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The Record and Prospects of the All-Volunteer Military in the United States

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From the onset of World War II until July 1973, the draft was a fact of life for male youth in America. Economists said surprisingly little about the draft prior to the mid-1960s, but that changed with the escalation of the Vietnam War in 1966 and the public debate that ensued. Over the next five years, economists produced a substantial volume of research about the draft and the feasibility of an all-volunteer force (AVF). Major contributors included Walter Y. Oi (1967a, b), Lee W. Hansen and Burton A. Weisbrod (1967), Stuart H. Altman and Alan E. Fechter (1967), Anthony C. Fisher (1969), and Altman and Robert J. Barro (1971).When Richard Nixon was elected president in 1968, he established the President's Commission on an All-Volunteer Armed Force (known now as the Gates Commission because it was chaired by former Secretary of Defense Thomas Gates) to study the feasibility of an all-volunteer force.[1] Milton Friedman, who was already known for his strong views on the draft (Friedman, 1967), became one of the most influential members of the commission. In November 1970, the Gates Commission unanimously recommended abolition of the draft and implementation of an AVF.

Conscription was ended on June 30, 1973, and since then the U.S. armed forces have relied upon volunteers to fill their ranks. Since its inception, the all-volunteer force has had its ups and downs. The downs have typically occurred in

[1] Oi (1996) provides a succinct history of the draft in the United States and an interesting account of the Gates Commission. The idea for a commission originated with W. Allen Wallis, President of the University of Rochester, who broached it to President-elect Nixon. Wallis served as a member of the commission. William Meckling, Dean of Rochester's School of Business, served as its Executive Director. Research directors included Walter Oi, Stuart Altman, and Harry Gilman.

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periods of tight civilian labor markets, during which some pundits and politicians have pronounced the AVF a failure and called for a return to the draft.[2] Such is the case again today. With civilian unemployment at its lowest level since the start of the AVF, the U.S. armed forces missed their total recruiting enlisted objective by 6000 in Fiscal Year (FY) 1998 and 8500 in FY 1999. The Air Force, which had never missed its recruiting objective, fell 1800 recruits short of its FY 1999 target of 34,400. The Army missed its FY 1999 target of 74,500 recruits by 6300. These trends have caused many politicians and military policymakers to express concern about the deteriorating ability of the military to attract and retain personnel and to maintain a high level of overall readiness. These issues were prominent during the 2000 presidential campaign.

We begin by discussing the economics of a military draft and the concerns that critics have expressed about an all-volunteer force. Next we review the AVF record from 1973 to 1999, highlighting trends in force manning and experience, measures of recruit quality, and the demographic content of the force. A description of these trends and the factors behind them is necessary for an understanding of the future of the AVF and whether it is time to re-implement a draft, which we consider in the last section.

A fundamental point that is often ignored is that the choice is not between a volunteer force and a pure draft force. Officers have usually not been drafted in the United States and enlisted personnel serving beyond their initial obligation have always been volunteers. Even at the height of the Vietnam War, draftees made up only about half of the enlisted force.[3] The choice is between a pure volunteer force and a mixed force of volunteers (some draft-induced) and draftees, and the analytical question is what fraction of enlisted personnel serving in their first enlistment will be draftees rather than volunteers. When we speak below of a "draft force," we mean a mixed force consisting of both volunteers and draftees.

Economic Issues in the Choice of a Draft or an All-Volunteer Force

Efficiency Issues

The economists writing during the late 1960s clearly favored a volunteer force, which they argued would be more efficient than a draft force. The relative efficiency of a volunteer force was based on three factors. The first source of relative efficiency is due to the fact that the opportunity costs of the personnel comprising a volunteer force will always be less than or equal to the opportunity costs of the

[2] For recent examples from the popular press suggesting that the draft should be reconsidered, see Krulak (1998), Shields (1999), and Shafer (1998).

[3] Oi (1967a) estimated that about 20 percent of annual enlisted accessions during the 1960–65 era were conscripts and 38 percent of the nonconscripts were "reluctant volunteers." We estimate that draftees and reluctant volunteers made up about one-quarter of the 1960–65 enlisted force and about half of the enlisted force at the height of the Vietnam War.

personnel serving in a mixed force of equal size. To understand this proposition, suppose that the military demands a force of M personnel drawn from a population pool of N individuals who are eligible for military service. In the case of a volunteer force, the military must establish a wage (W_V^M) that will attract M volunteers, as shown in Figure 1. The upward sloping supply curve in Figure 1 is based on individuals' opportunity costs of military service and it arrays opportunity costs from lowest (OC_{MIN}) to highest (OC_{MAX}). An individual's opportunity cost consists of foregone civilian wages plus the net value the individual places on the nonpecuniary aspects of civilian life compared with military life. The M volunteers are individuals whose opportunity costs of military service are less than or equal to W_V^M.[4]

The opportunity cost of the volunteer force is the sum of the opportunity costs of the M volunteers (area $A + B + C$ in Figure 1). In the case of a draft, the government sets a lower wage (W_D^M) and consequently attracts only V ($< M$) volunteers. The military must therefore draft M-V individuals from the pool of N-V non-volunteers to provide a force of size M.[5] In a random lottery draft, the average opportunity cost (AOC) of a randomly selected draftee will be the average opportunity cost of the N-V draft-eligible individuals.[6] Because individuals are selected at random, the average opportunity cost of the M-V draftees will also equal AOC, which in turn exceeds the opportunity costs of the M-V marginal volunteers. As a result, the opportunity cost of a draft force exceeds the opportunity cost of a volunteer force. In Figure 1, the opportunity cost of a draft force is $A + B + C + D + E$, so in a random lottery draft the opportunity cost of the draft force exceeds the cost of a volunteer force by area $D + E$.

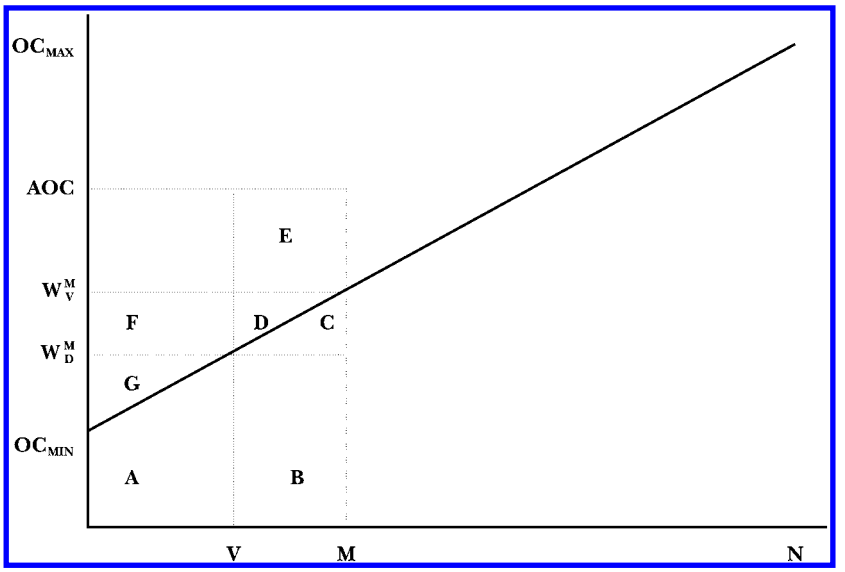
Methods of conscription other than by pure random lottery can reduce the excess opportunity cost of a draft force. According to Cooper (1982), the World War I draft was by "lowest value drafted first." Draft boards in World War I

[4] Formally, an individual chooses the military alternative if the utility associated with enlistment ($U^M = W^M + e$) exceeds the utility associated with civilian life ($U^C = W^C + c$). In these expressions for utility, e and c are the values the individual places on the nonpecuniary aspects of military life and civilian life, respectively. The military alternative is selected if $W^M > W^C + (c - e)$.

[5] To keep the analysis simple, we ignore the distinction between reluctant volunteers and true volunteers. Following Angrist (1991), to demonstrate the consequence of this distinction, suppose that the utility of volunteer enlistment is $U^e = W^M + e$, the utility of being drafted is $U^d = W^M + d$, and the utility of civilian life is $U^C = W^C + c$. Let q be the probability of being drafted. An individual volunteers if $U^e > U^d$ and $U^e > qU^d + (1 - q)U^c$. Assuming no distinction in the pay of conscripts and volunteers, the first condition requires $e > d$ while the second condition requires $W^M > W^C + (c - e) - (e - d)q/(1 - q)$. In a pure volunteer system, the condition for enlistment remains $W^M > W^C + (c - e)$ and the supply curve is as shown in Figure 1. Under a draft, the supply curve will remain as shown in Figure 1 if $e = d$ — that is, the nonpecuniary value of enlistment is the same as the nonpecuniary value of conscription. If the conditions of service differ for conscripts and volunteers, so that $e > d$, the threat of conscription can expand supply because the condition $W^M > W^C + (c - e) - (e - d)q/(1 - q)$ is more likely to be met.

[6] Analytically, AOC is $E(OC|OC > W_D^M)$ — that is, an average of the values of OC between OC_{MIN} and OC_{MAX} with each value weighted by the fraction of people in this range who have that value. When the supply curve is linear, AOC is the midpoint between OC_{MIN} and OC_{MAX}.

Figure 1
Enlistment Outcomes and Social Costs in a Volunteer System and a Random Lottery Draft



exempted those with the best civilian alternatives and conscripted those with the worst civilian alternatives. Such a draft conscripts the same individuals who would have served in the volunteer system and therefore eliminates the excess opportunity cost of the draft force over a volunteer force. While such a system eliminates the excess opportunity cost of a draft force, it does so by shifting the burden of providing for a military force from the general taxpayer to conscripts with the poorest civilian opportunities. It raises obvious equity issues that are addressed below.

Sjaastad and Hansen (1970) studied the consequences of allowing draftees to avoid service by furnishing a substitute or paying an exemption or "commutation" fee. Both of these practices were allowed during the Revolutionary War and the Civil War. Theoretically, when the purchase of substitutes is permitted, there will be no direct entries because everyone can collect the side payment and enter as a substitute. The M individuals in Figure 1 with the highest opportunity costs hire another M individuals with the lowest opportunity costs; thus, the draft with substitute purchase option also generates the same force as a volunteer system. The competitive price for substitutes, shown in Figure 1, is $P_S = W_V^M - W_D^M$ and the M volunteers collect $W_D^M M$ in military pay plus the side payments ($F + D + C$ in Figure 1). Allowing substitutes shifts the burden of paying for the military force from taxpayers to those who hire substitutes.

Payment of a commutation fee has a similar effect. If the government sets the price of a commutation (PC) at what the side payment would have been in a competitive market for substitutes, then again everyone with opportunity cost in

excess of W_V^M will purchase one. In this case, however, the government will collect revenue equal to PC(N-V) in exemption payments. Commutations provide another way by which a draft can produce the same force as a volunteer force and thereby eliminate the excess opportunity cost associated with a random lottery draft.[7]

Draft exemptions and deferments have often been allowed on the basis of factors such as occupation, marital status, or educational status. Suppose that an individual can acquire an exemption or deferment from the draft for some cost C_E. An individual will acquire an exemption if their opportunity cost of being drafted minus the cost of an exemption is greater than the level of military pay W_D^M. If the cost of acquiring an exemption is the same for everyone, then permitting exemptions selects those with the highest opportunity costs out of the pool of draft-eligible individuals.

With exemptions and deferments, the social cost of the draft becomes the sum of the expected opportunity cost of the individuals drafted at random from the pool of draft-eligible individuals and the resource expenditure by those who acquire exemptions. Although individuals expend resources to avoid the draft, the deadweight cost of a system that permits exemptions is smaller than the deadweight cost of the pure lottery system with no allowance for exemption or deferment, because the exemption system reduces the losses for individuals with especially high opportunity costs.

In sum, the relative opportunity cost of a conscripted force depends on the method of conscription. We have shown several cases in which the opportunity costs of conscripted and volunteer forces are the same. But for reasons discussed below, recent drafts have relied more heavily on conscription by random lottery and have reduced the extent of exemption or deferment. Furthermore, the practice of permitting substitutes or purchase of exemptions has not been used since the Civil War. Consequently, the proposition remains that military forces obtained with modern methods of conscription will have higher opportunity costs than those obtained by volunteer means.

Other efficiencies derive from the fact that a volunteer force has lower turnover and less annual demand for new personnel. To minimize the burden of conscription, draftees have typically been required to serve for only two years. Volunteers serve longer initial terms (now about 4.5 years, on average) and reenlist at higher rates. The longer initial tours for volunteers increase the proportion of deployable, trained personnel in the force. The Gates Commission estimated that just reducing the fraction of personnel in training would permit a 6 percent reduction in force size without a loss of readiness (and would reduce per capita

[7] During the Civil War, commutations cost $300 in the North and any draftee could purchase one. According to the Gates Commission report (Report of the President's Commission, 1970, p. 159), only 46,000 of the 250,000 individuals drafted in the North during the Civil War actually served. Eighty-seven thousand avoided service by paying the $300 commutation fee and another 116,000 provided substitutes. Moore (1924) provides a fascinating account of the draft in the Civil War South. The South exempted Mennonites from conscription upon payment of $500 gold to the Confederate Treasury. Exemptions were also granted for various forms of political patronage.

training costs). Moreover, experience growth in the volunteer force brought about by higher retention would allow a smaller required force size.[8] Force size differences are further accentuated by the increased complexity of military equipment, which raises the relative productivity of more experienced, better-trained personnel. The apparent cheapness of personnel in a draft encourages substitution of personnel for equipment and may even necessitate the adoption of simpler weapons.

However, recent analyses by Lee and McKenzie (1992), Ross (1994), and Warner and Asch (1996) suggest that a volunteer force does not always have lower social cost. When the military force size expands, the military wage bill increases and the government must increase taxes to pay the larger wage bill. Browning (1987) estimates that private sector distortions caused by federal taxation amount to around 30–40 cents per dollar of federal revenue. Deadweight losses due to taxation increase at a slower rate as force size increases under a draft because pay does not need to be increased for the military to obtain more personnel. The social cost of a military force consists of the opportunity cost of the personnel, the cost of training, and the deadweight tax loss from the military payroll. At low force levels, the volunteer force has lower social cost because the military payroll, and therefore the deadweight loss from taxation to make the payments, is small. As the force grows beyond a certain size, the social cost of a volunteer force exceeds the cost of a draft force of equal size because the deadweight loss on the larger volunteer force payroll exceeds the sum of the excess training costs and opportunity costs of the draft force.[9] The switch point, where a draft force becomes more cost effective, declines as the deadweight loss from taxation increases and as enlistment supply decreases or becomes less elastic. Yet because of potential productivity differences, it is still ambiguous whether a draft force or volunteer force will be more efficient when large forces are required.[10]

This line of analysis raises the possibility that a country that has a large military manpower requirement (relative to its population) may find a draft more efficient. Israel is the prime example of such a country. Ross (1994) analyzed a 1983 cross-section of 78 countries and found that the likelihood that a country has a draft is positively related to the relative size of its military. Interestingly, Ross found little

[8] See Warner and Asch (1995) for a review of AVF-era studies of the relationship between military experience and productivity.

[9] Discussing the situation in which a large force is required relative to population, Friedman (1967, p. 202–203) stated: "And to rely on volunteers under such conditions would then require very high pay in the armed services, and very high burdens on those who do not serve. . . It might turn out that the implicit tax of forced service is less bad than the alternative taxes that would be used to finance a volunteer army."

[10] When account is taken of the deadweight loss of taxation, a draft with the hiring of substitutes dominates a volunteer force in terms of social cost. Both systems have produced the same opportunity cost, as discussed in the text, but the draft system with substitutes places the burden of paying for the force on the those who hire substitutes while the volunteer force places the burden on the taxpayer which generates a deadweight loss.

evidence that the likelihood of a draft is related to a country's per capita income. But democracies were more likely to have a draft, as were European countries.

Equity Issues

Central to the 1960s debate over method of military manpower procurement was who should bear the burden of national defense. The volunteer system places this burden on the general taxpayer; conscription implicitly taxes draftees and individuals that would have volunteered in its absence.[11] As Benjamin Franklin wrote:

> But if, as I suppose is often the case, the sailor who is pressed and obliged to serve for the defence of this trade at the rate of 25s. a month, could have £3.15s, in the merchant service, you take from him 50s. a month; if you have 100,000 in your service, you rob that honest part of society and their poor families of £250,000 per month, or three million per year. . . But it may be said, to give the king's seamen merchant's wages would cost the nation too much, and call for more taxes. The question will then amount to this; whether it be just in a community, that the richer part should compel the poor to fight for them and their properties for such wages as they think fit to allow, and punish them if they refuse?[12]

Implicit in Franklin's statement is the regressive nature of the conscription tax. This tax is particularly regressive when conscription selects for service the same individuals who would have served in the volunteer system (as did the "least value drafted first" system during World War I) and thereby reduces the extent of direct (and probably progressive) taxation of the general populace.

The move in recent drafts to limit exemptions and deferments and conscript by lottery derives from the general recognition that the draft tax tends to be regressive.[13] A lottery is not a panacea, however. Families with daughters and families without any children can avoid the conscription tax but not a general income tax. Furthermore, because conscription is a tax on labor, it narrows the tax base. Recipients of capital income avoid paying for defense under conscription but not under a volunteer system. Although a lottery draft is more equitable than other forms of taxation, in that everyone has an equal chance of selection, most people

[11] In Figure 1, the V volunteers lose rents equal to area F. The *M-V* draftees suffer foregone rents and opportunity costs exceeding their military pay equal to the area C+D+E. The conscription tax is thus C+D+E+F. Estimates of implicit tax rates during the Vietnam era ranged between 50 percent and 80 percent of first-term military pay (Oi, 1967; Hansen and Weisbrod, 1967; Sjaastad and Hansen, 1970). These tax rates were inordinately high compared with tax rates on income borne by other segments of the population.

[12] This quotation is taken from the Gates Commission report (Report of the President's Commission, 1970, pp. 23–24). The original source was not provided.

[13] Many in the South came to view the Civil War as a "rich man's war and a poor man's fight" (Moore, 1924). Responding to a public outcry that the well-to-do were not bearing their fair share of the war effort, the South eliminated many exemptions and the hiring of substitutes in late 1863.

would not view random assignation of a tax burden as very fair, either. This inequity obviously increases as the number to be drafted falls in relation to the pool of draft-eligible individuals. Advocates of conscription have proposed solving this inequity by requiring all youth to participate in some form of national service. Economists have universally criticized such schemes.[14]

Elimination of the hidden nature of the conscription tax has been an important feature of the all-volunteer force. It has forced more explicit, and in our opinion, more rational consideration of the cost of military manpower in defense decision-making.

The Concerns of AVF Critics

In a January 10, 1970, memorandum to Thomas Gates, Secretary of the Army Stanley Resor raised a number of potential problems with an all-volunteer force. Other writers, including Fallows (1981) and Kester (1986), echoed Resor's concerns. Their main concern was about the quality of the force, which Resor and others thought would decline under an AVF. After all, they argued, if the AVF attracts individuals with lower civilian wage opportunities, and wage opportunities reflect underlying ability, the volunteer force will necessarily be less able than a draft force of comparable size.

Resor and others expressed concern that force quality would decline for other reasons, too. One was a lack of political support for a volunteer force. When confronted with competing demands for federal dollars, Congress and the administration would permit military pay to decline over time relative to civilian wages. Under such circumstances, the armed services would either reduce force size or lower entry standards to meet strength targets. Either response to sagging political support implies diminished force quality. Military readiness would further deteriorate because the higher personnel budget in the volunteer regime would crowd out military research and development and the purchase of military hardware.

Concern was also expressed that elimination of the draft would lead to deterioration of both the reserve force and the officer corps. After all, the threat of being drafted kept the nation's reserve forces well-manned during the draft era as youth subject to the draft joined the reserves. The risk of being drafted also induced college students to join the Reserve Officer Training Corps (ROTC) program while in college.

The other main area of concern was about the social representativeness of a volunteer force. Fear was expressed that blacks and other minorities would become overrepresented in the volunteer force and the armed forces would become less representative of the society at large. Furthermore, personnel are assigned to military occupations largely on the basis of the Armed Forces Qualification Test (AFQT), a composite score derived from the Armed Forces Vocational Aptitude Test Battery (ASVAB), a ten-part test that each recruit takes at entry. Because blacks

[14] Milton Friedman and Congressman Pete McCloskey engaged in a heated debate about national service that is documented in Anderson (1982).

and other minorities tend to score lower on the AFQT, fears were expressed that blacks and other minorities would be concentrated in the war-fighting skills such as infantry and would be more exposed to death or injury in wartime.

The All-Volunteer Force Record

Many of the concerns expressed by the critics of the all-volunteer force were not borne out by experience, while other predictions made before the advent of the AVF, such as those made by Walter Oi, were exactly on target. This section discusses trends in force size and defense spending, enlisted recruiting and turnover, indicators of recruit quality, and the demographic composition of the force.[15]

Force Size and Defense Spending

Since World War II, Department of Defense planning has been built around a two-war scenario, determining the active and reserve forces capable of simultaneously fighting wars in Europe and Asia. From 1973 until 1990, defense planners called for an active force of around 2.1 million over this period; the active force in fact hovered around this level, as shown in Table 1. Congress consistently supported the active strength levels called for in the military's plans. Despite changes in turnover, experience, and other factors, the all-volunteer force has apparently had little effect on planned strength levels. The active force was downsized dramatically after the collapse of the Soviet Union and by 1998 stood at two-thirds of its pre-1990 level. These reductions came about as a result of changes in the external threat; there is no evidence that the existence of the AVF affected the extent of the downsizing one way or another.

As some critics predicted, the reserve forces shrank in the immediate aftermath of the Vietnam War from 896,000 in 1973 to 776,000 in 1978, as draft-motivated reservists completed their terms of service and were not replaced by new volunteers. But even as calls for a reserve draft were issued in the early 1980s, reserve manning grew rapidly as personnel leaving active duty associated with reserve units at high rates. Reserve force manning peaked in 1988 at 1.1 million. The reserve forces were downsized along with the active forces, but not by as much, and now at 877,000 are almost the same strength as they were in 1973. Reserve forces now play a larger role in the "total force" concept of military planning than they did during the Cold War era.

Although some critics of an all-volunteer force predicted that extremely large pay raises would be necessary to implement an all-volunteer force, a number of the economic estimates of the late 1960s turned out to predict quite accurately that a

[15] The record of the all-volunteer force has been the subject of two conferences sponsored by the Department of Defense, on the tenth and twentieth anniversaries of the implementation of the AVF (Bowman, Little and Sicilia, 1986; Fredland, Gilroy, Little, and Sellman, 1996). Interested readers are referred to these conference volumes for other discussions of the AVF record.

Table 1
Force Size, Enlisted Accessions, and Male 18-Year Old Cohort, Various Years
(*in thousands*)

Fiscal Year	*Total Force*	*Active Force*	*Active Enlisted*	*Enlisted Accessions*	*Enlisted Accessions as a % of Force*	*18-Year-Old Male Cohort*	*Accessions as a % of 18 Year-Old Males*
1973	3149	2253	1921	406	21.1	2052	19.8
1978	2838	2062	1775	306	17.2	2157	14.2
1983	3152	2162	1811	304	16.8	2022	15.0
1988	3352	2209	1820	271	14.9	1947	13.9
1993	2819	1776	1435	203	14.1	1740	11.7
1998	2347	1470	1171	179	15.3	1965	9.1

Source: Data for 1973 through 1997 are from *Population Representation in the Military Services, Fiscal Year 97,* Office of the Assistant Secretary of Defense (Force Management Policy), November 1998. Fiscal Year 1998 data were provided by the Defense Manpower Data Center.

substantial but affordable pay increase would attract the necessary manpower. Oi (1967a, b), Altman and Fechter (1967), and Fisher (1969) all estimated the elasticity of initial enlistment supply to exceed 1.0. These studies estimated the budgetary cost of moving to a volunteer force of 2.65 million active duty personnel to range from about $4 to $7.5 billion, about a 10 to 15 percent increase over the 1965 defense budget. Work by the Gates Commission staff obtained similar estimates of the elasticity of enlistment supply and furthermore showed retention to be very responsive to pay. Research during the AVF has generally reaffirmed these results; Warner and Asch (1995) survey AVF-era research on recruitment and retention.

Personnel costs made up 29.9 percent of the military's budget in 1965 and 34.2 percent at the height of the Vietnam War in 1970, as shown in Table 2. To implement the all-volunteer force, Congress raised the entry basic pay of enlisted personnel from $133 per month in 1970 to $326 per month in 1973. After these pay increases and post-Vietnam downsizing, personnel costs rose to about 37 percent of the defense budget in 1975. Since then, personnel costs have declined as a percent of the defense budget and now only make up 27.3 percent. Spending on acquisition and research and development has increased as a portion of the Department of Defense budget, not decreased as critics of the all-volunteer force had predicted. Of course, defense acquisitions and research and development might have increased even faster without an all-volunteer force, but the evidence for this conjecture is weak.

The large drops in both total defense spending and military manpower costs as a percent of GDP in Table 2 are remarkable. The end of the Cold War did indeed pay a peace dividend.

Table 2

Military Personnel Costs as a Percent of Total Defense Budget and Defense Budget and Personnel Costs as a Percent of GDP, Various Years

Year	*Personnel as a % of Total Defense*	*Defense as % of GDP*	*Personnel as a % of GDP*
1965	29.9	6.9	2.1
1970	34.2	7.3	2.5
1975	37.3	5.3	2.0
1980	30.8	5.1	1.6
1985	24.7	6.6	1.6
1990	27.1	5.1	1.4
1995	28.1	3.5	1.0
2000	27.3	2.8	0.8

Notes: Figures calculated from FY 2000 Department of Defense Green Book at <http:www.dtic.mil/comptroller/fy2000budget>. Personnel costs include all costs related to personnel including direct pays and allowances and indirect costs such as recruiting, training, travel, and permanent change of station costs. Data prior to 1985 include payments to military retirees. Data from 1985 onward include an accrual charge for the expected future retirement costs of the current force.

Enlisted Recruiting and Turnover

After estimating the pay raise required to implement an all-volunteer force, Oi (1967a) estimated that the volunteer force would lead to a 30 percent reduction in enlisted force turnover. Turnover was expected to fall because volunteers could be attracted for longer initial tours of duty and because retention would rise as a result of volunteers' stronger taste for the military and of higher levels of pay.[16] Based on an annual average turnover rate of 21 percent in the 1960–65 draft period, Oi's estimate of the reduction in turnover implied a volunteer-force turnover rate of 14.8 percent.

This prediction has proven remarkably accurate. In 1973, the last year of the draft, new recruits totaled 406,000, which was 21.1 percent of the enlisted force that year, as shown earlier in Table 1. Turnover has declined considerably since 1973, hovering around 15 percent since the late 1980s. Because accessions only increase when retention falls to maintain a constant force size, the average number of years someone stays in the force can be roughly estimated as the reciprocal of the

[16] In addition to pay, the services manage retention through extensive use of reenlistment bonuses that are targeted to occupational areas where the services want to keep personnel. Warner and Asch (1995) review the elasticities of supply with respect to pay and reenlistment bonuses. Similarly, the services manage the separation of personnel through the use of separation pay, retired pay, and the use of up-or-out rules.

accessions as a percent of the force, shown in Table 1. By this measure, years per accession have risen from 4.74 years in 1973 to around 6.5 years since 1988. In other words, the average recruit today has stayed about two years longer than did the average recruit during conscription. The average age of the enlisted force has risen from 25 years to 27.5 years.

Between 1974 and 1987, "careerists," personnel with more than four years of experience, rose from 39 to 50 percent of the enlisted force. This growth reflected reduced turnover in a force of constant size. Since 1987, careerists have grown to 54 percent of the enlisted force; this additional growth was mostly due to the downsizing of the early 1990s.[17]

The 1998 demand for new enlisted personnel was less than 10 percent of the cohort of males turning 18 years old that year, as shown in the final column of Table 1. The annual accession requirement in the coming decade is likely to be around 200,000–210,000, still only 10.5 percent of the 18 year-old male cohort, which is predicted to grow to 2.2 million by 2010. By comparison, in 1973 the draft was taking a number of people equal to 19.8 percent of the cohort of 18 year-old males.

Senior military leaders believe that the reduction in turnover and the resulting increase in experience since the inception of the all-volunteer force have improved the productivity of the U.S. military dramatically. Although military productivity is difficult to measure, a number of AVF-era studies reviewed in Warner and Asch (1995) find military readiness measures such as aircraft sortie rates and equipment downtime to be significantly related to personnel experience, particularly in high-tech occupations. Military leaders were therefore very concerned by difficulties in retaining career officers and enlisted personnel that surfaced in 1998–99, when retention rates dipped below levels sufficient to sustain the career forces.[18] Among enlisted personnel, the dips were particularly pronounced in skills such as communications and intelligence, cryptology, aviation maintenance, and jobs related to information technology. Retention dipped in a number of officer communities, and pilot retention became a particular concern.

The dips in officer and enlisted retention were no doubt due in part to the robust civilian economy. Other factors may have played a role. An often-cited factor is operational tempo—that is, the work pace of military units—which has increased since downsizing (Hosek and Totten, 1999). Furthermore, assignments abroad today are more likely to be unaccompanied temporary duty assignments away from

[17] During downsizing, the services attempted to effect a balanced reduction that came from all experience levels. The purpose was to avoid future experience shortfalls that would occur if all of the reductions had come from reduced accessions. To accomplish that goal, the Department of Defense implemented a buyout program aimed at inducing the voluntary separation of mid-career personnel. Although these programs were reasonably successful, some seniority growth did occur.

[18] If 1998–1999 retention rates are maintained in the coming decade, the Navy and Air Force will not be able to sustain their current experience mix but the Army and Marine Corps will (Asch, Hosek and Warner, 2001).

U.S. home bases, rather than permanent duty assignments accompanied by families. As a result, the extent of family separation has increased.

The Clinton administration and the Congress reacted to the recent retention difficulties by implementing a 4.8 percent across-the-board pay increase for military personnel on January 1, 2000, with additional increases targeted toward mid-career personnel on July 1, 2000. In another move to bolster retention, Congress also modified a new, less-generous military retirement system known as REDUX, which applied to personnel entering active duty after August 1986. Personnel under REDUX were given the option of remaining under it and receiving a lump-sum payment of $30,000 upon completing 15 years of service or switching to the more generous system prevailing before August 1986 without such payment. Although FY 2000 retention data are not yet available, anecdotal reports indicate that retention has begun to improve compared with FY 1998-99 levels.

Recruit Quality

Recruit quality has varied considerably during the period of the all-volunteer force, but not always in directions envisioned by AVF critics. Recruit quality is commonly measured by the distribution of scores on the Armed Forces Qualification Test (AFQT) and by the percent of recruits considered to be "high-quality." Recruits are placed into aptitude categories on the basis of AFQT score. The nationally-normed percentiles are: I (93–100), II (65–92), IIIA (50–64), IIIB (31–49), IV (10–30), V (0–9). The armed forces are legally prohibited from taking individuals scoring in aptitude category V.

Table 3 shows the aptitude group distribution of accessions during three draft years—1952, 1957, and 1968—and at five-year intervals beginning in 1973. For comparison, the top row also shows the aptitude group distribution of the 1980 male youth population, when the ASVAB was administered to a nationally representative sample of American youth as part of the 1980 wave of the National Longitudinal Survey of Youth. Unfortunately, the breakdown of group III into its IIIA and IIIB sub-categories is not available for either the 1980 male youth population or the three draft-era years.

Nonetheless, the comparisons in Table 3 are striking. In most years of the all-volunteer force, about 4 percent of the accessions have come from aptitude group I, slightly lower than the 5 percent of the male youth population in this category and much lower than the draft-era range of 6–8 percent. But the AVF has attracted more recruits from aptitude group II, especially since 1988. The biggest change has been the increase in accessions from aptitude group III and the elimination of accessions from group IV. The draft generated slightly more highly-able recruits than the AVF, but also many more low-scoring recruits. Also, recruit quality would have been higher during the draft if college students and other high-aptitude youth were not allowed to obtain exemptions from the

Table 3
Accession Test Scores, Various Years *(percent receiving score)*

	I *(93–100)*[a]	*II* *(65–92)*	*All III* *(31–64)*	*IIIA* *(50–64)*	*IIIB* *(31–49)*	*IV* *(10–30)*	*V* *(<10)*	*Average AFQT*[b]
1980 Male Youth	5	35	29			23	8	52
1952	6	22	32			39	0	49
1957	8	25	43			24	0	54
1968	6	32	38			25	0	55
1973	4	31	52	24	28	13		56
1978[c]	5	23	43	16	28	29		51
1983	6	31	52	21	32	11		57
1988	4	36	55	26	28	5		59
1993	4	38	56	29	28	1		61
1998	4	35	60	29	31	1		59

[a] Numbers in parentheses are AFQT percentile ranges.
[b] AFQT averages for 1988, 1993, and 1998 computed from raw enlistment contract records supplied by Defense Manpower Data Center. Means for earlier years were estimated as sum of within-aptitude group average AFQT times percent in aptitude group. Within-aptitude AFQT averages were constructed from Army enlistment data for 1987–1998. Estimated averages were constructed for years 1988, 1993, and 1998 and in all three cases were within one percentage point of the actual average.
[c] 1978 data corrected for misnorming.
Sources: Aptitude frequencies for 1980 male youth, 1952, 1957, and 1968 are from *Profile of American Youth,* Office of the Assistant Secretary of Defense (Manpower, Reserve Affairs, and Logistics), 1982. Data for 1973 through 1993 are from *Population Representation in the Military Services, Fiscal Year 97,* Office of the Assistant Secretary of Defense (Force Management Policy), November 1998. Fiscal Year 1998 data were provided by the Defense Manpower Data Center.

draft. Average AFQT has risen during the AVF.[19] Since higher quality personnel perform better on military-related tasks (Fernandez, 1992; Orvis, Childress and Polich, 1992), the increase in personnel quality has improved the overall productivity of the force.

The educational attainment of enlisted accessions has improved remarkably since the inception of the all-volunteer force. In 1973, less than two-thirds of accessions had high school diplomas. High school diploma graduates have comprised 90 percent or more of accessions since 1984. Since 1991, at least 90 percent of the accessions of every service have had high school diplomas.

However, the movement toward a greater number of high-quality accessions was not a smooth one. Table 3 shows that the proportion of group II and group III recruits actually dropped substantially from 1973 to 1978, before rebounding after that time. More detailed data shows that "high-quality accessions"—defined as

[19] The Department of Defense has never published the average AFQT score of entering cohorts, but rough estimates for various years are provided in the last column of Table 3. Estimates were obtained as a sum of the fraction in each aptitude group multiplied by the average AFQT for that category. The within-group averages were calculated from Army enlistment records for the period 1987–97. Using the Army within-group averages was preferable to using within-group mid-points; the Army within-group averages were almost the same as averages constructed from Navy data over the same period.

those with a high school diploma who score 50 or above on the AFQT—rose at the start of the volunteer force from 42.8 percent in 1973 to 48.6 percent in 1976 and then plummeted to 27.1 percent in 1977 and 33 percent in 1978.

The quality decline was not known at the time. A new version of the ASVAB test was introduced in 1977. The new test was misnormed, leading many recruits who should have been placed into aptitude group IV to be placed in higher aptitude categories. Reports from recruiting stations painted a rosy recruiting picture even as actual recruit quality declined. The problem was discovered in 1980 after the armed forces' training commands complained about recruits' poor performance in training. The misnorming of the ASVAB was clearly an early debacle for the all-volunteer force.

Recruit quality fell for other reasons. Figure 2 shows trends in the civilian unemployment rate, relative pay at entry, and the percentage of "high quality" recruits, all normalized to a level of 1.0 in 1974. Recruiting was helped by a big rise in civilian unemployment from 5.6 percent in 1974 to 8.5 percent in 1975. However, by 1979 unemployment almost returned to its 1974 level. Meanwhile, relative military pay declined in the second half of the 1970s. Between 1974 and 1980, enlisted pay fell about 13 percent relative to the earnings of full-year round 18–24 year-old male workers.[20] The relative decline in military pay grew out of Carter-era caps on federal pay growth that were aimed at controlling growing budget deficits and seemed to confirm the belief in some quarters that the AVF would collapse for lack of political support. In addition to the poor recruiting, enlisted retention also declined sharply in the late 1970s.

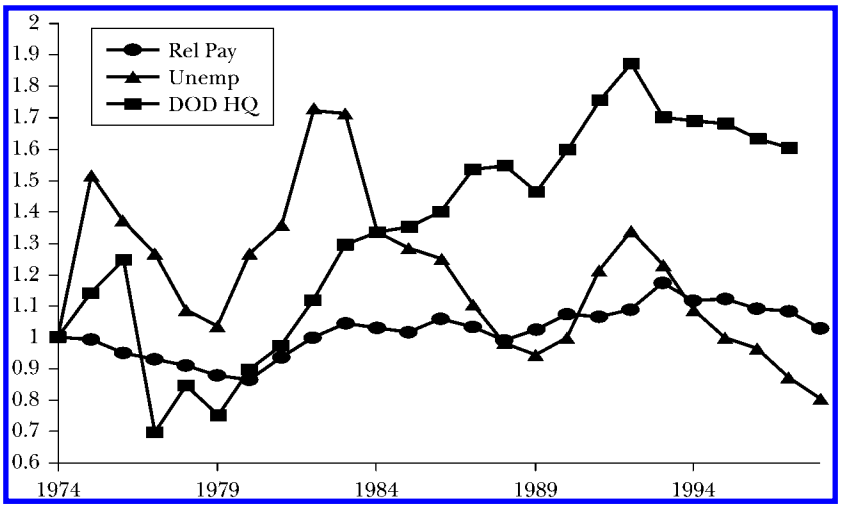
A final factor that caused recruit quality to suffer in the early years of the all-volunteer force was the elimination of the GI Bill. Some defense officials and politicians viewed the GI Bill as an expensive entitlement program that did not induce many additional enlistments. The GI Bill was eliminated on January 1, 1977, and a much less generous program was substituted in its place. In hindsight, the belief that educational benefits had little effect on enlistment was wrong.[21]

The recruiting difficulties of the late 1970s reversed in the 1980s, as illustrated by Figure 2. In 1980, only 35 percent of enlisted recruits were high quality; by 1990, the percentage had risen to 62 percent. The increases enjoyed in the early 1980s can be traced to two factors. One factor was the response of the political system. The Carter administration sought and received an 11.7 percent military pay increase beginning in January 1981. The incoming Reagan administration obtained

[20] The relative military pay trend in Figure 2 is the ratio of: 1) E-1 basic pay each year since 1974 divided by the 1974 value; and 2) average annual earnings of full-year round male high school graduate workers ages 18-24 divided by the 1974 value. The relative pay trend is normalized to 1.0 in 1974 and thus reflects the ratio of military pay growth since 1974 relative to civilian pay growth since 1974. Civilian earnings data are not available prior to 1974.

[21] Warner and Asch (1995) review AVF-period studies prior to 1995 that link educational benefits and enlistment. Warner, Simon and Payne (2000) find that over the period 1987–1997 Army and Navy educational benefit programs had significant positive effects on enlistment supply and that the educational benefit programs are cost-effective relative to other recruiting tools.

Figure 2
Percent High Quality, Civilian Unemployment Rate, and Relative Pay at Entry (*series normalized to 1.0 in 1974*)



another 14.3 percent increase in January 1982. These pay increases restored relative military pay to its 1974 level. The other factor was a deep recession in 1982–83.

Recruit quality continued to rise in the late 1980s despite declining unemployment. Part of the continued rise can be traced to a slowdown in civilian wage growth for high school graduates. Reduced enlisted turnover enabled the services to lower recruiting goals and focus on high quality prospects. Expansions in recruiters and advertising, greater use and larger dollar amounts of enlistment bonuses, and improved educational benefits embodied in the Army College Fund (1984) and the Montgomery GI Bill (1986) all helped attract high quality recruits. Studies of enlisted supply estimate elasticities with respect to relative military pay, the unemployment rate, and recruiters to be on the order of 0.5 to 1.0, 0.3 to 0.9, and 0.5, respectively (Warner and Asch, 1995; Warner, Simon and Payne, 2000).

Recruit quality peaked in 1992 as the military downsizing further reduced recruiting goals at the same time the economy experienced a severe recession. Recruiting seemed so easy, in fact, that in the downsizing period the services reduced their recruiter forces and slashed their advertising budgets. The Army scaled back Army College fund benefits and enlistment bonuses. In 1994, the Department of Defense closed a number of small recruiting stations and consolidated its recruiting operations in larger offices. These consolidations saved money, but they also reduced the exposure of the armed forces in a number of communities.

The apparently easy recruiting of the early 1990s has been reversed in more recent years. High quality enlistments have fallen from 74.4 percent of total enlistments in 1992 to 59.1 percent in 1999. Several factors explain this decline.

The real earnings of 18–24 year-old male high school graduates have risen since 1993, leading to a decline in relative military pay of about 10 percent (which appears as the dip at the end of the relative pay line in Figure 2). The unemployment rate has fallen by almost half since July 1992. Rising college attendance is another factor. In 1987, about 57 percent of high school seniors went to college within 12 months of graduation. That percentage has risen to almost 70 percent today. Warner, Simon and Payne (2000) estimate that the decline in unemployment has reduced the number of high-quality recruits by about 15,000 annually and the rise in college attendance has reduced the number of recruits by another 14,000 annually, holding other factors constant such as the availability of educational benefits.

In the last three years, the services have expanded their recruiter forces, advertising budgets, and enlistment incentives in an attempt to stave off recruiting shortfalls. These policy actions have apparently begun to take effect. Although the armed forces experienced recruiting shortfalls in 1998 and 1999, all four services met their 2000 recruiting objectives.

Demographic Characteristics of the Force

The Gates Commission predicted that black representation would increase from 14 percent of the enlisted force under the draft to only 15 percent in a volunteer force. In fact, representation of African Americans in the armed forces increased from 14 percent to 19 percent in the first five years of the all-volunteer force, as shown in Table 4. Since the early 1980s, blacks have made up about 22 percent of the enlisted force and about 30 percent of the Army's enlisted force.

While blacks are overrepresented in the enlisted forces in comparison with their representation in the population, Hispanics are underrepresented, as shown in the middle columns of Table 4. At the start of the all-volunteer force, Hispanics made up 4.6 percent of the enlisted force. While the Hispanic percentage has grown over the AVF period, they still comprise only about 7.5 percent of the enlisted force. The Air Force currently has the smallest Hispanic representation (3.8 percent) while the Marine Corps has the largest (11.6 percent).

Minority representation in the officer corps has risen over time. Blacks now make up 7.5 percent of the officer corps and Hispanics make up 3.1 percent; these groups are now represented in the officer corps at almost the same rate as their representation in the civilian population of 18-44 year-old college graduates (8.3 percent and 4.6 percent, respectively).

Whether minority representation in the armed forces is excessive is a matter of judgement. General Colin Powell, former chairman of the Joint Chiefs of Staff, has often been quoted (for example, in Jehn, 1991) as saying that rather than apologize for the disproportionate number of minorities in the military, he is proud that the military offers those types of opportunities to them. Friedman (1967) considered the issue to be a red herring. Regardless of one's viewpoint, the practical side of the matter is that there are only two ways to increase the percentage of whites in the armed forces substantially: 1) a lottery draft with few exemptions or deferments; or

Table 4
Blacks, Hispanics, and Females as a Percent of the Force, Various Years

	Blacks		*Hispanics*		*Females*	
	Officer	*Enlisted*	*Officer*	*Enlisted*	*Officer*	*Enlisted*
1973	2.4	14.0	1.3	4.1	4.2	2.2
1978	4.2	19.2	1.4	4.0	6.5	6.6
1983	5.8	21.6	1.4	4.0	9.5	9.3
1988	6.5	22.1	1.8	4.5	11.3	10.4
1993	7.0	21.9	2.4	5.8	13.2	11.6
1998	7.5	22.0	3.1	7.5	14.2	13.7

Sources: Data for Hispanics for 1973 and 1978 from Mark Eitelberg (1996). All other data for years 1973–1993 from *Population Representation in the Military Services, Fiscal Year 97,* Office of the Assistant Secretary of Defense (Force Management Policy), November 1998. Fiscal Year 1998 data were provided by the Defense Manpower Data Center.

(2) a large pay raise. Neither policy is very likely. Indeed, a large pay raise which led to more white and fewer nonwhite accessions would almost surely be criticized for denying job opportunities to blacks and other minorities.

Are blacks disproportionately assigned to war-fighting skills and therefore more exposed to the risk of injury or death than whites, as some critics have charged? In 1998, 16 percent of black males were assigned to infantry, gun crews, and seamanship specialties while 20 percent of white males were. On the other hand, blacks are more likely to serve in the military and are overrepresented in war-fighting skills in terms of the overall population. Blacks in war-fighting skills were 0.53 percent of the overall black male population age 20–44 while white personnel made up 0.37 percent of the white male population. But in terms of the overall population and in terms of the military population, blacks were overrepresented in support and administrative positions where black personnel held 26 percent of these jobs while only 12 percent of whites did. Again, whether these racial differences in occupational assignment should be a matter of concern is a matter of judgement.

At the end of the draft in 1973, women comprised only 2.2 percent of the enlisted force and 4.2 percent of the officer force, as shown in the final columns of Table 4. The Gates Commission said nothing about the use of women in the all-volunteer force, but the services did not take long to decide that women were a vital source of supply. By 1978, the share of women in the enlisted force had already tripled to 6.6 percent. The share has continued to grow; women now comprise about 14 percent of the enlisted force. The Air Force has the largest female content (18 percent) and the Marine Corps has the least (5.4 percent). Women now also comprise about 14 percent of the officer corps and over 19 percent of all new officers.

Traditionally, women were "demand-constrained" in the armed forces: that is, at the going military pay levels, more women were willing to enlist than were

allowed to enlist. The constraint was due to legal injunctions that prohibited women from serving in some occupations, particularly combat arms, and in some circumstances, such as designated combat zones. In the early 1990s, most non-combat arms positions were opened up to women, and they were allowed to serve on combat ships like carriers. Women officers now fly combat aircraft. A Pentagon panel recently recommended allowing women to serve aboard submarines.

Controversies still surround questions about where, when, how, and if women should serve in the military. Women tend to leave service at a higher rate and to have lower deployment readiness rates than men because of pregnancy, health status, and other factors. At the same time, because of demand constraints, the women who do enter service tend to be better educated than their male counterparts. For all services combined, female aptitude test scores are similar to male scores.[22] Harrell and Miller (1998) found that the increased use of women has had little effect on readiness, unit cohesion, and morale. Although the jury is still out on the use of women in the military, we are skeptical that with women comprising only 14 percent of the force that the U.S. military has been over-feminized.

Is the All-Volunteer Force Sustainable?

The answer to this question is "yes." Military recruiting and retention are sufficiently responsive to compensation and other incentives that there exist feasible levels of pecuniary and nonmonetary incentives that will allow the armed forces to meet their strength objectives—in terms of numbers, quality, and experience—now and in the foreseeable future.

First-term enlisted Regular Military Compensation, which includes basic pay, housing and food allowances, and a tax advantage for the non-taxability of the allowances, averages about $25,000. Regular Military Compensation of all enlisted personnel averages about $31,000. Enlisted experience-earnings profiles are similar to those found in the private sector. For the majority of a military career, military pay falls around the 70th percentile of earnings of similarly experienced full year-round male high-school graduate workers and around the median earnings of full year-round male workers who have some college education (Asch, Hosek and Warner, 2001). Given the many negative nonpecuniary aspects of military service—for example, loss of freedom, longer hours of work, exposure to danger, family separation, reduced spouse employment opportunities, and so on—these levels of pay hardly seem excessive. Table 2, presented earlier, showed that military personnel costs are now less than 1 percent of GDP.

The all-volunteer military is also sustainable in the sense that the economy

[22] Among 1998 recruits, women and men both had an average AFQT of 59; 67 percent of males and 71 percent of females fell in aptitude categories I-IIIA. There are differences by service; Army and Marine Corps female recruits score somewhat better than male recruits but slightly worse in the Navy and Air Force.

could absorb a significant increase in military pay. An enlisted basic pay increase of 10 percent costing about $2.3 billion would probably solve most enlisted recruiting and retention problems; a basic pay increase of 20 percent costing $4.6 billion almost surely would. In an overall federal budget of $1.8 trillion, with projected surpluses in the hundreds of billions stretching into the medium-term, an increase in military pay is certainly affordable.

The all-volunteer force is also a sustainable institution in the sense that the electorate would probably see some additional spending as a cheap price to pay to avoid a return to conscription. Indeed, a draft would surely be perceived as less equitable today than it was at the time it was abolished. Recall that in 1973 the armed forces' demand for new recruits was about one-fifth of the cohort of males turning 18 years old each year; now it is only about one-tenth.

It is interesting to speculate on what a draft would look like if it were to be reinstated. Absent any reductions in the current recruiting effort or in pay and other incentives, a draft for the purpose of meeting the services' strength targets would involve conscripting fewer than 10,000 youth per year—and perhaps drafting no one at all some years. If a draft was to involve meaningful numbers of youth, it would need to be accompanied by a substantial reduction in first-term enlisted pay. For example, a 50 percent basic pay reduction for the first two years of service would restore junior enlisted pay to the relative level prevailing in the 1960s. This pay cut would reduce voluntary supply by about 27 percent. It would also raise the demand for new recruits by about 40 percent because of higher turnover. As a result of these factors, the armed forces would need to conscript about 120,000 youth each year to meet current strength requirements.

If a draft involving this number of conscripts were limited to 18 year-old males, each male youth would have only about a 6 percent chance of being drafted. Imposition of the conscription tax on such a limited number of youth would seem rather egregious, and probably not politically acceptable, given the decline in the defense burden and the rise in incomes that taxpayers have recently enjoyed.

A draft accompanied by a 50 percent basic pay reduction for the first two years of service would have little impact on the defense budget—and could even possibly increase it. Consider the situation of the Army in this scenario. The basic pay cost of the Army enlisted force is currently $7.2 billion. With a 50 percent basic pay reduction for the first two years of service, the basic pay cost would drop to $5.9 billion, an apparent saving of $1.3 billion. However, a pay cut of this magnitude would also lead to higher rates of turnover, and thus a need to bring more people into the Army each year. The Army's demand for new personnel at the current pay level is about 66,000 per year. We estimate that the demand would rise to about 93,000 with the pay reduction. Thus, the Army's training costs would rise by about $500 million (assuming a training cost of $20,000 per recruit).

The Army's costs in this "mixed force" scenario—part volunteer, part draft—would be higher for other reasons as well. First, draftees would no doubt be less motivated than volunteers. Second, the quality of new recruits might decline if the draft was truly random and the Army was required to accept individuals with low scores on

the AFQT. Third, the average experience level would decline by about two years. Finally, as experience levels declined, a draft would shrink the pool of individuals from which the services could select for advancement to the upper ranks. The reduction in the capacity to select personnel for the upper-level positions is particularly troublesome, because filling the senior ranks with more qualified personnel has a bigger impact on productivity than filling the junior ranks with more qualified personnel.[23] To restore lost capability, the Army would either have to increase force size or restore the lost experience by raising pay for career personnel. The latter policy would be more difficult and more expensive than in the case of the volunteer force because of the decline in the number of volunteers in the mixed force. Restoration of the lost capability would dissipate any remaining savings from the pay reduction.

Because a draft therefore offers little prospect for reducing budgetary outlays for defense (at current strength levels), it would not reduce the deadweight loss from taxation that accompanies the provision of a military force. Moreover, conscription would entail higher social costs because of the greater opportunity costs of the draftees.

Sustaining the all-volunteer force has without question become more of a challenge to military personnel planners in recent years, as the strong economy and the trend toward college attendance have reduced the pool of young people who seriously consider a military commitment. But the armed forces can meet the challenge without resort to a draft. Asch, Kilburn and Klerman (1999) discuss ways that the military can better tap the market for college-bound youth. Of course, the military could respond to the recent challenges by reducing their recruiting standards for high-quality personnel, just as it raised them in the early 1990s when a recession and the defense drawdown made recruiting unusually easy. However, cutting recruit quality is an option the military leadership refuses to consider, especially given the likely increase in the demand for quality in the future as the military becomes even more oriented to high technology. From an economic standpoint, what levels of personnel quality are efficient for sustaining the military's objective state of readiness is an open question.

A recent Defense Science Board (2000) report identified areas of concern with the current military force structure and with certain military personnel management practices. Central to the report was the need for the Department of Defense to define the roles and missions of the active and reserve forces more clearly and to integrate the reserve forces with the active forces better. Focus on a draft would deflect attention from this and other areas of concern.

Final Remarks

Economics cannot rule out the possibility of circumstances under which a draft would be more efficient than a volunteer force. But the economic case for con-

[23] We have not said much about the military organizational structure or the structure of military compensation. See Asch and Warner (2001) for a treatment of these questions.

tinuing the all-volunteer force appears even more compelling today than it was in the early 1970s, when the armed forces demanded a larger fraction of the youth population. Technological changes that reduce the numerical demand for military manpower while raising the relative demand for high-quality personnel will further accentuate the case for the AVF in the years to come. A case in point is a new Navy destroyer that is now on the drawing board. This destroyer will be much more lethal than the current class of Navy destroyers, because of its state-of-the-art technology, but it is being designed to operate with a crew of only 100, compared with a crew of 400 on the current class of destroyers.

Other countries that have maintained their military draft are now leaning in the direction of a volunteer force. The Italian government has already taken steps to end conscription and implement a volunteer force, and Germany is actively debating elimination of compulsory military service. On the other hand, many countries still rely on conscription, including Russia, China, Denmark, Netherlands, Poland, Turkey, Brazil, Peru and Mexico (United Nations Commission on Human Rights, 1997).

Finally, the above-cited Defense Science Board (2000) report also addressed the civilian side of the Department of Defense manpower equation and concluded that in the coming decade, problems arising from an aging civilian workforce in the Department of Defense will dwarf problems with the military force. The average age of the civilian workforce in the Department of Defense is 45; in the coming decade, over half of that workforce will be eligible to retire. Based on current federal compensation and personnel policies, it will be difficult to replace these workers, especially Senior Executive Service personnel and scientists and engineers who work in Department of Defense research labs. We venture to say that a draft of middle-aged civilians and professionals will not be mentioned as one of the feasible alternatives.

■ *This paper is dedicated to Walter Oi, who has been the godfather of research on the economics of the draft and the all-volunteer force. We thank Brad De Long, Bill Dougan, Curt Gilroy, Alan Krueger, Walter Oi, Aline Quester, Todd Sandler, Curtis Simon, Timothy Taylor, and Michael Waldman for comments on a previous draft.*

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