

This PDF is a selection from an out-of-print volume from the National Bureau of Economic Research

Volume Title: Public Sector Payrolls

Volume Author/Editor: David A. Wise, ed.

Volume Publisher: University of Chicago Press

Volume ISBN: 0-226-90291-9

Volume URL: <http://www.nber.org/books/wise87-1>

Publication Date: 1987

Chapter Title: Military versus Civilian Pay: A Descriptive Discussion

Chapter Author: Douglas W. Phillips, David A. Wise

Chapter URL: <http://www.nber.org/chapters/c7148>

Chapter pages in book: (p. 19 - 46)

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## Military versus Civilian Pay: A Descriptive Discussion

Douglas W. Phillips and David A. Wise

The goal of this chapter is to compare the compensation of persons who follow a career in the military with the compensation that similar individuals would expect if they were to follow a career in the civilian sector. While recruitment posters and television advertisements often emphasize the training to be had in the military, it is not common to base public recruitment efforts on pay comparisons. And while the military pension system is a very important component of compensation, it seems almost never mentioned in public recruitment efforts as one of the advantages of a military career. Casual observation suggests that many people believe that military pay is low.

The basic approach followed in this chapter is to compare the compensation of military enlisted personnel with the compensation of high school graduates in the civilian sector, and to compare the compensation of officers with the compensation of college graduates in the civilian sector. Compensation is meant to include accrued Social Security benefits and accrued pension benefits. The comparison, however, excludes some forms of compensation in both the civilian and the military sectors, such as health benefits.

Military salary is taken to be regular military compensation, the largest component of which is basic pay, accounting for 70 percent to 80 percent of regular military compensation. The basic allowance for quarters, the basic allowance for subsistence, and the federal income

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tax advantage comprise the remaining portion of regular military compensation. The basic allowances are paid to members of the armed forces who do not receive room or board in kind from the military. The federal income tax advantage results from the tax-exempt status of these allowances and can account for 4 percent to 8 percent of regular compensation. Basic pay is subject to both the federal income tax and, since 1957, to Social Security tax. In addition to regular military compensation, some military personnel receive additional compensation in the form of hazardous duty pay, submarine duty pay, and so forth, but on average these types of compensation are small compared to regular compensation.<sup>1</sup>

Until 1967, military pay was much lower than wages or salaries in the private sector. Under the federal Pay Comparability Act of 1967, however, basic pay schedules along with other elements of regular military compensation must be adjusted to wage rate increases in the private sector. This act mandates that military wages be indexed to wage increases in the civil service, which in turn are indexed to wages in the private sector. One might conclude that this indexing makes a comparison of military and civilian compensation a totalogical exercise, but the nonsalary components of compensation are very different in the two sectors, even if true comparability with the civilian sector were maintained with respect to regular salary. In addition, an important component of the analysis here will be the potential earnings of military personnel after retirement from military service.

It is important to understand from the start that the comparison is not behavioral in any sense. Thus, for example, there is no analysis of compensating differentials or any discussion of the compensation package that the military must offer to recruit personnel.

Also, it is not possible to make precise comparisons of potential earnings of identical individuals in the military versus the private sector. The comparisons must be taken only as indications of the order of magnitude of earnings potential in the two sectors. Some sensitivity analysis is undertaken to determine the effect on the comparisons of one assumption, however.

Section 2.1 compares age-compensation profiles of persons in the military with those in the civilian sector. The general conclusion is that the military pension provisions mean that total compensation from a career in the military would typically be much higher than total compensation in the civilian sector. Section 2.2 considers the retirement wealth of persons in the two sectors. The typical pension wealth of persons who follow a career in the military would at age sixty-two be two to three times as great as the pension wealth of persons who stayed in the civilian sector. Finally, section 2.3 compares military pension accrual profiles with separation rates from the military. Again, the

analysis is descriptive but is intended to suggest the results that would be obtained from more detailed behavioral analysis that will be undertaken in future work.

## 2.1 Age-Compensation Profiles in the Military and Civilian Sectors

In this section the procedure followed to develop age-compensation profiles in the civilian sector is discussed first, illustrating the idea for high school graduates. Then the procedure is extended to account for compensation of persons who follow a career in the military, using the career path of a typical enlisted person for illustration. Finally, compensation profiles and total compensation for the two groups are compared.

### 2.1.1 Civilian Age-Compensation Profiles

The components of compensation are presented in table 2.1 for high school graduates. To facilitate comparison with a survey of the earnings of retired military personnel, all monetary values are in 1978 constant dollars. Column (1) is based on 1978 current population survey data on the earnings of full-time employees. The estimates are based on a simple regression that includes age, age squared, tenure on the current job, tenure squared, and an age-tenure interaction term. The relevant parameter estimates are shown in table 2.A.1. Tenure on the current job is included to facilitate calculation of private pension benefit accruals which are typically based on years of service in a given job. The salary figures that are shown are based on the assumption that high school graduates begin work at age twenty and stay with the same employer until age sixty-two. Of course this is an unrealistic assumption and will be modified in making comparisons presented below. The profile exhibits the usual pattern of increasing real earnings until around the age of fifty, with declining real earnings thereafter. Column (2) shows accrued Social Security benefits, assuming that the receipt of benefits starts at age sixty-two and using a 3 percent real discount rate. The annual change in accrued Social Security benefits is shown in column (3).

Accrued private pension wealth is shown in column (4). These figures are based on the provisions of a typical defined benefit pension plan.<sup>2</sup> Annual accruals are shown in column (5).<sup>3</sup> The columns (6–8) pertaining to military pension benefits and military pension wealth are blank of course in this case. Social Security taxes are shown as negative values.<sup>4</sup> Finally, column (10) shows total cumulated compensation, including pension benefits and Social Security wealth. It can be seen in the last row of the table that typical accrued Social Security wealth at age 61 is \$56,977 and that private pension wealth is \$53,645. Of

**Table 2.1**                      **Civilian Age-Compensation Profile, for High School Graduates**

Age	Yrs of Service	Salary (1)	SS Wealth (2)	Δ SS Wealth (3)	Prvt Pens Wealth (4)	Δ Prvt Pens Wealth (5)	Military Pension (6)	Military Pens Wealth (7)	Δ Military Pens Wealth (8)	SS Tax (9)	Total (10)
20	1	7,615								0	7,615
21	2	8,505								-128	15,992
22	3	9,362								-140	25,214
23	4	10,185								-153	35,246
24	5	10,975								-219	46,001
25	6	11,730								-235	57,497
26	7	12,452								-249	69,700
27	8	13,140								-296	82,544
28	9	13,794								-310	96,027
29	10	14,414	6,953	6,953	3,136	3,136				-360	120,170
30	11	15,001	7,538	585	3,736	600				-450	135,906
31	12	15,554	8,146	608	4,394	658				-467	152,269
32	13	16,073	8,767	621	5,111	717				-502	169,168
33	14	16,558	9,410	643	5,889	777				-600	186,546
34	15	17,010	10,071	661	6,728	839				-617	204,440
35	16	17,427	10,760	688	7,629	901				-632	222,825
36	17	17,811	11,596	836	8,594	965				-748	241,689
37	18	18,161	12,449	853	9,624	1,029				-799	260,934

38	19	18,478	13,400	951	10,718	1,094	- 813	280,644
39	20	18,760	14,370	970	11,878	1,160	- 900	300,634
40	21	19,009	15,366	996	13,103	1,226	- 912	320,952
41	22	19,224	16,389	1,023	14,396	1,292	- 1,000	341,492
42	23	19,405	17,494	1,105	15,755	1,369	- 1,009	362,352
43	24	19,553	18,734	1,240	17,181	1,426	- 1,144	383,427
44	25	19,667	20,147	1,413	18,674	1,493	- 1,150	404,850
45	26	19,747	21,636	1,489	20,233	1,560	- 1,155	426,490
46	27	19,793	23,224	1,588	21,860	1,627	- 1,158	448,339
47	28	19,805	24,920	1,697	23,554	1,694	- 1,159	470,375
48	29	19,784	26,768	1,866	25,314	1,760	- 1,197	492,588
49	30	19,728	28,884	2,097	27,140	1,826	- 1,209	515,030
50	31	19,639	31,107	2,224	29,030	1,890	- 1,204	537,580
51	32	19,517	33,466	2,359	30,985	1,955	- 1,298	560,112
52	33	19,360	35,970	2,504	33,004	2,019	- 1,297	582,698
53	34	19,170	38,566	2,596	35,084	2,081	- 1,284	605,260
54	35	18,946	40,689	2,123	37,225	2,141	- 1,269	627,200
55	36	18,688	42,656	1,966	39,423	2,197	- 1,317	648,734
56	37	18,396	44,711	2,056	41,684	2,252	- 1,315	670,122
57	38	18,071	46,870	2,159	43,978	2,304	- 1,292	691,363
58	39	17,711	49,166	2,295	46,332	2,354	- 1,266	712,458
59	40	17,318	51,610	2,444	48,731	2,398	- 1,238	733,381
60	41	16,891	54,206	2,595	51,170	2,439	- 1,292	754,014
61	42	16,431	56,977	2,771	53,645	2,475	- 1,257	774,435

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course not all employees in the private sector are covered by pensions, possibly only 60 percent are.

### 2.1.2 Military Age-Compensation Profiles

We have no data on average age earnings profiles in the military. Thus for comparison we have selected profiles for several typical career paths. These paths are determined by level of final rank in the service. Regular military compensation is then determined by assuming typical promotion ages and years of service in rank for persons who obtain these final ranks. Four ranks are considered: E6, E7, E8, and E9. They correspond in the army to staff sergeant, sergeant first class, master sergeant, and sergeant major, respectively. Illustrative data for a person who would reach the E8 rank is shown in table 2.2. While mandatory retirement rules are not written in law, they are typically observed but with exceptions, and the mandatory retirement ages vary from service to service. In the army, an E6 if not promoted would typically have to retire after 20 years of service, an E7 after 24 years of service, an E8 after 27 years, and an E9 after 30 years.

Table 2.2 assumes that retirement of an E8 occurs at twenty-seven years of service. Thus the salary figures in table 2.2 up to twenty-seven years of service, age 46, are based on regular military compensation schedules. At age 47 the individual is assumed to leave the service, and salary thereafter until age 62 represents estimated potential earnings in the civilian sector, based on a 1977 Department of Defense retiree survey.

The estimates are based on the earnings of retirees who were working full time in the civilian sector. Sixty-four percent of retired enlisted personnel and 56 percent of retired officers were working full time at the time of the survey. The earnings of this group seem to be the best indication of the potential earnings of military retirees, although the tendency of those with better earnings possibilities to be more likely to work may exaggerate the average potential earnings of retirees. This self-selection effect has not been accounted for in the empirical results, shown in table 2.A.2 for enlisted personnel and officers separately. The estimation equations include the same variables used to predict the earnings of high school and college graduates in the civilian sector, plus variables that measure years of military service, education, mandatory retirement, and final rank in the military. The initial civilian earnings of retired military personnel are typically lower than final military earnings. Thus for the illustrative retiree in table 2.2, civilian earnings at forty-seven are predicted to be \$13,696, while final military salary was \$20,724. Civilian earnings then increase, based on the estimates in table 2.A.2, to \$18,718 at age sixty-two.

Since military personnel are covered by Social Security, the two columns (2, 3) pertaining to Social Security are analogous to those in

**Table 2.2 Military Age-Compensation Profile, for a Person Who Reaches the Rank of E8**

Age	Yrs of Service	Salary (1)	SS Wealth (2)	Δ SS Wealth (3)	Prvt Pens Wealth (4)	Δ Prvt Pens Wealth (5)	Military Pension (6)	Military Pens Wealth (7)	Δ Military Pens Wealth (8)	SS Tax (9)	Total (10)
20	1	8,444								0	8,444
21	2	9,186								-92	17,538
22	3	10,067								-102	27,504
23	4	11,035								-113	38,425
24	5	11,035								-151	49,309
25	6	11,519								-160	60,668
26	7	11,519								-160	72,027
27	8	12,599								-205	84,421
28	9	12,599								-205	96,814
29	10	12,957	6,095	6,095						-237	115,630
30	11	12,957	6,680	585						-284	128,887
31	12	13,736	7,211	532						-299	142,856
32	13	14,607	7,802	591						-342	157,712
33	14	15,127	8,415	613						-414	173,038
34	15	15,127	9,045	630						-414	188,380
35	16	15,470	9,700	656						-426	204,080
36	17	17,442	10,502	802						-556	221,768
37	18	17,762	11,321	818						-596	239,753
38	19	17,762	12,229	908						-596	257,627
39	20	18,119	13,161	932				150,955	150,955	-666	427,167
40	21	18,119	14,117	956				156,088	5,133	-666	450,710

(continued)

**Table 2.2** (continued)

Age	Yrs of Service	Salary (1)	SS Wealth (2)	Δ SS Wealth (3)	Prvt Pens Wealth (4)	Δ Prvt Pens Wealth (5)	Military Pension (6)	Military Pens Wealth (7)	Δ Military Pens Wealth (8)	SS Tax (9)	Total (10)
41	22	18,988	15,099	982				170,410	14,322	-764	484,238
42	23	18,988	16,161	1,062				175,250	4,840	-764	508,364
43	24	18,988	17,357	1,196				179,785	4,536	-859	532,224
44	25	18,988	18,656	1,299				184,008	4,223	-859	555,875
45	26	20,724	20,095	1,438				208,796	24,788	-955	601,871
46	27	20,724	21,629	1,535				212,787	3,991	-955	627,166
47	28	13,696	23,120	1,490			11,016	208,697	4,091	-801	648,476
48	29	14,307	24,733	1,613			11,016	204,559	4,138	-866	670,409
49	30	14,879	26,477	1,744			11,016	200,373	4,186	-912	692,950
50	31	15,412	28,360	1,883			11,016	196,139	4,234	-945	716,082
51	32	15,907	30,393	2,033			11,016	191,865	4,274	-1,058	739,707
52	33	16,362	32,589	2,196			11,016	187,650	4,305	-1,096	763,879
53	34	16,779	34,969	2,370			11,016	183,222	4,338	-1,124	788,582
54	35	17,157	37,516	2,558			11,016	178,853	4,368	-1,150	813,795
55	36	17,497	39,832	2,315			11,016	174,450	4,404	-1,234	838,986
56	37	17,797	42,284	2,452	10,195	10,195	11,016	170,016	4,434	-1,272	874,739
57	38	18,059	44,871	2,588	11,914	1,719	11,016	165,560	4,456	-1,291	902,373
58	39	18,282	47,336	2,465	13,787	1,873	11,016	161,091	4,469	-1,307	930,233
59	40	18,466	49,836	2,500	15,823	2,036	11,016	156,605	4,486	-1,320	958,445
60	41	18,611	52,535	2,699	18,031	2,209	11,016	152,111	4,494	-1,424	987,061
61	42	18,718	55,408	2,872	20,425	2,394	11,016	147,618	4,494	-1,432	1,016,135

Table 2.1. The military retiree is assumed to take a civilian job with a typical defined benefit pension plan like the one described above. Thus he also accrues private pension wealth as shown in columns (4) and (5) of table 2.2.

Columns (6), (7), and (8) pertain to military pension benefits, pension wealth, and accrual rates. Vesting in the military pension system occurs after twenty years of service. Benefits are determined by years of service times 2.5 percent times final military compensation. The benefits are fully indexed for inflation. Thus after twenty years of service a person in the military could retire at 50 percent of his final basic pay indexed to the consumer price index. Benefits are adjusted in March and September of each year. With additional years of service, benefits may increase at 2.5 percent per year to a maximum of 75 percent of basic pay. Only a very small fraction of military personnel are allowed to remain in the service for more than thirty years.

After twenty years of service, the value of pension wealth for the illustrative individual in table 2.2 is almost \$151,000 (in 1978 dollars). It increases to \$213,000 after twenty-seven years, when the person must retire. At that time the person begins to receive benefits of \$11,000 per year in real dollars. As pension benefits are received, pension wealth falls. But the decline in pension wealth is not as great as the annual benefit, since the decline in pension wealth occurs only because the individual is expected to receive benefits for one less year, but this year is the last year of life and thus the discounted value of benefits in this year is relatively small. Finally, column (10) shows total cumulated compensation.

From the last row of the table, it can be seen that at age sixty-one this person has accrued \$55,408 in Social Security wealth, \$20,425 in private pension benefits, and \$147,618 in military pension wealth.

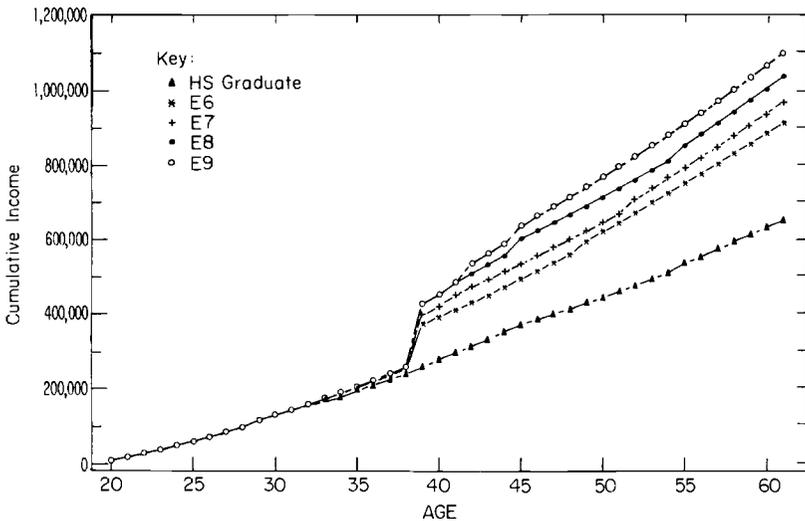
### 2.1.3 Military and Civilian Compensation Compared

While one might argue that the compensation of persons who remain in the military should be compared with the compensation of civilians who remain in the same firm, the typical experience of military personnel were they to have followed a career in the civilian sector would not be a lifetime career with the same firm. It would not be the expected alternative. One might also argue that the appropriate civilian comparison should be with persons in large firms, but that also would not represent the typical career opportunity of military personnel were they to follow instead a career in the civilian sector. There probably is no single correct comparison. We will maintain the comparison with the average high school graduate and the average college graduate, over all jobs and in firms of all sizes. We rely primarily on figures that are based on the assumption that persons in the civilian sector have two

job changes, at ages twenty-nine and forty-five, but comparisons assuming no job change in the civilian sector are also presented. It may have been more appropriate to consider simple age-earnings profiles without correcting for job tenure, but as mentioned above tenure is an important determinant of private pension benefits. Thus this procedure has been followed for convenience.

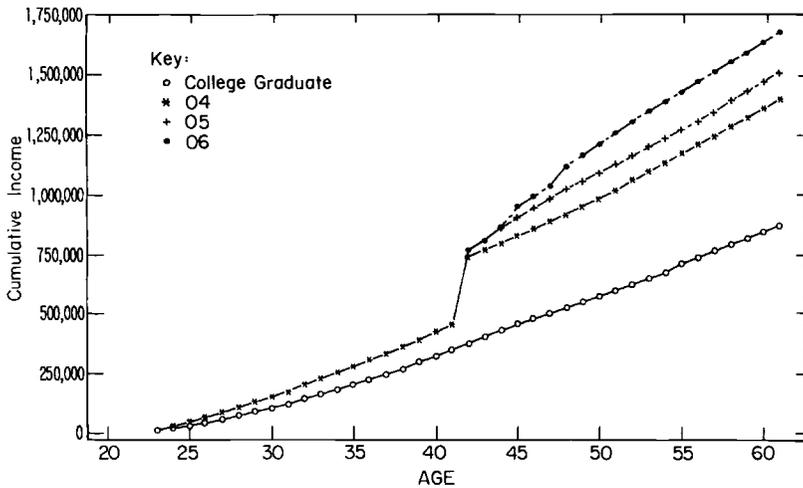
Cumulative age compensation profiles of four types of enlisted personnel are compared with the age-compensation profile of the typical high school graduate in figure 2.1, assuming that the high school graduate changes jobs twice. Notice that average civilian compensation essentially matches military compensation during the first twenty years of employment. This is what one might expect if indeed regular military compensation is indexed to civilian earnings. After twenty years of service, however, the value of the military pension leads to a large jump in military compensation. By age sixty-two, potential cumulative compensation following a career in the military is much higher than accrued compensation in the civilian sector.

A comparable graph for three officer ranks, compared with civilian college graduates, is shown in figure 2.2. The officer ranks are 04, 05, and 06, corresponding to major, lieutenant colonel, and colonel respectively. In this case, our predicted civilian compensation is somewhat lower than military compensation even before twenty years of employment. In part this may result because the average job of military



**Fig. 2.1**

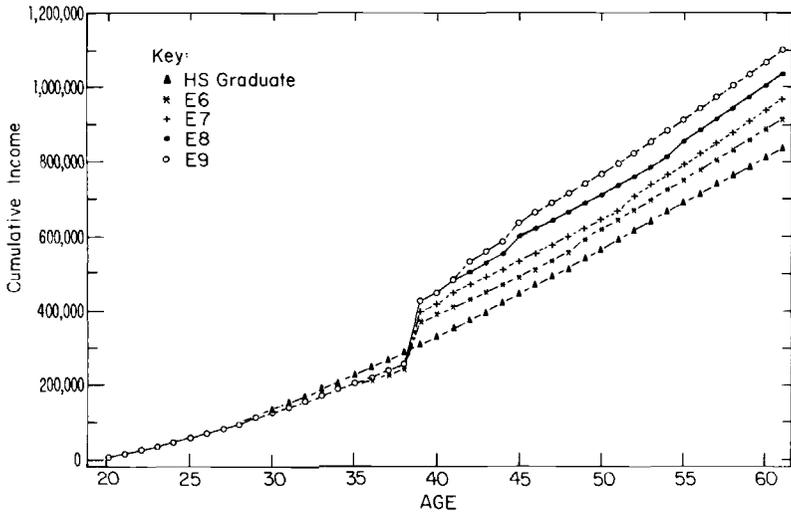
Comparison of cumulative earnings and pension wealth among four types of enlisted men and a high school graduate who changes jobs two times.



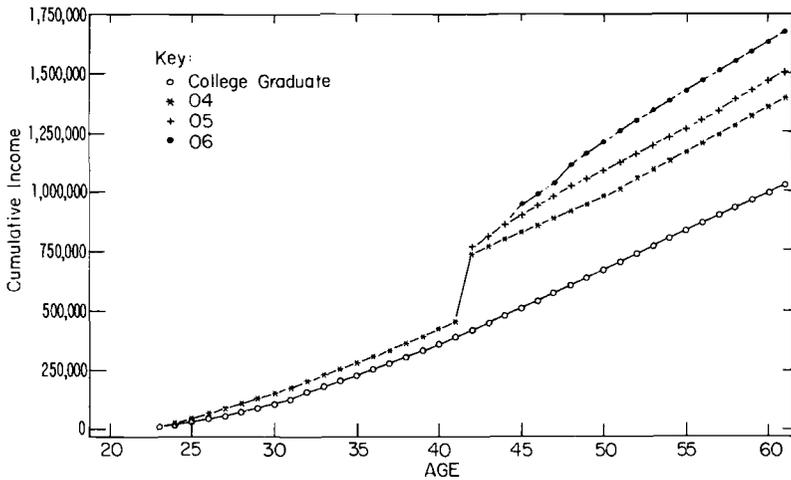
**Fig. 2.2** Comparison of cumulative earnings and pension wealth among three types of officers and a civilian college graduate who changes jobs two times.

officers, matched to comparable jobs in the federal civil service, and in turn matched to jobs in the civilian sector, are associated with higher salaries than the average job in the civilian sector. While evidence in Crane and Wise (1984) suggests that military enlisted personnel may be similar with respect to academic aptitude and other measures of individual characteristics to the average high school graduate, the “ability” of military officers may on average be greater than that of the average college graduate. The average academic aptitude, for example, of persons entering the military academies is higher than that of the average college entrant, suggesting that the average military officer if he were in the private sector might have a better-paying job than the average college graduate in the civilian sector. The job change assumption in the civilian sector may of course lead to lower predicted earnings than the ideal comparison would mandate. Comparable graphs assuming no job change in the civilian sector are shown in figures 2.3 and 2.4 respectively. These comparisons surely overstate compensation in the civilian sector.

Some additional information on the components of earnings in the military and civilian sectors are shown in figures 2.5 and 2.6. The bottom line in figure 2.5 represents the earnings of an officer who reaches the O4 rank and takes a job in the civilian sector after twenty years of service. The second line up shows salary earnings plus changes in military pension wealth which are negative after retirement. The top line is the latter amount plus private pension benefits and Social Se-

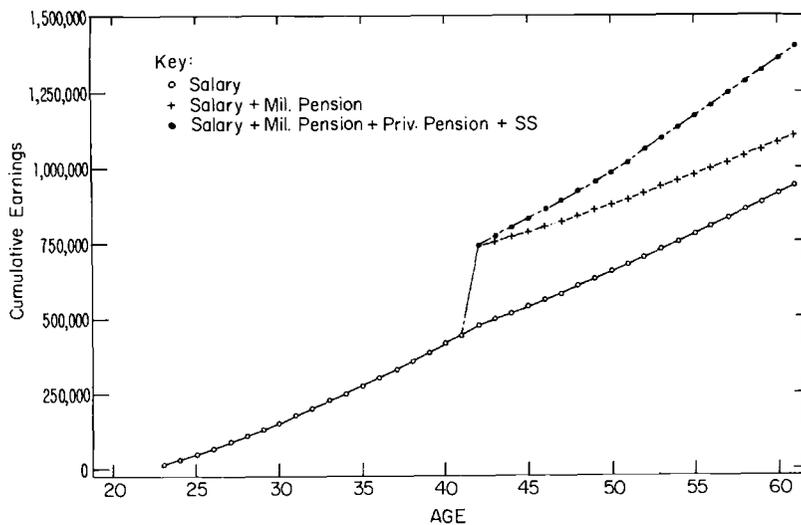


**Fig. 2.3** Comparison of cumulative earnings and pension wealth among four types of enlisted men and a civilian high school graduate.

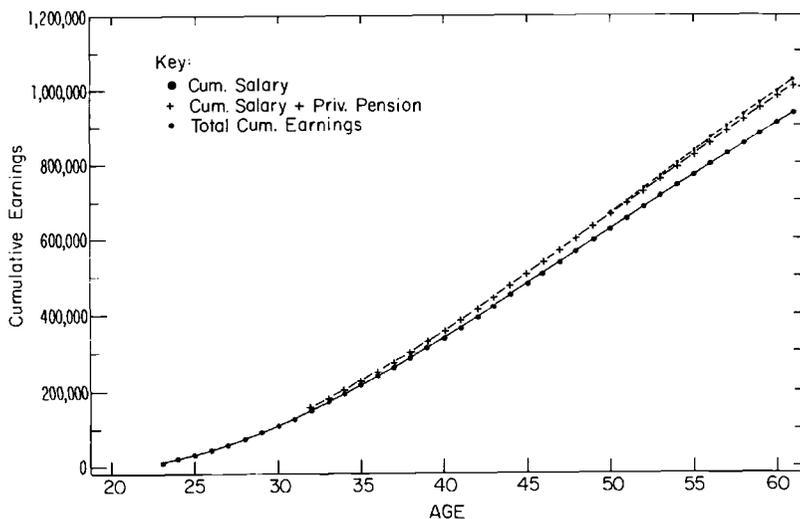


**Fig. 2.4** Comparison of cumulative earnings and pension wealth among three types of officers and a civilian college graduate.

curity accruals, less Social Security taxes. The comparable information for a college graduate who remains in the same firm throughout his working life is shown in figure 2.6. The bottom line in this figure represents salary, and the second line salary plus private pension wealth. The difference between the two is small but grows continuously until



**Fig. 2.5** Comparison of cumulative salary, cumulative salary plus military pension wealth, and total cumulative earnings of an officer who reaches rank 04 at retirement.



**Fig. 2.6** Comparison of cumulative salary, cumulative salary plus private pension wealth, and total cumulative earnings of a typical college graduate.

age sixty-two. The top line adds Social Security wealth less Social Security taxes.

Total cumulated compensation following military versus civilian careers is shown in table 2.3. If one assumes two job changes in the civilian sector, these comparisons suggest that the cumulated compensation at age sixty-two of career enlisted personnel with a subsequent civilian job would be 1.35 to 1.68 times the compensation of the typical high school graduate. The total compensation of career officers who assume civilian jobs upon retirement from the military would be 1.61 to 1.93 times the total compensation of college graduates, depending upon military rank attained. If the comparison is with civilians who stay with the same employer throughout their working lives, the ratios are 1.14 to 1.42 for military enlisted personnel and from 1.36 to 1.63 for officers, depending on military rank attained. Thus while these numbers are far from exact, they suggest that the potential compen-

**Table 2.3** Total Lifetime Compensation of Military Personnel and Civilians, by Job Change Assumption, 1978 dollars

Rank at Retirement or Education Level	Total Compensation	Total Compensation as Percent of Civilian Total
<b>Two Job Changes in the Civilian Sector</b>		
<b>Enlisted</b>		
E6	881,498	1.35
E7	939,519	1.44
E8	1,016,135	1.56
E9	1,096,754	1.68
High school grads	774,435	1.00
<b>Officers</b>		
O4	1,395,374	1.61
O5	1,506,846	1.74
O6	1,673,291	1.93
College grads	865,649	1.00
<b>No Job Change in the Civilian Sector</b>		
<b>Enlisted</b>		
E6	881,498	1.14
E7	939,519	1.21
E8	1,016,135	1.31
E9	1,096,754	1.42
High school grads	774,435	1.00
<b>Officers</b>		
O4	1,395,374	1.36
O5	1,506,846	1.47
O6	1,673,291	1.63
College grads	1,023,862	1.00

sation associated with a military career is substantially greater than the compensation that might be expected in the civilian sector.

## 2.2 Pension Wealth from Military and Civilian Careers

The pension wealth of military personnel after twenty years of service is shown in table 2.4. Before twenty years of service, accrued pension wealth is zero; then it jumps at twenty years of service to between \$117,000 and \$151,000 for enlisted personnel, depending on rank, and from \$260,000 to \$277,000 for officers. These amounts are typically between 50 percent and 60 percent of total earnings during the first twenty years of service.

In comparison, the typical high school graduate with a pension plan described above would have \$11,878 in accrued pension wealth after working twenty years. A typical college graduate would have \$19,135. These numbers pertain to civilian workers who remain with the same employer for twenty years. Possibly a better comparison is with a civilian whose earnings are equal to the salary earnings of a person in the military. While a military enlisted person who ultimately would attain the rank of E9 would have accrued pension wealth after twenty years of service of \$150,955, a person in the civilian sector with the same salary profile and who did not change jobs would have \$11,343 after working twenty years. The E9 when he leaves the military after thirty years of service would have \$249,320 in pension wealth. A person in the civilian sector with the same salary profile would have \$27,111 in pension wealth after thirty years of employment.

Suppose that the value of the pension twenty years hence were known and understood by potential enlistees. Then the present value of pension wealth twenty years hence could be considered an enlistment bonus. Suppose that once one enlists one is never forced to leave the

**Table 2.4 Military Pension Wealth at Vesting, by Rank at Retirement, for Selected Officer and Enlisted Ranks**

Rank at Retirement	Pension Wealth at Vesting	Pension Wealth as Percent of Cumulated Salary at Vesting
Enlisted		
E6	117,133	46.9
E7	133,195	51.2
E8	150,955	58.0
E9	150,955	56.1
Officer		
04	260,044	54.7
05	276,520	57.0
06	276,520	57.0

service before twenty years, although voluntary separations occur. Then the pension could be considered a sure thing if one chose to remain in the service, and foregoing this future pension wealth would be part of the opportunity cost of leaving the military service. For an enlisted person who would ultimately reach the rank of E9, the value of this bonus at enlistment would be \$83,302, with future pension wealth discounted at 3 percent. For an officer who would reach the rank O6, the value of the pension at enlistment would be \$152,082. These seem like large amounts to pass up were they known. But as mentioned above, pension benefits seem not to be emphasized in public recruitment efforts. In addition, of course, it may be that a 3 percent discount rate does not capture well individual rates of time preference. Estimated rates are often much higher. It is also possible that the compensating differential necessary to entice people to join the military is very large. Subsequent discussion seems to make clear that future pension wealth is highly valued by individuals that have been in the service for five years or more. It is likely that personnel who are in the service are well aware of the value of future pension benefits.

Possibly more interesting than retirement wealth after twenty years of employment is retirement wealth at the age when retirement from the labor force is typically considered. Public and private pension wealth at age sixty-two of persons following a military career, compared with pension wealth of high school and college graduates, is shown in table 2.5. Annual benefits from these pension sources are shown in table 2.6. At age sixty-two the pension wealth of career enlisted personnel ranges from \$157,000 to \$258,000, as compared with \$111,000 for the typical high school graduate. Pension wealth of officers at this age ranges from

**Table 2.5** Public and Private Pension Wealth at Age Sixty-Two of Military Enlisted Men and Officers and of High School and College Graduates

Rank at Retirement or Education Level	Social Security Wealth	Private Pension Wealth	Military Pension Wealth	Total
Enlisted rank				
E6	55,903	29,451	72,120	157,474
E7	55,875	25,154	105,972	186,001
E8	55,408	20,425	147,618	223,451
E9	56,376	17,631	183,678	267,685
High school grads	56,977	53,645	—	110,622
Officer rank				
O4	57,844	37,719	167,932	263,495
O5	57,844	23,483	240,192	321,519
O6	57,844	—	339,737	397,581
College grads	57,844	77,624	—	135,468

**Table 2.6 Annual Public and Private Pension Benefits at Age Sixty-Two of Enlisted Men and Officers and of High School and College Graduates**

Rank at Retirement or Education Level	Social Security	Private Pension	Military Pension	Total
Enlisted rank				
E6	4,518	3,627	5,382	13,519
E7	4,508	3,098	7,834	15,439
E8	4,470	2,515	11,016	18,001
E9	4,548	2,171	13,707	20,427
High school grads	4,597	4,004	—	8,604
Officer rank				
04	4,667	4,645	12,532	21,844
05	4,667	2,892	17,923	25,483
06	4,667	—	25,353	30,020
College grads	4,667	5,793	—	10,460

\$263,000 to \$398,000 for the three ranks we have considered, compared with \$135,000 for the typical college graduate. Thus, potential pension wealth at age sixty-two is two to three times as high for military careerists as for comparable civilians. Social Security wealth is about the same for military personnel as for civilians, and there is little difference in Social Security wealth among the military ranks considered. Private pension wealth is approximately twice as high for civilians as for military careerists. But this difference is swamped by the value of the military pension. Of course by age sixty-two, former military personnel could have been collecting pension benefits for twenty years or more. All of these comparisons assume no job change in the civilian sector. This of course, exaggerates to a substantial degree the value of pension wealth in the civilian sector (Kotlikoff and Wise 1983, 1984). Annual pension benefits shown in table 2.6 reveal comparable differences between the military and private sector, with military total benefits two to three times as high as benefits from a civilian career.

### 2.3 Increments to Military Pension Wealth and Retirement

The military has maintained the need for a young, vigorous armed force. This goal has been reflected in mandatory retirement rules for at least a century. To recruit and retain personnel in light of the mandatory retirement rules, with historically low salaries, in the face of hardship assignments, and in the face of limited postmilitary employment opportunities, it was argued that a generous pension system was necessary.

The pension system has also been used to induce early retirement. The need for an early retirement policy became evident during the Spanish-American and Civil wars when a large number of older officers prevented the military forces from operating effectively. This led to legislation in 1861 that authorized voluntary retirement after 40 years of service and mandatory retirement at 45 years.<sup>5</sup> Legislation in 1908 increased the requirement for voluntary retirement to 30 years of service.<sup>6</sup> In 1938 the required number of years of service to receive a pension was reduced to the current 20 years.<sup>7</sup> Legislation in 1925 established the military pension benefits for an individual with 30 years of service at the current 75 percent of basic pay; it was argued that these generous retirement provisions were necessary because military retirees often had few other outside sources of income.<sup>8</sup> The typical officer, it was argued, lost contact with family and friends, and with private sector employment opportunities, when he entered the military. Thus the pension was often his sole source of income. Legislation authorizing generous retirement benefits also recognized that military service entails unusual conditions of hardship, danger, and restrictions on personal liberty. Thus, it was argued, military employees should be rewarded in old age with a pension that is more generous than a private sector pension.<sup>9</sup> Until 1967, military wages were substantially lower than wages in the private sector. Hence it has been argued that the military relied on the pension system to attract personnel. The legislation of 1945, which established the basic framework of the officers' pension system, was established to maximize the number of volunteers to replace World War II retirees.<sup>10</sup>

Whether these reasons remain compelling today is open to question. The percentage of ground combat and general duty occupations have decreased significantly over the past ninety years, while the percentage of white-collar jobs has increased. A recent survey of military retirees by the General Accounting Office found that current retirees had spent a small fraction of their total months of service in "combat related" occupations (Government Accounting Office 1978, 10–11, Appendixes VI, V). As the military service has become more like a private sector job, the need for extra compensation for military service is less clear. While a military retiree may have had few civilian employment opportunities in the past, it seems evident that that is not true today. Over half find private sector employment after retirement from the military services. All are eligible for Social Security benefits, and many also receive private pensions. And, while salaries in the military may have been much lower than those in the private sector, the earlier evidence demonstrates that that is not true today. Indeed, as mentioned previously, under the federal Pay Comparability Act of 1967 salary levels are set to be much more in line with those in the private sector, man-

dating that military wages be indexed to wage increases in the federal civil service, which in turn are indexed to wages in the private sector.<sup>11</sup>

With this background and the stated goals of the pension system in mind, we consider the apparent relationship between separation rates from the armed forces and the pension system. Does it serve to retain personnel for some number of years, say to capture returns on training costs, and then to encourage retirement? Does the system seem to have a differential impact on some groups versus others, for example, those who are doing well in the service versus those who are doing less well? The goal here is not to assess the effects in a formal way, but rather to highlight the apparent major incentive effect of the pension system.

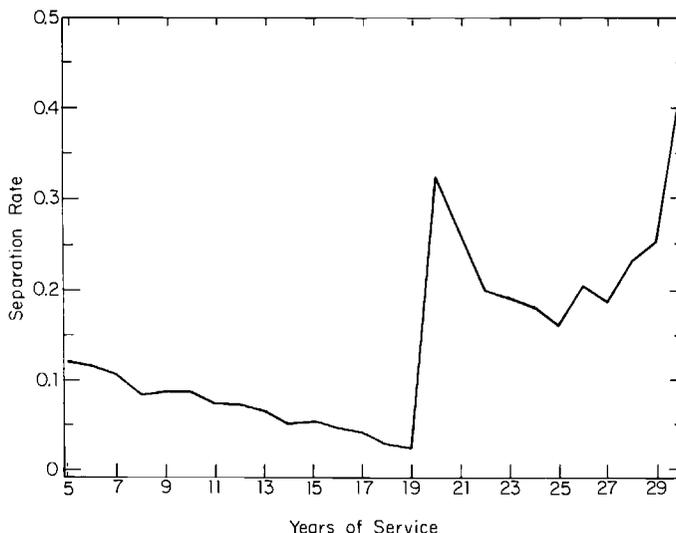
We have already demonstrated the large increase in pension wealth at twenty years of service. But the salary structure also formalizes large increases in pay at twenty-three and twenty-six years of service. These salary increases induce large jumps in pension wealth at these years as well. To see this, in table 2.7 pension wealth accruals by year of service are shown for an enlisted man who reaches the rank of E9 and for an officer who reaches the O6 rank. Both must retire after thirty years of service. At twenty-three years of service, pension wealth jumps by about 16 percent for both the officer and the enlisted man. The increase at twenty-six years of service is 12 percent for the enlisted person and about 11 percent for the officer. There is also a larger than usual increase at twenty-two years of service. This pattern is reflected in the accruals for other ranks as well, as long as mandatory retirement does not occur before these years.

**Table 2.7 Pension Wealth Accrual by Years of Service for an Enlisted E9 and an Officer O6**

Years of Service	Enlisted Person Who Reaches Rank E9		Officer Who Reaches Rank O6	
	Change in Pension Wealth	Percent Change	Change in Pension Wealth	Percent Change
20	150,955	—	276,520	—
21	5,133	3.4	8,929	3.2
22	14,322	9.2	18,560	6.5
23	28,321	16.6	48,694	16.0
24	5,143	2.6	8,479	2.4
25	4,788	2.4	7,817	2.2
26	25,159	12.1	39,017	10.6
27	4,470	1.9	7,021	1.7
28	4,075	1.7	6,277	1.5
29	3,679	1.5	5,538	1.3
30	3,275	1.3	4,811	1.1

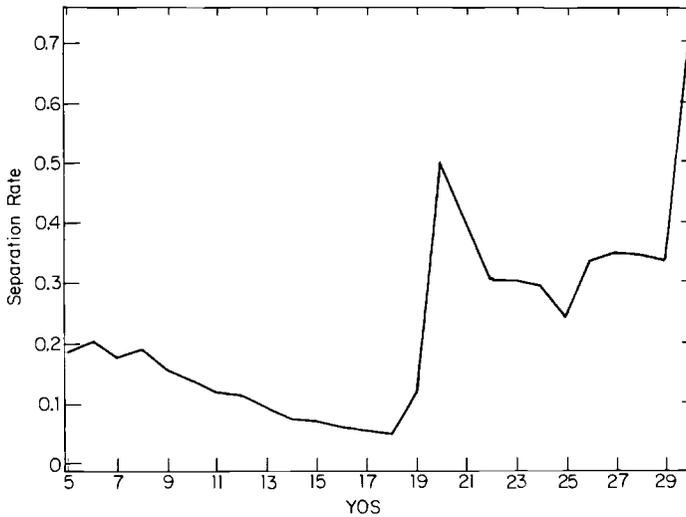
Total separation rates for all reasons are shown in figure 2.7 for officers and in figure 2.8 for enlisted personnel, by years of service. The graphs show the proportion of people who are in the service after a given number of years who leave the service during the following year. They show hazard rates in more formal terminology. The reasons for separation include active-duty release, nondisability retirement, disability retirement, death, and all other reasons. Active-duty release means separation after completing a term of enlistment. It includes both voluntary and involuntary separations, a distinction that is often ambiguous. We have not yet obtained these data for persons in the service less than five years.

It is clear from the graphs that among persons who have been in the service for at least five years, the probability of leaving declines continuously until nineteen years of service. It is small throughout the period. The data is consistent with the hypothesis that as the value of the future pension wealth increases because the length of time to its availability is shorter, individuals are increasingly less likely to forego the pension to accept a job in the civilian sector. Thirty-two percent of officers who are still in the service leave after twenty years, while fully 50 percent of enlisted personnel leave after twenty years. Thereafter, there is a substantial drop in average separation rates. This pattern, of course, is what one would expect if one viewed military compensation in the form of a lifetime budget constraint with a shape similar to that in figures 2.1 through 2.4.



**Fig. 2.7**

Average military separation rates by years of service for officers, 1972-82. *Source:* Defense Manpower Data Center.



**Fig. 2.8** Average separation rates for enlisted personnel, 1972-82.  
*Source:* Defense Manpower Data Center.

These figures are averages across all men in the military and make no distinctions among individuals. One might expect that whether an individual left the military would depend on current rank and expected promotion in the military versus expected alternative income in a civilian job. While doing well in the military might encourage one to stay there, it might also indicate greater ability than the average person in the military and therefore relatively better opportunities in the civilian sector, and thus a greater likelihood of leaving the military. On the other hand, persons doing poorly in the military may find it unappealing for the future, but doing poorly in the military may indicate that opportunities in the civilian sector are not good either. Thus it is not clear what relationship one should observe between performance in the military and separation rates.

The empirically observed rates by rank are shown in table 2.8 for enlisted personnel and in table 2.9 for officers. Again, these rates pertain to total separations and make no distinction among the possible reasons for leaving. The heavy horizontal lines indicate mandatory retirement years by rank in the army. They are only suggestive because these limits vary by military service. In addition, while a person who is for example, an E5 after twelve years of service would presumably have to leave at 13 years of service if he were not promoted, he could be promoted in the interim and thus not be forced to leave. Horizontal dashed lines are drawn at the twenty-year vesting period and at the two points of relatively large salary increases, twenty-three and twenty-

**Table 2.8** Total Separation Rates by Rank and Years of Service for Enlisted Personnel, 1972-82 Average

Years of Service	Rank						
	E1-E3	E4	E5	E6	E7	E8	E9
5	.364	.175	.113	.102	.160	.183	.078
6	.410	.202	.126	.128	.144	.188	.186
7	.388	.198	.116	.095	.114	.165	.233
8	.443	.233	.135	.104	.115	.137	.260
9	.381	.215	.114	.086	.099	.129	.194
10	.396	.201	.108	.079	.077	.119	.100
11	.412	.180	.094	.056	.068	.061	.181
12	.395	.222	.116	.053	.053	.066	.089
13	.360	.185	.101	.044	.043	.066	.101
14	.325	.164	.079	.041	.041	.049	.093
15	.340	.177	.082	.035	.035	.042	.059
16	.284	.145	.072	.041	.032	.037	.039
17	.313	.120	.071	.039	.033	.036	.034
18	.212	.136	.056	.042	.028	.032	.055
19	.339	.219	.147	.127	.093	.079	.095
20	.689	.807	.742	.591	.423	.318	.237
21	.634	.784	.717	.480	.351	.257	.202
22	.395	.653	.540	.374	.316	.222	.188
23	.418	.453	.557	.499	.293	.197	.175
24			.603	.510	.306	.212	.170
25			.583	.476	.273	.167	.125
26			.484	.439	.687	.251	.207
27			.490	.448	.489	.320	.213
28			.574	.422	.409	.414	.202
29			.565	.407	.413	.355	.241
30			.691	.726	.706	.737	.749
31			.671	.665	.700	.686	.621

six years of service. The blanks in the table occur where there were fewer than twenty-five observations. Even in other cells pertaining to high ranks with few years of service or to low ranks with relatively many years of service, the number of observations may be quite small. Thus the lower left triangle of the table and the upper right triangle may be anomalous.

Enlisted personnel at the lowest ranks have the highest separation rates for all years before pension vesting at twenty years of service. The E1 through E3 group has higher separation rates than the E4 group, and this latter group in turn has higher separation rates than the E5 group, for virtually every year of service category.<sup>12</sup> Persons at the E5 level are more likely to leave than persons at the E6 level in each year of service category. In part, of course, this reflects the up-or-out rule.

For each rank there is a large jump in the separation rate at the vesting age. But the rate at this age declines continuously from a high

**Table 2.9** Total Separation Rates by Rank and Years of Service, for Officers, 1972-82 Average

Years of Service	Rank						
	01	02	03	04	05	06	07-011
5	.054	.158	.117	.125	.156	.123	
6	.049	.139	.124	.130	.110	.169	
7	.036	.119	.115	.107	.141	.132	
8	.020	.088	.075	.094	.139	.143	
9	.028	.079	.086	.099	.124	.116	
10	.034	.092	.090	.068	.141	.109	
11	.017	.064	.099	.050	.107	.124	
12	.011	.046	.126	.033	.104	.120	
13	.020	.039	.119	.043	.060	.081	
14	.008	.020	.102	.041	.031	.081	
15	.010	.049	.107	.045	.025	.050	
16	.002	.030	.089	.045	.024	.048	
17	.028	.026	.079	.040	.015	.027	
18	.012	.027	.041	.030	.009	.039	
19	.050	.029	.032	.017	.023	.016	
20	.079	.092	.354	.528	.283	.216	
21	.041	.106	.303	.422	.213	.174	
22	.086	.117	.225	.297	.185	.126	.069
23		.094	.220	.269	.214	.101	.066
24		.087	.205	.291	.201	.091	.071
25		.068	.156	.225	.206	.110	.065
26		.172	.185	.260	.246	.180	.078
27			.187	.246	.210	.168	.051
28			.200	.247	.341	.193	.079
29			.211	.314	.336	.216	.104
30			.606	.617	.498	.340	.136
31			.388	.385	.426	.379	.270

of 80 percent for persons at the E4 rank to a low of 24 percent for those at the E9 level. Thereafter the pattern is similar, with higher ranking persons less likely to leave. Thus the pattern for enlisted personnel suggests that persons who have moved most quickly through the ranks are least likely to leave the military. The only noticeable exception is revealed in the upper right-hand portion of the table; it shows relatively high separation rates for persons who have moved very quickly through the ranks. For example, the separation rate for persons at the E9 level after seven years of service is 23 percent, while it is about 10 percent for persons at the E6 level after seven years of service.

For the highest three ranks there appears to be a large increase in the separation rates between twenty-five and twenty-six years of service. Remaining in the service from twenty-five to twenty-six years increases the value of the pension by a substantial amount, while in-

creases thereafter are relatively small. This possible effect does not seem evident between twenty-two and twenty-three years of service, however.

While these separation rates cannot tell us how many of those who remain after twenty years of service will remain until the mandatory retirement age, because the data do not allow one to follow the same individuals over time, the data do suggest that almost no one who is not promoted would remain in the service until the mandatory retirement age. For example, of those at rank E7 who remain in the service at twenty years, only about 32 percent would still be in the service after twenty-three years, according to the figures in the column E7. Only about 23 percent of those at the E8 level would remain until mandatory retirement at twenty-six years were they not promoted. Thus the pension provisions seem to provide a strong incentive to retire, at least if the inducement of currently available benefits is not offset by increases in pension wealth that would result from a promotion were one to remain in the service.

Separation rates for officers are shown in table 2.9 by rank and years of service. Compared with enlisted personnel, for officers the relationship between rank and separation rates seems much less pronounced. Considering only persons in ranks O3 through O6, with less than twenty years of service, there is little relationship between rank and rate of separation, although a sharp eye might see a tendency for the separation rates to be higher for higher-ranking officers with few years of service, and a reversal of this tendency as years of service approach twenty. After the vesting age, however, it seems clear that separation rates are considerably lower for higher-ranking officers. For example, at twenty years of service the separation rates range from a high of .53 for those at the O4 level to a low of .22 for those at the O6 level. This pattern persists among those with more years of service. For example, approximately 27 percent of those at the O4 level leave at twenty-three years of service while only 11 percent of those at the O6 rank leave at twenty-three years.

Again, it seems apparent that the available pension benefits provide a strong inducement to leave the service. For example, only about 30 percent of officers who remained in the service at twenty years at the O4 level would stay until the age of mandatory retirement at twenty-four years were they not promoted. Fewer than 23 percent of officers who were in the service after twenty years at the O6 level would remain until the age of mandatory retirement at thirty years of service were they not promoted in the interim.

In short, there is a strong incentive for both officers and enlisted personnel to retire at twenty years of service, an incentive that provides a much greater effective inducement for persons at lower than at higher

ranks. Even after twenty years of service, foregone pension benefits seem to weigh heavily against remaining in the service, if the foregone benefits are not offset by increased pension wealth (and salary) resulting from promotions in the service.

## 2.4 Summary

Potential compensation from a military career is considerably larger than typical enlisted personnel and officers would receive if they were to follow a lifetime career in the civilian sector. Total potential lifetime compensation of enlisted careerists according to our preferred estimates is between 1.35 and 1.68 times the average lifetime compensation of high school graduates, depending on military rank achieved. Total potential compensation of officers is between 1.61 and 1.93 times the lifetime compensation of the average college graduate, according to our preferred comparison. Because of ambiguity about the “correct” comparison to make, the figures cannot be considered precise, but we believe they reflect realistic orders of magnitude.

Much of the difference between military and civilian compensation is due to the very generous military pension system. The public and private pension wealth at age sixty-two of career enlisted personnel would be between 1.5 to 2.5 times the pension wealth of the typical high school graduate with a private pension. Career officers at sixty-two would have two to three times the public and private pension wealth of a typical college graduate with a private pension.

Summary descriptive data suggest that the military pension system provides a strong inducement for those with five or more years of service to remain for twenty years when pension benefits are available. After that, available pension benefits apparently provide a strong incentive to retire if foregone benefits are not offset by promotions in the service and the resulting increase in pension wealth.

Behavioral analysis of the effects of military versus civilian compensation on enlistment and separation rates will be the subject of future work.

## Appendix

**Table 2.A.1. Estimated Parameters of Civilian Earnings Profiles, Based on 1978 Current Population Survey Data, by Education Level**

Variable	High School Graduates	College Graduates
Constant	- 3,890.09 (655.02)	- 25,053.30 (2,332.48)
Age	676.63 (38.53)	1,868.39 (129.52)
Age squared	- 7.66 (0.52)	- 19.63 (1.68)
Tenure	493.07 (49.96)	613.68 (150.08)
Tenure squared	- 7.67 (1.10)	- 0.71 (3.13)
Age × tenure	- 0.33 (1.31)	- 6.21 (4.02)
R <sup>2</sup>	.19	.22
N	10,203	3,525

Note: Numbers in parentheses are standard errors.

**Table 2.A.2 Estimated Parameter of Civilian Earnings Profiles of Retired Military Personnel, for Enlisted Personnel and Officers**

Variable	Enlisted Personnel	Officers
Constant	23,593.7 (14,214.6)	- 28,786.1 (23,299.2)
Age	- 439.9 (606.1)	1,948.2 (894.6)
Age squared	4.5 (7.0)	- 19.95 (8.4)
Tenure	562.5 (213.4)	281.4 (315.7)
Tenure squared	- 19.9 (11.5)	9.4 (17.8)
Years of service	- 316.6 (145.9)	- 180.4 (127.2)
Race	69.6 (1,228.2)	- 47.8 (4,045.0)
Education		
High School	866.3 (1,163.5)	—
Some college	950.7 (1,230.3)	1,569.7 (1,156.5)

Table 2.A.2 (continued)

Variable	Enlisted Personnel	Officers
B.A. degree	4,476.9 (1,865.5)	3,095.3 (1,283.1)
Grad. degree	7,508.8 (2,600.4)	4,344.7 (1,376.9)
Mandatory retirement	1,004.7 (704.3)	-2,211.5 (870.7)
Rank		
E6	2,438.4 (1,228.3)	—
E7	3,716.6 (1,229.9)	—
E8	4,232.4 (1,384.4)	—
E9	6,654.8 (1,677.5)	—
O5	—	2,412.6 (1,091.3)
O6	—	5,496.7 (1,441.7)
O7 or higher	—	13,415.7 (3,911.2)
$R^2$	.066	.106
$N$	804	712

Note: Numbers in parentheses are standard errors.

## Notes

The computations for this chapter were completed by Maria Hanratty, and most of the historical information in the first part of section 2.3 is taken from her 1984 paper.

1. For a detailed description of regular military compensation, see Binkin 1975. See also Dept. of Defense, 1976.

2. Benefits are given by  $.01 \times \text{years of service} \times \text{average earnings}$  in the last five years of employment. The plan is assumed to have ten-year cliff vesting and early retirement at age fifty-five, and to limit credited years of service to thirty. The early retirement benefit reduction is assumed to be 3 percent. For a detailed discussion of the characteristics of private pension benefits, see Kotlikoff and Wise 1983 and 1984.

3. Private pension benefit accruals are calculated assuming a 3 percent real discount rate and 6 percent price inflation. The later figure is important in assessing the value of early retirement benefits.

4. Social Security figures are based on 1978 provisions.

5. Act of August 3, 1861, 12 Stat. 287.

6. Act of May 13, 1908, 35 Stat. 501.
7. Act of June 23, 1938, T. L. no. 30-379.
8. Senate Report No. 39, 62d Cong., 1st sess., May 24, 1911.
9. House Report No. 616, 48th Cong., 1st sess., March 4, 1884.
10. House Report No. 943, to accompany H.R. 3951, Sept. 6, 1945.
11. Much of this historical information is taken directly or paraphrased from Hanratty 1984.
12. Unfortunately, the number of individuals in each of the cells is not immediately available, but a relatively small proportion of enlisted personnel would be in the lowest category after several years of service. Thus, this group may in some respects be an anomalous one.

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