentage of the population in the military. As noted above (footnote four), conscription in the Civil War was unlike that in subsequent wars: few of those called were inducted, and opportunities abounded to avoid service.[25] Thus, we focus on World War Two.

Table One. Military size relative to population.		
War	Fraction of the population in the military	Column 2 divided by the # for WWII
Civil War	.104	.92
WWI	.045	.4
WWII	.113	1.0
Korea	.035	.31
Vietnam	.041	.36
Sources. U.S. Department of Veteran Affairs and U.S. Census.		

Note, although Table One shows the fraction of the *total* population, this data is still useful because we do not know how many of those deferred were actually capable of service (to determine *N* in our theoretical model). For example, in the Viet Nam War, about 32% of draft-age men served in the

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[25] In the Civil War, local communities and states raised large sums to hire volunteers and substitutes and to pay commutation fees. Both informal and formal draft insurance existed: one called who was insured would have a substitute hired or commutation paid. See Perri (2008).

military, 8.744 million out of 27 million men age 18-25 (Baskir and Strauss, 1978, Cooper, 1982).[26] A relatively small number of men outside the ages of 18-25 served. Approximately 15 million men were exempted or deferred. Almost 16 million served in the U.S. military in World War Two, and about 50 million registered for the draft, so (ignoring any from outside the draft-eligible range who served), again about 32% of the eligible population served. However, in World War Two, those 18-45 (later 17-45) were eligible for induction, so those then considered potentially fit for military service represented a much larger percentage of the population than in the Viet Nam War.

In World War One, an age group comparable to that in World War Two was draft eligible, those aged 18 to 45. Also, a comparable percentage of those who served in these wars were draftees, 70% for World War One, and 67% for World War Two. Thus, since about 10% of those registered for the draft were conscripted in World War One, and the corresponding figure for World War Two is 22%, we have further evidence suggesting the U.S. military in World War Two employed a larger percentage of those capable of military service than it did in other wars.

One way to think about N, the population eligible for military service, is to view it as the number eligible before costless deferments are received. Thus, for example, in comparing conscription in World War Two and in the Vietnam War, a much smaller percentage of the population was subject to conscription in the latter war. In comparing the Vietnam draft to the draft in World War Two, the relevant value for N for the former would be much larger than described in the previous paragraph if we included the age group excluded from eligibility in Vietnam, but included during World War Two. If we were able to measure those fit for service for a comparable age group, one would expect the actual percentage desired in the military, η/N, to be much larger in World War Two than in Vietnam, or in the other U.S. wars when conscription was employed (again, excluding the Civil War).

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[26] Angrist (1990) claims fewer than one-fourth of the young men born between 1950 and 1953, whose eligibility for the military was based on the lottery, served in the military during Vietnam.

Using DWL from an increase in marginal tax rates, .78 (Feldstein, 1999), from *ineq*.(4), the breakeven point---at which conscription and a volunteer military cost the same---$\eta/N = 1/(1+t)$ is .56. Without explaining the source of this statistic, Segal and Segal (2004) claim the fraction of men eligible for military service (based on age, health, and mental aptitude) in World War Two who actually served was .56! Since DWL is a positive function of MTR and the elasticity of civilian labor supply, if labor supply elasticity and MTRs were comparable during World War Two and in the early 1990s, then the U.S. would have been near the breakeven point in World War Two.[27] Note, the observed η/N of .56 overstates the measure we wish to observe because N should include those who are unfit by choice in order to receive a deferment.

Lacking measures of labor supply elasticity to compare, we examine estimates of (average) MTRs during World War Two and in 1994 (for which year Feldstein measured DWL). Two different approaches to estimating MTRs have been used. The first is by Seater (1982, 1985) and Stephenson (1998), and the second by Barro and Sahasakul (1983, 1986). Mulligan and Marion (2001) argue there is no good reason to choose one method over the other, so both are included in Table Two.

It appears MTR was a bit lower during World War Two than in 1994, implying a lower DWL, so the breakeven point would have been somewhat larger than .56.[28] If labor supply elasticity were comparable in those time periods, the U.S. may have had η/N close to $(\eta/N)^*$ during World War Two. Note, Chetty (2009) argues estimated DWL is too high because some of the costs of tax avoidance are transfers, and individuals overestimate their costs of avoidance, and do not take full advantage of their ability to evade taxes.[29]

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[27] Again, we ignore other costs (higher turnover and reduced human capital investment, for example) that would tend to raise the social cost of conscription.

[28] From Table Two, the Barro and Sahasakul estimates suggest a larger difference in MTRs between the 1940s and the 1990s than do the estimates from Seater and Stephenson. Also, in recent work, Barro and Redlick (2009) include state MTRs (excluded in the earlier papers), and find a significant increase in total MTRs from the 1940s to the 1990s. For example, for 1944 and 1994, they find total MTRs of .263 and .385 respectively.

[29] Ziliak and Kneisner (2005) find estimates of DWL that are about one half of what is usually found because they do not assume consumption and leisure are additive in utility (as is usually assumed).

Table Two. Average Marginal Tax Rates (MTRs) for selective years.		
Year	Average MTR (Seater and Stephenson)	Average MTR (Barro and Sahasakul)
1942	14.2	13.4
1943	16.8	14.8
1944	14.8	18.3
1945	15.0	18.6
1994	17.4	21.5
Source: Stephenson (1998). Note both income and payroll taxes are included.		

7. Other considerations

In this section, factors ignored for simplicity so far are considered. Many, but not all, of these factors would seem to increase the social cost of conscription relative to a volunteer military.

A. Wage discrimination

With a volunteer military, wage discrimination may be used:[30] the wage is reduced below that necessary to attract the desired number of individuals, advertising is used to modify preferences, and bonuses are employed when necessary to attract marginal individuals. These policies seem to aptly describe current recruitment policy, and may imply a reduction in payroll cost (including recruitment cost). Thus, social cost may be reduced due to lower deadweight loss from taxation.

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[30] I owe this discussion to an anonymous referee.

B. Permanent versus temporary exemptions

In the model herein, we ignored the timing aspect of exemptions. In a multi-period model, temporary exemptions, say for educational purposes, may simply shift the time when one is eligible for a draft. However, for the Netherlands, Imbens and van der Klaauw (1995) found educational exemptions considerably increase the chance one will be permanently exempted. The smaller the age group eligible for a draft, the more likely a temporary exemption is to become permanent.

C. Heterogeneity of deferment costs and benefits

If benefits and cost of deferments differ in the population, a draft will not likely replicate a volunteer military in the identity of the individuals who will be enlisted. For example, bright youth from poor families may have high social benefits from an educational deferment, but also have high costs of education.[31] The more heterogeneous benefits and costs of deferments are, the larger the resource misallocation with a draft due to the "wrong" individuals being enlisted.

D. Turnover and differences in productivity

A draft implies higher turnover, and thus higher personnel cost for that reason, something ignored herein. Productivity differentials have an uncertain effect on the relative social cost of conscription and a volunteer military. Ross (1990, 1994) and Berk and Lipow (2008) find a draft may yield higher social welfare than a volunteer military when recruit quality is heterogeneous. Perri (2010) finds a draft only implies higher social welfare if screening of recruits is very costly or inaccurate.

E. Investment in human and physical capital

As noted in the introduction, a series of papers has examined the effect of conscription on investment in human and physical capital (Lau, Poutvaara, and Wagener, 2004, Potvaara and Wagener, 2007, Keller, Poutvaara, and Wagener, 2009, and Keller, Poutvaara, and Wagener, 2010). Conscription has a negative impact on human capital investment because it distorts time allocations over the life cycle: education is postponed or disrupted causing less investment. Also, firms may be reluctant to train individuals who are eligible for the draft and have yet to serve.

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[31] I owe this point to an anonymous referee.

Additionally, conscription is a tax on draftees during their service, whereas a tax liability spread more evenly over the life cycle would increase saving and investment in physical capital. Finally, lower stocks of human and physical capital negatively affect a country's growth. All of these effects increase the social cost of conscription relative to a volunteer military.

8. Summary

Previous research on conscription has essentially ignored deferments. [32] We developed a model of military conscription with costly deferments. With costly deferments, the usual misallocation of resources with conscription versus a volunteer military---because the "wrong" individuals are inducted, those with higher reservation wages---can be avoided. In this sense, a costly deferment is like the monetary buyouts available during the Civil War. The tradeoff between conscription and a volunteer military involves the cost of deferments with the former and the higher deadweight cost of taxation with the latter. As has been argued previously, we find conscription is socially preferable to a volunteer military only if a large percentage of eligible individuals are demanded by the military. We also find, if conscription is used when it is socially cheaper than a volunteer military, welfare is improved if deferments have *lower* social benefits because the military wage is then lower, as is the deadweight loss from taxation to finance the military payroll. Ignoring costs of conscription discussed in the previous section, and using estimates of marginal tax rates and deadweight loss from taxation, the U.S. in World War Two may have been close to the point at which conscription and a volunteer military were of equal cost with costly deferments.

Thus, the analysis of deferments offers new insights into questions regarding the relative social cost of conscription and a volunteer military.

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[32] As noted in Section 1, Warner and Negrusa (2005) consider evasion costs. Although a deferment is one way of evading military service, the analysis of evasion differs from that of deferments in that the former deals with the costs of evasion and the costs of preventing evasion, and the latter treats deferments as given, and not something the government expends resources to prevent.

References

Ackley, Gardner A. "The Salary Plight of the Drafted Soldier." Council of Economic Advisors memorandum to the Secretary of Defense, July 27, 1967.

Angrist, Joshua D. "Lifetime Earnings and the Vietnam Era Draft Lottery: Evidence form Social Security Administration Records." *American Economic Review* 80 (June 1990): 313-335.

Asch, Beth, and Heaton, Paul. "Monopsony and Labor Supply in the Army and Navy." Working paper, the Rand Corporation, 2008.

Barro, Robert J., and Redlick, Charles J. "Macroeconomic Effects from Government Purchases and Taxes." Working paper, Harvard University, 2009.

Barro, Robert J., and Sahasakul, Chaipat. "Measuring the Average Marginal Tax Rates from the Individual Income Tax." *Journal of Business* 56 (October 1983): 419-452.

_____. "Average Marginal Tax Rates from Social Security and the Individual Income Tax." *Journal of Business* 59 (July 1986): 555-566.

Baskir, Lawrence M, and Strauss, William A. *Chance and Circumstance*. New York: Alfred A. Knopf, 1978.

Becker, Gary S. "The Case Against Conscription." Working paper # D-4514, the Rand Corporation, 1957.

Berck, Peter, and Lipow, Jonathan. "Military Conscription and the (Socially) Optimal Number of Boots on the Ground." Paper presented at NBER National Security Working Group, February 28, 2008.

Browning, Edgar K. "On the Marginal Welfare Cost of Taxation." *American Economic Review* 77 (March 1987): 11-23.

Card, David, and Lemieux, Thomas. "Going to College to Avoid the Draft: The Unintended Legacy of the Vietnam War." *American Economic Review* 91 (May 2001): 97-102.

Chambers, John W. II. *To Raise an Army*. London: The Free Press, 1987.

Chetty, Raj. "Is the Taxable Income Elasticity Sufficient to Calculate Deadweight Loss? The Implications of Evasion and Avoidance." *American Economic Journal: Economic Policy* 2 (August 2009): 31-52.

Cipollone, Piero, and Rosolia, Alfonso. "Social Interactions in High School: Lessons from an Earthquake." *American Economic Review* (June 2007): 948-965.

Cooper, Richard V.L. "Military Manpower Procurement: Equity, Efficiency, and National Security." In *Registration and the Draft*, ed. by Martin Anderson. Stanford: Hoover Institution, 1982.

Curtis, Thomas B. "The Draft: Unjust and Unnecessary." In *The Military Draft*, ed. by Martin Anderson. Stanford: Hoover Institution, 1982.

Feldstein, Martin. "Tax Avoidance and the Deadweight Loss of the Income Tax." *Review of Economics and Statistics* 81 (November 1999): 674-680.

Flynn, George Q. *The Draft, 1940-1973*. Lawrence: University of Kansas Press, 1993.

_____. *Conscription and Democracy*. Westport, Connecticut: Greenwood Press, 2002.

Friedman, Milton. "Why not a Volunteer Army?" In *The Draft: A Handbook of Facts and Alternatives*, ed. by Sol Tax. Chicago: University of Chicago Press, 1967.

Henderson, David R. "The Role of Economists in Ending the Draft." *Economic Journal Watch* 2 (August 2005): 362-376.

Imbens, Guido, and van der Klaauw, Wilbert. "Evaluating the Cost of Conscription in the Netherlands." *Journal of Business and Economic Statistics* 13 (April 1995): 207-215.

Janowitz, Morris. "The Logic of National Service." In *The Military Draft*, ed. by Martin Anderson. Stanford: Hoover Institution, 1982.

Johnson, William R. "When is a Military Draft Optimal?" Working paper, University of Virginia, 1990.

Keller, Katarina, Poutvaara, Panu, and Wagener, Andreas. "Military Draft and Economic Growth in OECD Counties." *Defence and Peace Economics* 20 (October 2009): 373-393(b).

_____. "Does Military Draft Discourage Enrollment in Higher Education? Evidence from OECD Countries." *FinanzArchiv* 66 (June 2010): 97-120.

Kuziemko, Ilyana. "'Dodging Up' to College or 'Dodging Down' to Jail: Behavioral Responses to the Vietnam Draft by Race and Class." Paper presented at the Law, Economics, and Organization Workshop, Yale Law School, October 30, 2008.

Lau, Morten I., and Poutvaara, Panu. "Dynamic Costs of the Draft." *German Economic Review* 5 (November 2004): 381-406.

Lee, Dwight R., and McKenzie, Richard B. "Reexamination of the Relative Efficiency of the Draft and the All-Volunteer Army." *Southern Economic Journal* 58 (January 1992): 644-654.

Mulligan, Casey B., and Marion, Justin G. "Average Marginal Tax Rates Revisited: A Comment." Harris School of Public Policy Working paper, University of Chicago, 2001.

Mulligan, Casey B., and Shleifer, Andrei. "Conscription as Regulation," *American Law and Economics Review* 7 (Spring 2005): 85-111.

Mulligan, Casey B. "Taxation in Kind." Working paper, University of Chicago, 2008.

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

O'Sullivan, John, and Meckler, Alan M. *The Draft and Its Enemies*. Urbana: University of Illinois Press, 1974.

O'Toole, Patricia. *When Trumpets Call*. New York: Simon and Schuster, 2005.

Perri, Timothy J. "The Economics of U.S. Civil War Conscription." *American Law and Economics Review* 10 (Fall 2008): 424-453.

_____. "The Draft and the Quality of Military Personnel." Working paper, Appalachian State University, 2010.

Poutvaara, and Wagener, Andreas. "To Draft or not to Draft? Inefficiency, Generational Incidence, and Political Economy of Military Conscription." *European Journal of Political Economy* 23 (December 2007): 975-987.

Rohlfs, Chris. "Estimates of the Willingness-to-Pay to Avoid Military Service and Fatality Risk: Evidence from the Vietnam Draft." Working paper, University of Chicago, 2005.

Ross, Thomas W. "Raising an Army: A Positive Theory of Military Recruitment." Working paper, Carleton University, 1990.

_____. "Raising an Army: A Positive Theory of Military Recruitment." *Journal of Law and Economics* 37 (April 1994): 109-131.

Rostker, Bernard. *I Want You! The Evolution of the All-Volunteer Force*. Santa Monica: Rand Corporation, 2006.

Seater, John J. "Marginal Federal Personal and Corporate Income Tax Rates in the U.S., 1909-1975." *Journal of Monetary Economics* 10 (Issue 3, 1982): 121-135.

_____. "On the Construction of Marginal Federal Personal and Social Security Tax Rates in the U.S." *Journal of Monetary Economics* 15 (July 1985): 361-381.

Segal, David R., and Segal, Mady Wechsler. "America's Military Population." *Population Bulletin* 59 (December 2004): 3-40.

Stephenson, E. Frank. "Average Marginal Tax Rates Revisited." *Journal of Monetary Economics* (April 1998): 389-409.

Warner, John T., and Asch, Beth J. "The Economic Theory of a Military Draft Reconsidered." *Defence and Peace Economics* 7 (Issue 4 1996): 297-312.

Warner, John T., and Negrusa, Sebastian. "Evasion Costs and the Theory of Conscription." *Defence and Peace Economics* 16 (April 2005): 83-100.

_____. *"The* Economic Case for All-Volunteer Forces." In *Service to Country: Personnel Policy and the Transformation of Western Militaries*, ed. by Curtis L. Gilroy and Cindy Williams. Cambridge, Massachusetts: MIT Press, 2006.

Warner, John T., Miller, James C. III, and Asch, Beth J. "Economics and the All-Volunteer Force." In *Better Living Through Economics*, ed. by John J Siegfried. Cambridge, Massachusetts: Harvard University Press, 2010.

Ziliak, James P., and Kneisner, Thomas J. "The Effect of Income Taxation on Consumption and Labor Supply." *Journal of Labor Economics* 23 (October 2005): 769-796.