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STUDY 9

ECONOMIC ANALYSIS OF THE VOLUNTEER MILITARY

— J. Huston McCulloch

BACKGROUND

When the United States returns to a Volunteer Army, a substantial raise in compensation, especially for first term enlisted men, will be necessary to maintain the large force strengths Congress is likely to desire.

It is difficult to estimate the size of the needed raise from the observed behavior of first term enlistees, because a large fraction of today's volunteers are strongly motivated by the threat of being drafted. One approach to this problem is to use attitudinal surveys to separate the "true" volunteers from the "reluctant" ones. Another is to include a measure of draft pressure in the supply equation and then to evaluate the function when draft pressure is zero. Both these methods have drawbacks. The first relies upon the subjective (and perhaps intimidated) introspection of the enlistees instead of upon actual behavior. The second entails the difficulty of quantifying an elusive and highly subjective variable.

A third method (not without its own drawbacks) is to use the behavior of men who have re-enlisted at least once to infer the tastes of American men in general for the military. These men are no longer liable for the draft and therefore have made their decision to be in the Armed Forces freely. It is true that they have had different experiences and are at different points in their careers than potential first termers. However, theirs is the objectively observable behavior of known true volunteers.

THE DISTRIBUTION OF TASTES

The level of military pay relative to civilian pay varies most dramatically with respect to education and race, mostly because of variation on the civilian-side. Table II.9.1 shows the military compensation and population during Fiscal Year

II-9-1
<table>
<thead>
<tr>
<th>RACE</th>
<th>EDUCATION</th>
<th>YEARS OF SERVICE COMPLETED</th>
<th>(1) MILITARY COMPENSATION MG I-III ONLY (FY 69)</th>
<th>(2) MILITARY POPULATION MG I-III ONLY (FY 69)</th>
<th>(3) MEDIAN CIVILIAN EARNINGS OF COMPARABLY AGED PERSONS MG I-III ONLY (FY 69)</th>
<th>(4) CIVILIAN LABOR FORCE FOR COMPARABLY AGED PERSONS MG I-III ONLY (FY 69)</th>
<th>(5) ( R = \frac{1}{(2) + (4)} )</th>
<th>(6) ( P = \frac{(2)}{(3)} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non Black</td>
<td>H.S. Diploma or Less</td>
<td>4-5</td>
<td>6150</td>
<td>73500</td>
<td>5340</td>
<td>548000</td>
<td>1.150</td>
<td>0.1183</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6-7</td>
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<td>66100</td>
<td>5840</td>
<td>615000</td>
<td>1.142</td>
<td>0.0971</td>
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<tr>
<td></td>
<td></td>
<td>8-9</td>
<td>6620</td>
<td>57200</td>
<td>6290</td>
<td>511000</td>
<td>1.053</td>
<td>0.1006</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10-11</td>
<td>6990</td>
<td>52400</td>
<td>6150</td>
<td>426000</td>
<td>1.137</td>
<td>0.1094</td>
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<td></td>
<td></td>
<td>12-13</td>
<td>7180</td>
<td>57800</td>
<td>6500</td>
<td>365000</td>
<td>1.104</td>
<td>0.1368</td>
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<td></td>
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<td>6510</td>
<td>6440</td>
<td>7150</td>
<td>372000</td>
<td>0.910</td>
<td>0.0170</td>
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<tr>
<td></td>
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<td>6-7</td>
<td>6950</td>
<td>5670</td>
<td>7680</td>
<td>348000</td>
<td>0.904</td>
<td>0.0160</td>
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<td></td>
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<td>8-9</td>
<td>6740</td>
<td>4400</td>
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<td>304000</td>
<td>0.826</td>
<td>0.0142</td>
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<td></td>
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<td>7100</td>
<td>4420</td>
<td>8270</td>
<td>266000</td>
<td>0.858</td>
<td>0.0163</td>
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<td></td>
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<td>12-13</td>
<td>7330</td>
<td>4630</td>
<td>8480</td>
<td>254000</td>
<td>0.864</td>
<td>0.0179</td>
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<tr>
<td>Black</td>
<td>H.S. Diploma or Less</td>
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<td>5900</td>
<td>8160</td>
<td>3780</td>
<td>298000</td>
<td>1.562</td>
<td>0.2150</td>
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<td></td>
<td></td>
<td>6-7</td>
<td>6410</td>
<td>7540</td>
<td>4380</td>
<td>359000</td>
<td>1.464</td>
<td>0.1735</td>
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<td>8-9</td>
<td>6460</td>
<td>6540</td>
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<td>301000</td>
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<td>0.1785</td>
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<td>10-11</td>
<td>6800</td>
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<td>4710</td>
<td>209000</td>
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<td>0.1788</td>
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<tr>
<td></td>
<td></td>
<td>12-13</td>
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<td>190000</td>
<td>1.501</td>
<td>0.2589</td>
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<td></td>
<td>Greater than H.S. diploma</td>
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<td>6240</td>
<td>521</td>
<td>5230</td>
<td>166000</td>
<td>1.192</td>
<td>0.0305</td>
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<td></td>
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<td>5110</td>
<td>111000</td>
<td>1.293</td>
<td>0.0506</td>
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<td></td>
<td></td>
<td>8-9</td>
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<td>632</td>
<td>6020</td>
<td>176000</td>
<td>1.097</td>
<td>0.0346</td>
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<tr>
<td></td>
<td></td>
<td>10-11</td>
<td>7020</td>
<td>565</td>
<td>5440</td>
<td>131000</td>
<td>1.232</td>
<td>0.0414</td>
</tr>
<tr>
<td></td>
<td></td>
<td>12-13</td>
<td>7010</td>
<td>674</td>
<td>6680</td>
<td>49000</td>
<td>1.050</td>
<td>0.1210</td>
</tr>
</tbody>
</table>
1969 of re-enlistees in Mental Groups I-III who first entered military service since the end of the Korean War, by education, race, and length of service, along with the earnings and population of their counterparts in the civilian labor force. This military compensation includes basic pay, proficiency pay, regular reenlistment bonus, and variable reenlistment bonus, as well as estimates of the value of quarters, subsistence, and the tax advantage on quarters and subsistence. It includes no estimate of the value of retirement benefits. (See Appendix II.9.A for details regarding data.) Men in Mental Group IV were excluded because the acceptance standards for this group were not constant between 1955 and 1965.

It is natural to postulate that \( P \), the fraction of any subset of the total qualified labor force preferring to be in the military is a fixed function of \( R \), the ratio of the group's military compensation to its civilian alternative. The simple constant elasticity relationship

\[
P = \alpha R^\beta
\]

is unsatisfactory because \( P \) ought to be bounded above by unity. The assumption that elasticity falls linearly from a positive value when \( P \) is zero to zero when \( P \) is unity satisfies this requirement and implies the following form:

\[
P = \frac{\alpha R^\beta}{1 + \alpha R^\beta}.
\]

Rearranging and taking natural logarithms, we have

\[
\log \frac{P}{1-P} = \alpha' + \beta \log R.
\]

To test for the possibility that tastes vary by race, a dummy variable \( D \) was added which takes the value 1 for blacks and 0 for non-blacks:

\[
\log \frac{P}{1-P} = \alpha + \beta \log R + \gamma D.
\]

This equation was fit to the data of Table II.9.1 with a linear regression, using weights based on the assumption that the variance of its discrepancy for a given observation is proportional to the reciprocal of the observation's military population. The adjusted \( R^2 \) of this regression was 0.85. The estimators of the parameters are shown below, together with those of their standard errors:

\[
\log \frac{P}{1-P} = -2.84 + 6.49 \log R - 1.07D.
\]

\[(.11) \quad (.91) \quad (.33)\]
Unfortunately, the t statistic of the racial dummy variable is 3.19, which for 17 degrees of freedom is significant at the 99% confidence level, so that we cannot simply assume that its coefficient is zero. The negative coefficient means that although a higher fraction of qualified blacks are in the military than of non-blacks, this fraction is not as high as we would expect given the attractiveness of military pay relative to the depressed civilian pay of blacks. This fact has three possible interpretations.

1. Blacks have a distaste for the military so that at equal relative pay, a greater proportion of them than of non-blacks would prefer to be civilians.

2. The military has a distaste for blacks, and somehow excludes them.

3. The technique used to infer Mental Group of civilians from their race and education is imperfect, and either overestimates the black Mental Group I-III population or underestimates the civilian earnings of these persons.

In any case, the dummy variable must be used to predict response to pay changes.

The taste curves for blacks and non-blacks are shown in Figure II.9.1. Each curve has a zero slope when P and R are 0, rises as R increases, inflects, and approaches the asymptote P = 1 as R increases. The elasticity of both of these curves is 6.49 (1-P), so that enlistments are very responsive to pay increases, even at Vietnam force levels when P averages no more than 0.2. (There are over 16 million qualified men ages 19 to 48.)

**THE SUPPLY OF ENLISTED MEN IN FISCAL YEAR 1971**

Table II.9.2 shows the projected FY 71 total qualified labor force (including qualified persons in Mental Group IV) corresponding to different lengths of service up to twelve, by race and education. Table II.9.3 gives projected median civilian earnings in FY 71 by the same variables. Table II.9.4 shows the military compensation of enlisted men at FY-70 rates, and Table II.9.5, the components of military compensation which are directly proportional to basic pay (that is, excluding proficiency pay, the value of quarters and subsistence, and the tax advantage on quarters and subsistence).
Figure II.9.1. Distribution of Tastes
### TABLE II.9.2. Total Qualified Labor Force (Projected to FY 71)

<table>
<thead>
<tr>
<th>EDUCATIONAL ATTAINMENT</th>
<th>AGES CORRESPONDING TO YEARS OF SERVICE COMPLETED</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0-1</td>
</tr>
<tr>
<td>Non-black</td>
<td></td>
</tr>
<tr>
<td>Less than H.S. Diploma</td>
<td>515,000</td>
</tr>
<tr>
<td>H.S. Diploma</td>
<td>1,148,000</td>
</tr>
<tr>
<td>Greater than H.S. Diploma</td>
<td>714,000</td>
</tr>
<tr>
<td>Black</td>
<td></td>
</tr>
<tr>
<td>Less than H.S. Diploma</td>
<td>92,900</td>
</tr>
<tr>
<td>H.S. Diploma</td>
<td>157,600</td>
</tr>
<tr>
<td>Greater than H.S. Diploma</td>
<td>33,800</td>
</tr>
</tbody>
</table>

### TABLE II.9.3. Median Earnings Of Qualified Civilians (Projected to FY 71)

<table>
<thead>
<tr>
<th>EDUCATIONAL ATTAINMENT</th>
<th>AGES CORRESPONDING TO YEARS OF SERVICE COMPLETED</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0-1</td>
</tr>
<tr>
<td>Non-black</td>
<td></td>
</tr>
<tr>
<td>Less than H.S. Diploma</td>
<td>3,560</td>
</tr>
<tr>
<td>H.S. Diploma</td>
<td>4,450</td>
</tr>
<tr>
<td>Greater than H.S. Diploma</td>
<td>5,790</td>
</tr>
<tr>
<td>Black</td>
<td></td>
</tr>
<tr>
<td>Less than H.S. Diploma</td>
<td>1,880</td>
</tr>
<tr>
<td>H.S. Diploma</td>
<td>3,210</td>
</tr>
<tr>
<td>Greater than H.S. Diploma</td>
<td>5,200</td>
</tr>
</tbody>
</table>

II-9-6
### Table II.9.4. Mean Annual Compensation of Enlisted Men (at FY 70 Rates)

<table>
<thead>
<tr>
<th>EDUCATIONAL ATTAINMENT</th>
<th>YEARS OF SERVICE COMPLETED</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0-1</td>
</tr>
<tr>
<td>Non-black</td>
<td></td>
</tr>
<tr>
<td>Less than H.S. Diploma</td>
<td>3,040</td>
</tr>
<tr>
<td>H.S. Diploma</td>
<td>3,120</td>
</tr>
<tr>
<td>Greater than H.S. Diploma</td>
<td>3,340</td>
</tr>
<tr>
<td>Black</td>
<td></td>
</tr>
<tr>
<td>Less than H.S. Diploma</td>
<td>2,980</td>
</tr>
<tr>
<td>H.S. Diploma</td>
<td>3,070</td>
</tr>
<tr>
<td>Greater than H.S. Diploma</td>
<td>3,240</td>
</tr>
</tbody>
</table>

### Table II.9.5. Component of Military Compensation Proportional to Basic Pay (at FY 70 Rates)

<table>
<thead>
<tr>
<th>EDUCATIONAL ATTAINMENT</th>
<th>YEARS OF SERVICE COMPLETED</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0-1</td>
</tr>
<tr>
<td>Non-black</td>
<td></td>
</tr>
<tr>
<td>Less than H.S. Diploma</td>
<td>1,860</td>
</tr>
<tr>
<td>H.S. Diploma</td>
<td>1,910</td>
</tr>
<tr>
<td>Greater than H.S. Diploma</td>
<td>2,050</td>
</tr>
<tr>
<td>Black</td>
<td></td>
</tr>
<tr>
<td>Less than H.S. Diploma</td>
<td>1,820</td>
</tr>
<tr>
<td>H.S. Diploma</td>
<td>1,890</td>
</tr>
<tr>
<td>Greater than H.S. Diploma</td>
<td>2,000</td>
</tr>
</tbody>
</table>
Supply curves have been constructed using the taste function

\[ p = \frac{\exp(-2.84 \cdot 1.07D) R^{6.49}}{1 + \exp(-2.84 \cdot 1.07D) R^{6.49}} \]

and the data of Tables II.9.2 – II.9.5 giving total volunteers in the absence of a draft for each experience group as a function of an equiproportionate raise across all pay grades for men with that experience. The crucial supply curve for the first two years of service, where the largest raise will be necessary, is shown in Figure II.9.2. The supply curves do not quite have the smooth shape of the taste functions of Figure II.9.1, because the points of steepest slope for the various education-race cells occur at different percentage changes in basic pay.

Because these supply curves were based on the qualified labor force, instead of the qualified population, they somewhat underestimate the actual response to a pay raise. They do not allow for the fact that higher military pay will pull men into the labor force, nor that the absence of draft pressure will release many reluctant students from the universities.

A FY 71 PAY RAISE FOR MOVING TOWARD A POST-VIETNAM VOLUNTEER MILITARY

To preserve the present experience mix in the Armed Forces, it would be necessary to pay the average first-termer as much as a man who had reenlisted once or twice. In fact, it would be necessary for the basic pay of a given pay grade actually to decrease with experience. Therefore it would seem desirable to let the experience mix change in the direction recommended by the Hubbell Report, Volume II, Appendix II, that is, to substitute men with 4 to 11 years for men with only 0 to 3 years of service completed.

After American disengagement from the war in Vietnam, force levels will probably return to close to their FY 61-FY 65 average of 2.656 million men. Since officers typically make up about 12% of the force, this strength level implies about 2.353 million enlisted men. Although it is unlikely that this force level will be achieved by FY 71, reliance on the draft could still be minimized for the duration of the Vietnam War if pay raises are incorporated into the FY 71 budget which are compatible with a volunteer force equivalent to these 2.353 million enlisted men. Although such raises would not guarantee a complete elimination of involuntary inductions in FY 71, they certainly would imply a drastic reduction in draft calls and would pave the way to completely
Figure II.9.2. Supply of Manpower to Military in FY 71
0-1 Years of Service Completed
eliminating the draft after Vietnam. The response to these raises should be carefully studied in order to make fine adjustments in the FY 72 pay package.

The current (FY 69) force contains about 415,000 enlisted men who have completed at least 12 years of service. Their pay was raised by 12.6 percent from FY 69 to FY 70, well over the annual raise in civilian wage standards. Therefore at least as many men with that much experience could be expected to stay on in FY 71, even without an additional raise. We need direct our attention only to the 1.920 million men with less than twelve years of service.

The approximate distribution of these 1.920 million men by length of service is shown in the first line of Table II.9.6. The figure of 817,000 men in the first two years of service was based on actual mean accessions over the period FY 60-65 (455,700/year) multiplied by the ratio of FY 67 plus FY 68 accessions (1,635,000 men) to the number of men in their first two years of service at the end of FY 68 (1,466,000). At the FY 70 compensation levels, shown on the second line of Table II.9.6, these men receive about 9.17 billion dollars per year.

If formal and on-the-job training occupy about 16 weeks toward the beginning of a new enlisted man's first two years, men in training are about .1715 of the first 2 year's force. This means that the mixed FY 61-65 force contained about 140,000 men in training, leaving only 1,780,000 effectives in their first 12 years of service.

A suggested target length of service distribution for an all-volunteer force is shown on the third line of Table II.9.6. This distribution implies a total of only 1,903,000 men in the first 12 years of service. However, since there will be only 715,000 men in the first 2 years, only 123,000 men will be in training, so there will still be 1,780,000 effectives in these years. This savings of 17,000 men due to reduced turnover moderates the budgetary expenditure necessary to support the all-volunteer force. There are of course further savings that will be permitted in the number of instructors and in the general overhead of the training establishment. Therefore my simple 17,000 man figure is very conservative. The percentage across-the-board increase in basic pay for all pay grades in each length of service bracket necessary to induce this force voluntarily is shown on the fourth line of Table II.9.6. The average total compensation this raise corresponds to is indicated in the fifth line.

Although no systematic raise is recommended for men with 10 and 11 years of service completed, it is anticipated that the number of men in this bracket will rise somewhat from its
TABLE II.9.6. Pay Raise Required for Volunteer Military

<table>
<thead>
<tr>
<th>YEARS OF SERVICE COMPLETED</th>
<th>0-1</th>
<th>2</th>
<th>3</th>
<th>4-5</th>
<th>6-7</th>
<th>8-9</th>
<th>10-11</th>
</tr>
</thead>
<tbody>
<tr>
<td>Approx. distribution of mixed force (000)</td>
<td>817</td>
<td>325</td>
<td>274</td>
<td>145</td>
<td>130</td>
<td>118</td>
<td>111</td>
</tr>
<tr>
<td>Mean FY 70 compensation</td>
<td>3140</td>
<td>4620</td>
<td>5100</td>
<td>6850</td>
<td>7450</td>
<td>7400</td>
<td>7820</td>
</tr>
<tr>
<td>Suggested distribution of Volunteer Force (000)</td>
<td>715</td>
<td>243</td>
<td>208</td>
<td>253</td>
<td>198</td>
<td>143</td>
<td>143</td>
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<tr>
<td>Required pct. increase in basic pay</td>
<td>132.9</td>
<td>52.1</td>
<td>44.6</td>
<td>7.1</td>
<td>2.5</td>
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<td>0.0</td>
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<tr>
<td>Mean Volunteer military compensation</td>
<td>5700</td>
<td>6260</td>
<td>6650</td>
<td>7180</td>
<td>7580</td>
<td>7670</td>
<td>7820</td>
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</tbody>
</table>

pre-Vietnam level. In part this rise is due to the exceptionally large pay raise that went into effect on 1 July 1969. In part it is in anticipation of the effect of the change of December 1966 in the qualification standards. Eventually, persons from the larger qualified population will work in their way into the career force. By not taking into account the effect of these factors on the force of men with 12 and more years of service, my estimate of the response to the pay raise I am suggesting is again conservative.

A suggested basic pay schedule for FY 71 reflecting these raises is shown in Table II.9.7. Because strict adherence to the equiproportionate rule implied a few reversals, the schedule had to be smoothed by hand to make it coincide with common sense.

THE BUDGETARY EXPENDITURE FOR THE VOLUNTEER MILITARY

The total recommended compensation for men in the first twelve years of service is 12.51 billion dollars per year. This means a budgetary expenditure of 3.34 billion dollars more than for the present mixed force. However, this expenditure does not represent a real cost to the nation. Military pay is just money being paid by one American to another. The real cost of the Armed Forces is the manpower that could have been used to make our civilian lives better. The only real ways to cut this cost are to utilize the nation's manpower resources more efficiently (as the Volunteer Military would),

II-9-11
### TABLE II.9.7 FY 70 Basic Pay and Recommended FY 71 Basic Pay

YEARS OF SERVICE COMPUTED UNDER 37 U.S.C. 205

<table>
<thead>
<tr>
<th>PAY GRADE</th>
<th>2 OR LESS</th>
<th>OVER 2</th>
<th>OVER 3</th>
<th>OVER 4</th>
<th>OVER 6</th>
<th>OVER 8</th>
<th>OVER 10</th>
<th>OVER 12</th>
<th>OVER 14</th>
<th>OVER 16</th>
<th>OVER 18</th>
<th>OVER 20</th>
<th>OVER 22</th>
<th>OVER 26</th>
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<tbody>
<tr>
<td>E-9</td>
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<td>372.90</td>
<td>388.20</td>
<td>403.20</td>
<td>417.90</td>
<td>433.20</td>
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<td>469.80</td>
<td>484.80</td>
<td>492.60</td>
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<td>380.70</td>
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<td>268.50</td>
<td>283.50</td>
<td>305.70</td>
<td>321.00</td>
<td>416.10</td>
<td>424.40</td>
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<td>391.00</td>
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</tr>
</tbody>
</table>

1Under 4 months.

Note: If no amount is shown for a pay grade under years of service, the amount immediately to the left applies.
or to reduce the size of the Armed Forces directly. Be-
grudging our men in uniform the free market wage they deserve
does not save the country anything.

A sizeable fraction of today's junior ranking officers
are reputedly motivated by the threat of being drafted. In
the absence of conscription, moderate raises would undoubt-
edly be in order for these officers. This additional budge-
tary expenditure should be added to my estimate of $3.34 billion
dollars per year for the enlisted man. However, because of a
conflict of interest, I have declined to make a proposal for
this raise.

Against the additional expenditure for officers, however,
should be poised the consideration that both the pay raise
itself, and the increased income of the civilian economy
when valuable men are no longer drafted, will be taxable. The
Treasury will receive a sort of rebate on the Volunteer
Military, through taxes on both the higher military and
civilian incomes.

THE EDUCATIONAL MIX OF THE VOLUNTEER MILITARY

The educational mix of the FY 69 enlisted force is
shown in Table II.9.8, along with the predicted distribution
of the volunteer force implied by Tables II.9.6 and II.9.7.
The Volunteer Military will result in a moderate decrease in
the educational attainment of the enlisted men if the pay
raise is equiproportionate across pay grades for each length
of service, in spite of the fact that more highly educated
men tend to have higher rank, for a given experience level.

Since it is likely that the military underutilizes the
high quality men it presently can draft for the asking, this
decrease is probably not unwarranted. Furthermore, any loss
in effectiveness due to lower education will be partly, if
not completely, offset by the greater experience of the all-
voluteer force. However, preliminary calculations indicate
that if some more effective way of rewarding ability can be
found than today's promotion system, even supplemented as it
is by proficiency pay and variable reenlistment bonuses, the
FY 69 distribution could be preserved for an additional ex-
penditure of only about $50 billion dollars per year above
the base expenditure of $3.34 billion. Future studies of
military pay should investigate exactly how much more a higher
quality man is worth to the military, as well as new ways of
identifying such a man in order to renumerate him accordingly.
TABLE II.9.8. Educational Attainment of Volunteer Force

<table>
<thead>
<tr>
<th>EDUCATIONAL ATTAINMENT</th>
<th>LESS THAN H.S. DIPLOMA (PERCENT)</th>
<th>H.S. DIPLOMA (PERCENT)</th>
<th>GREATER THAN H.S. DIPLOMA (PERCENT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY 69 Enlisted Force</td>
<td>22.0</td>
<td>61.9</td>
<td>16.1</td>
</tr>
<tr>
<td>Volunteer Enlisted Force</td>
<td>39.2</td>
<td>52.7</td>
<td>8.1</td>
</tr>
</tbody>
</table>

THE RACIAL MIX OF THE ALL-VOLUNTEER FORCE

Many observers are concerned about the racial composition of the all-volunteer military. The enlisted men in the mixed force of FY 69 were 10.1 percent black. My model suggests that the volunteer force will be 18.7 percent black, even considering the calculated "distaste" of blacks for the military. Milton Friedman has suggested that military pay must already be attractive to blacks, so that most of those blacks who have any inclination to enlist already have done so. The bulk of those who would be won over by a pay raise would therefore have to be white. However, the shameful fact of the matter is that current first-term military compensation is so low that it is not even attractive to blacks.

Some critics profess to be morally offended by the thought of a disproportionate number of blacks freely serving their country for pay which is very respectable for any young man. These critics could perhaps be relieved by the following plan: Preliminary calculations suggest that if blacks were paid about 21 percent less than non-blacks with the same ability and experience, the present 10.1 percent black ratio could be maintained. However, such discrimination would be stridently unconstitutional.

THE STATE INITIATIVE VOLUNTEER MILITARY

In the likely event that Congress puts off action on the Volunteer Military, there is nothing to stop an individual State from taking the initiative to end the involuntary induction of its own citizens. Numerous States took advantage of this right during the Civil War, with the result in the North that the huge Union Army was virtually all-volunteer.

Unfortunately, one State cannot significantly alter the length of service structure of the entire Armed Forces. It therefore would not be able to take advantage of the savings to be had by lengthening the average experience level of the force. However, since its quota is expressed in terms of
accessions, it need only supplement pay for men in their first two years of service, thanks to the possibility of what amounts to a two year enlistment by volunteering for induction.

To raise its share of the 817,000 men in the first two years of service of a Post-Vietnam mixed force, a State would have to supplement pay until total compensation was $5861 per year. Present (FY 70) compensation is $3139, so the supplement would have to average $2722. The outlay to the State would be its share of 2.27 billion dollars per year. In order to phase out the State supplements automatically in case Congress acts halfway, the legislation should read that the State shall make up the difference between $387.20 and the man's Federally provided monthly basic pay (which in FY 70 averages $160.40). This supplement should apply to the first two years' pay of any man, registered with a Local Board in the State, who enlists in any of the four services.

CONCLUSION

By extrapolating from the behavior of re-enlistees to that of first-term enlisted men, I have estimated the additional budgetary expenditure necessary to support a post-Vietnam all-volunteer Armed Force to be about 3.34 billion dollars per year and recommend that the Fiscal Year 1971 basic pay schedule of Table II.9.7 be put into effect as soon as possible. Although an all-volunteer basis for a Vietnam or even larger sized force would be desirable and feasible, force levels will probably have fallen so far by the time the legislative machinery acts on the Volunteer Military that there is little point in considering how to raise the present force, for example, on a volunteer basis.

The proposed pay raise is admittedly sketchy and fine adjustment will be required in preparing the FY 72 pay schedule. It would be desirable if the present routine practice of raising military pay in proportion to civil service pay were replaced by an annual study of military compensation, especially during the transition period to the all-volunteer force. The transition studies should pay especially close attention to the effects of the recent large increase in basic pay, of the preliminary Volunteer Army raise which is passed for FY 71, and of any State pay supplements which are passed in the near future.

Future studies should attempt to quantify the relative value to the military of men with different lengths of service and different levels of education. They should also try to estimate the value to servicemen of retirement benefits and recommend changes in the retirement program which will prevent the imbalances which presently exist for the longer lengths of service.
APPENDIX II.9.A ON DATA AND SOURCES

The composition of the enlisted force for all services by Length of Service (LOS), Education, Pay Grade, Military Occupation Specialty (MOS), Mental Group (MG), and Race was obtained from a magnetic tape specially prepared for the President's Commission on an All-Volunteer Armed Force by the Office of the Assistant Secretary of Defense (Manpower and Reserve Affairs). This tape gives the composition of the Armed Forces as of 30 March 1969. Because the tape did not account for enough men, the tabulation was adjusted upward by a factor of 2.977/2.744, making it match the published figure for the number of enlisted men on active duty on 31 December 1968. This adjusted tabulation was used to compute the military populations which appear in Table II.9.1 and which were added to projected civilian populations to give Table II.9.2. This tabulation also provided weights used for the average military compensation estimates of Tables II.9.1, II.9.4, and II.9.5.

Military compensation was computed as the sum of estimates of "Regular Compensation," Regular Re-enlistment Bonus (RRB), Variable Re-enlistment Bonus (VRB), and Proficiency Pay (Propay).

"Regular Compensation" by Pay Grade and LOS was taken from Table VII-2 of the DOD's Modernizing Military Pay (The "Hubbell Report"), Volume II, page 205. It is composed of Basic Pay plus estimates of the value of quarters, subsistence, and the tax advantage on quarters and subsistence. The figures in the Hubbell Report were upped by a factor of 1.07 for Table II.9.1 and 1.07 x 1.126 for Table II.9.4 to allow for pay raises between Fiscal Year 1968 and FY 70.

The formula for the RRB multiplier was applied using the assumption that the first reenlistment corresponds to the fifth through eighth years of service, the second to the ninth through twelfth years, and the third to the thirteenth through sixteenth years. This assumption was necessary because LOS, rather than number of reenlistments, was available on the OASD(M&RA) tape.

Average VRB multipliers for sailors in their fifth through eighth years of service by MOS, MG, Pay Grade, Education and Race were computed using an extract from the February 1969 Active Duty Enlisted Master Magnetic Tape Record for the Navy, obtained for the President's Commission from the Chief of Naval Personnel. These averages were applied to all services, on the assumption that the services differ only in composition with respect to the mentioned variables, but not in their VRB policies toward narrowly defined classes.
of persons. All persons in their fifth through eighth years were assumed to receive VRB according to these averages multipliers.

Total value of Propay received by MOS was computed from page 26.51 of the "Military and Civilian Personnel" statistics distributed by the OSD Directorate for Statistical Services for 17 September 1968. These figures were divided by the number of men E-4 and over (virtually no one under E-4 receives Propay) in each MOS, as given by the adjusted OASD (M&RA) tape, to give the following average annual Propay figures for men E-4 and over:

0 Infantry, Gun Crew & Allied Spec. $ 38.16
1 Electronics Equipment Repairmen 381.04
2 Communications and Intelligence Spec. 98.99
3 Medical and Dental Spec. 71.34
4 Other Tech. and Allied Spec. 69.68
5 Administrative Spec. & Clerks 18.58
6 Electrical, Mechanical Equipment Repairmen 50.44
7 Craftsmen 5.53
8 Service & Supply Handlers 10.51
9 Misc. (Negligible numbers) 294.33

Because of the difficulty of ascribing the value of potential retirement to the several years before retirement, no estimate of this admittedly valuable component of military compensation was included.

Full Time Civilian Labor Force and median earnings by Age, Detailed Education and Race in Calendar Year 1966 were computed from the edited version of the March 1967 Current Population Survey (CPS) provided to the President's Commis-

sion by the Bureau of Labor Statistics. Time in labor force was inferred from weeks worked, weeks looking for work, and main reason not working full year. Qualified Civilian Labor Force in CY 66 was derived, using three adjustments. First, medical and administrative disqualification rates of 25.8% for non-blacks and 16.8% for blacks were applied, based on preinduction examination experience from July 1950 to December 1968. (Source - 1968 Supplement to Health of the Army, June 1969, Medical Statistics Agency, Office of the Surgeon General, Department of the Army, page 40, Table 10.) Recent disqualification rates have been higher, especially for non-blacks, but this is probably due to draft-motivated efforts to fail the preinduction examination.
Second, the MG distribution by Race and Detailed Education was taken from Table II.9.5 of Bernard D. Karpinos, "The Mental Qualification of American Youths for Military Service and its Relationship to Educational Attainment," 1966 Social Statistics Section, Proceedings of the American Statistical Association. For Tables II.9.2 and II.9.3 this distribution was supplemented by an unpublished table kindly provided the Commission by Dr. Karpinos which indicates that 78.2% of non-blacks and 63.7% of blacks in MG IV and without a high school diploma are qualified under the current mental standards. (All high school graduates in MG IV are now qualified mentally.)

Third, an adjustment was made for aging, because the disqualification rate of thirty- and forty-year-olds is probably higher than that on nineteen-year-olds. Unfortunately, no direct statistics exist on this rate of decline. The best that could be done was to assume that the living qualified labor force decays at the same rate at which the Armed Forces lose men involuntarily (during an obligated tour of duty) from causes other than death. Based on DOD experience, this loss rate is 3.85% per year during the first year, and on Army experience, 3.20% per year thereafter. These rates were derived from figures from Report 46 of the Deputy Chief of Staff for Personnel, for 30 June 1966, 67, and 68.

The labor force estimates from the CPS tape were consistent with CY 66 populations. To estimate the FY 69 and FY 71 labor forces, these figures were adjusted using Census total male population estimates for 1966 by age and race on the assumption that a cohort would neither lose persons from death nor gain from immigration. (Because ages were not given any more finely than in single years, the cohorts were only shifted 2 and 4 years, as if to CY 68 and 70, respectively.) This adjustment is crucial, because given the position of the postwar baby boom, the first-term aged population will be some 30% higher in FY 71 than it was in CY 66.

Age and Detailed Education as given on the CPS tape were converted into the "ages corresponding to years of service completed" variable which appears in Tables II.9.1, II.9.2, and II.9.3 according to the following formula: It was assumed that the enlistment age of a person with a high school diploma or less would correspond to the actual mean enlistment age, about 19.25. It was assumed that a college drop-out would enlist 2.00 years later than this, and a person with a college degree or more, 2.00 more years later.

Earnings were adjusted for the passage of time using the 1966 and 1968 "Total Private" Gross Average Weekly Earnings of Production or Nonsupervisory Workers on Private Payrolls index of $98.82 and $107.73 to obtain a rate of growth of wages, and extrapolating 2.5 years from CY 66 to FY 71 and 4.5 years
from CY 66 to FY 71. These earnings figures were not "annualized," that is to say, they are low because of actually experienced unemployment. These non-annualized figures are the correct ones to use for our study, because the risk of unemployment is part of the civilian alternative, but not part of the military alternative.