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3 Investing in the Defense Work Force: The Debt and Structure of Military Pensions

Herman B. Leonard

The military pensions system has recently been the subject of widespread criticism. The Congressional Budget Office, the General Accounting Office, the Office of the Actuary in the Department of Defense, the *Fifth Quadrennial Review of Military Compensation* (QRMC V), the President's Private Sector Survey on Cost Control (the Grace Commission), and countless other private and public researchers have recently examined the military pensions system. All have found that the system constitutes a substantial obligation of future payments by taxpayers. These investigations have suggested minor to sweeping changes in the form, level, availability, timing, and composition of military retirement benefits.

As the Grace Commission report notes rather caustically, the military retirement system (MRS) has been remarkably resistant to change. In spite of the great volume of studies examining it and relatively wide agreement about some of the principal weaknesses of the system, no major change has been made in the system in the last two decades. Serious change may, however, be at hand. Proposals for substantial modifications likely to attract congressional and taxpayer notice have been put forward.

There are two quite different reasons to look closely at the MRS. First, and most important, it provides a considerable fraction—fully 30 percent—of the total compensation paid to military personnel. Pension rights are an additional 60 percent markup over basic cash salary payments. Since only about 15 percent of armed forces members ac-

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tually collect pensions, the pensions component of compensation for those who do collect is an even larger fraction of total pay.

In addition to its size, the pensions part of military compensation is important because its pattern of accrual over the employee's working life is quite different from the pattern of salaries. The MRS provides no regular retirement benefits to those who leave with fewer than twenty years of service. The relatively generous benefits paid to people who work longer than twenty years, however, provide a considerable incentive to stay in the service. The benefits also increase substantially if the career is extended beyond twenty years. In this case, however, the annuity is received for fewer retirement years. Moreover, options to work outside the military are reduced because fewer years remain in which to build a second career. This is a complex trade-off to make, and one of the principal components of the trade is determined by the level and structure of pension benefit accrual.

Since it both constitutes a large fraction of total compensation and is accrued in a very different time pattern than the rest of compensation, we can expect that the MRS has a substantial impact upon the retention, and, conceivably, the recruitment of military personnel. Indeed, it is fair to observe, as the Office of the Actuary did recently, that "The military retirement system is not an old-age pension system normally found in the private sector . . . . Rather, it is a system specifically designed to complement the management of the active force, and is a function of the military pay and allowance compensation structure." (Department of Defense 1983, 1). The MRS is said to be explicitly designed to help the military keep the right people, minimize the costs of retraining, and maintain an effective fighting force. What incentives does it provide—and at what expense? Alternative proposals should be examined in light of the changes they would induce in the retirement incentive structure. As we shall find, the MRS represents a very large public investment in retention. Would the same funds spent in different ways have more impact on strengthening the nation's defenses?

The second reason to examine the MRS is that its obligations to provide retirement income are not backed by any financial assets.[1] These obligations are commitments to pay and represent a considerable dedication of future tax or other revenues. These obligations represent real claims—taxpayers and government officials should know their approximate magnitude. This knowledge would provide a more accurate reflection of the "financial condition" of the government—that is, a more accurate accounting to taxpayers of one of their major future obligations.[2] It might also have an important impact on current decisions. A better estimate of the current equivalent salary cost of pension promises being rendered will give us a better estimate of the true cost of labor to the armed services. Such estimates are necessary to assess labor-saving capital investment correctly.

This chapter examines these issues. It begins with a description of the current armed forces retirement system with respect to the incentives it provides for retention and its costs, both current and accumulated. Next, the most widely discussed proposed alternative, that advanced by the Grace Commission, is examined against the backdrop of the current system. The concluding section provides some suggestions about what else we need to know before sweeping revision of the MRS can be contemplated with confidence about its impacts.

3.1 The Current System

In 1636 the Pilgrims adopted the first military retirement system in North America. It provided benefits to those disabled in military service. Disability compensation and retirement systems (initially based on need) were introduced from time to time for the veterans of a specific conflict. Thus, indigent Revolutionary War veterans were covered by a system authorized in 1818; this system was modified in 1832 to provide payments regardless of need—or, perhaps, in recognition of universal need. Veterans of other wars were similarly treated, but each system was separately legislated. In 1870, in the process of restructuring the Union army as a peacetime force, Congress established a retirement system providing an annuity of 75 percent of base pay for retirees voluntarily withdrawing after thirty years' service. With minor elaborations, the combination of these two figures is still a central feature of the MRS.[3]

The current MRS is a "defined benefit" plan providing disability and retirement benefits determined by a benefit formula. Members receive service credits of 2.5 percent per year of service, with a maximum of 75 percent. The retirement annuity is the average salary in the highest-paid three years of work times accumulated benefit credits.[4] Voluntary retirement benefits are available after twenty years of service. Thus, a retiree with twenty-five years of service is eligible to receive an annuity of $.025 \times 25 = .625$ times his or her average pay in the highest-paid three years of service. These benefits have until recently been fully protected against increases in the cost of living through an annual adjustment equal to the change in the CPI over the preceding twelve months.[5] No contributions are made by employees, and the system is entirely unfunded; Congress authorizes payment each year on a pay-as-you-go basis.[6] Members of the armed services pay Social Security taxes and may receive Social Security benefits; these are independent of the MRS.

As of September 1982, 2.1 million full-time active-duty military employees were drawing annual salaries of $27.3 billion. The MRS supported 1.2 million nondisability and 142,000 disability annuitants collecting payments of $13.9 billion and $1.4 billion respectively. In addition,

about 950,000 part-time reservists earned $2.2 billion in salaries. Reservists can also qualify for retirement benefits, though on a less generous basis than full-time members of the armed services.

This is a very generous retirement system. A rapid buildup of benefits (service credits of 2.5 percent per year), fully inflation-adjusted annuities, and no employee contribution would by themselves be a very substantial addition to compensation. But in a profession where careers can start at eighteen years of age or even younger, the provision of full immediate lifetime annuities after only twenty years of service means that many armed services personnel collect retirement benefits *for longer than they worked.*

The early availability of full lifetime inflation-protected benefits contributes to making this system a very important—and expensive—form of military compensation. The average age at retirement is between forty and forty-five years, which gives the annuitant a long life expectancy over which to enjoy the benefits of his or her service to the nation. Of course, given military pay schedules, the retirement pay by itself does not generally provide a lavish life-style. The average enlisted retiree with twenty years service in 1982 was entitled to a pension of about $9,000 per year—roughly at the poverty line for a family of four.

3.1.1 Incentive Effects

How is an armed service employee paid over the course of his or her career? Pension benefits are a substantial part of pay. To evaluate them and their incentive effects, we must first convert the pension benefits that will be received later into an equivalent current amount, known as the *pension wealth* of the employee. Changes in the pension wealth from one year to the next are a part of compensation.[7] As an illustration, we can compute the base pay, other compensation (quarters allowance, commissary and medical benefits, and so on), pension compensation, and total compensation for an armed services employee who enters the military at age twenty-two with a base pay of $15,000. This individual can retire with full benefits at age forty-two or after; we assume he or she will live to be seventy-five. Other compensation can be estimated as 35 percent of base pay, an assumption also used by the Office of the Actuary. Computation of pension wealth requires that we stipulate a real rate of return on riskless assets. Since our first interest is in the cost of the compensation provided, we first apply a 1 percent real rate of return in the figures presented here. This rate is consistent with the assumptions adopted by the Office of the Actuary. The calculations are carried out in real terms; inflation enters only as a result of the three-year final salary averaging in the determination of benefits. In this example, inflation is taken to be the Office of Management and Budget stipulated rate of 5 percent. The rate of real salary

growth across the employee's working life is taken to be 4 percent annually, of which 3.5 percent is from longevity increases (estimated from the existing distribution of military salaries), and 0.5 percent is an assumed rate of real general schedule wage increase. These are roughly consistent with the experience of the last three decades.

Table 3.1 presents the cost of base pay, other benefits, pension compensation, and total compensation earned by the employee in various years of his or her career. The results are dramatic. Over the first twenty years of the employee's career, his or her salary and other benefits increase in real terms from about $20,000 to almost $45,000. During this period, no pension compensation is earned because the employee's claims in the pension system do not begin until the twentieth year of service. Yet the cost to the taxpayer, in equivalent current dollars, of the increment to pension wealth in the twenty-first year of service is just under $22,000, nearly 50 percent of salary and other fringe benefit compensation paid in that year. Over the course of the next ten working years, the annual increment to pension wealth gradually drops to about $15,000. The employee's salary is increasing every year, in spite of the gradual reduction in pension compensation, and reaches $81,000 in the last year the employee could normally work.[8] Total compensation thus increases in real terms by nearly a factor of four across a working

Table 3.1 **Annual Cost of Base Pay, Other Compensation, and Pension Compensation for an Illustrative Military Employee**

Age	Base Pay	Other Pay	Pension Compensation[a]	Total Compensation
22	15.0	5.3	0.0	20.3
32	22.2	7.8	0.0	30.0
42	32.9	11.5	0.0	44.4
43	34.2	12.0	21.8	67.9
44	35.5	12.4	21.6	69.6
45	37.0	12.9	21.4	71.3
46	38.4	13.5	21.0	72.9
47	40.0	14.0	20.4	74.4
48	41.6	14.6	19.8	75.9
49	43.3	15.1	18.9	77.3
50	45.0	15.7	17.9	78.7
51	46.8	16.4	16.7	79.9
52	48.7	17.0	15.3	81.0

Source: Author's calculations. See text for assumptions.

Notes: All figures given in thousands of inflation-adjusted dollars. These figures give the value of compensation in the year in which it is received. They are denominated in real terms.

[a]Assumes a 1 percent real rate of discount to reflect government cost rather than value to the employee.

career of thirty years; on average, real compensation increases by nearly 5 percent annually. As table 3.1 makes clear, the total current equivalent cost of military compensation is heavily stacked toward the end of the service person's working career. While the effect on retention is not obvious, the direction is clear enough: the military compensation system (including the MRS) incurs a substantial fraction of the cost of compensation for long-term armed services personnel in the last years of their careers.

Whether or not this system provides an incentive for service personnel to continue working depends upon how they view these benefits, and in particular on how they discount the future value of the pensions they will receive. Table 3.2 shows the increment to pension wealth for the working period between twenty and thirty years of service, in real terms, calculated at real interest rates of 1, 3, 6 and 9 percent. These increments to pension wealth can be thought of as the *value* of pension compensation granted, as seen from the perspective of the employee, assuming various real rates of discount. As Table 3.2 indicates, pension earnings constitute a considerable bonus during the later working years if the employee's personal real discount rate is in the low to moderate range of 1 percent to 3 percent. If it is over 6 percent, pension compensation earned after twenty years of service is small or even negative—that is, the value of the pension as viewed by the employee is larger if it is taken immediately than if he or she works for additional years and receives a larger (but also later and shorter) annuity.[9]

Table 3.2 **Value of Pension Compensation of Illustrative Employee, Computed at Various Discount Rates**

	Annual Discount Rate			
Age	.01	.03	.06	.09
42	0.0	0.0	0.0	0.0
43	21.8	12.7	4.3	−.7
44	21.6	12.5	3.8	−1.3
45	21.4	12.1	3.3	−2.0
46	21.0	11.7	2.8	−2.7
47	20.4	11.2	2.1	−3.5
48	19.8	10.5	1.4	−4.4
49	18.9	9.8	.6	−5.3
50	17.9	8.9	−.4	−6.4
51	16.7	7.8	−1.5	−7.6
52	15.3	6.5	−2.7	−8.8

Source: Author's calculations. See text for assumptions.

Notes: All figures are in thousands of inflation-adjusted dollars. These figures give the value of compensation in the year in which it is received. They are denominated in real terms.

Whether the existing military compensation system promotes retention past the twentieth year of service, then, turns crucially on the employee's discount rate. One interesting though only suggestive piece of evidence is provided by the retirement behavior of previous armed services personnel. Only a relatively small fraction continue to serve beyond twenty years; the average age of a service person at retirement is only forty-three years. This pattern of early retirement could occur for any of a host of reasons. A particularly likely explanation is that most service members know by the end of twenty years of service whether they are likely to have strong career opportunities thereafter. If they are not, then they may well prefer to develop a second career outside the military, which many are in a good position to do given their training, experience, and the fact that they still have twenty good working years in which to do it. Since building a second career becomes more and more difficult with additional years of military service (and age), many armed service personnel regard twenty years of service as a critical decision point. Table 3.2 shows that the MRS is likely to be a strong offsetting incentive only if most servicemen and women have relatively low real discount rates. The fact that not many stay past twenty years may only reflect the good private sector employment opportunities many of them face. It may also indicate a relatively high rate of time preference that leads them to prefer an immediate pension.

These results cast some doubt on the view that the MRS provides a strong incentive for military personnel to work past the twentieth year of service when immediate pension benefits become available. The results do not, however, call into question the incentive effect, on either recruitment or retention *up to* the twentieth service year, of having the MRS. Table 3.3 shows the value of accrued pension rights to the illustrative employee discussed earlier for various personal discount rates. Even when evaluated at the (high) real discount rate of 6 percent, the

Table 3.3 **Value of Accrued Pension Rights for the Illustrative Employee, at Various Discount Rates and Ages**

	Annual Discount Rates			
Age	.01	.03	.06	.09
42	412	308	213	157
45	490	375	266	199
50	615	490	363	281
52	660	535	404	317

Source: Author's calculations. See text for assumptions.

Notes: All figures are in thousands of inflation-adjusted dollars. These figures give the value of pension accruals at various years in the employee's career. They are denominated in real terms. They are reported as present values in the years shown.

value of pension rights available to our illustrative employee at the end of twenty working years is over $200,000.[10] The employee gets nothing if he or she leaves before the twentieth year. This $200,000 accrued pension right can be viewed, therefore, as a bonus for reaching the twentieth year of service. Even if armed services personnel discount future payments at a very high discount rate, the vesting of pension rights in the twentieth year constitutes a considerable incentive to remain in the service to become eligible for retirement. Moreover, the $200,000—or more, if the serviceman or woman discounts the future at a lower rate—bonus payable in the twentieth year, with additional bonus payments for service beyond that, may well be an effective recruitment incentive for people considering a long-term military career.

If armed service employees discount future pension payments at a low rate, the MRS provides an enormous incentive to join and to serve for the minimum eligibility twenty years, and a considerable incentive to serve beyond that. If employees discount their future receipts at a higher rate (3 percent to 6 percent in real terms), then the MRS still provides a strong incentive to join and to serve twenty years, but little incentive to serve beyond that. These incentives are achieved, however, at considerable cost. In the case of our illustrative employee, the cost to taxpayers (using a 1 percent real rate of discount) for providing the minimum pension for which the employee qualifies at age forty-two is over $400,000. This is a very large addition to the salary and other benefits we are paying.

3.1.2 The Military Pension Debt

The military retirement system is expensive. While considerable financial commitments to armed forces personnel have been undertaken in return for their services, no funds have been set aside to help future taxpayers redeem the obligations. The MRS is thus another form of the national debt. A number of studies, using a variety of different methodologies, have recently estimated the magnitude of the pension debt taxpayers owe to current and future retirees under the MRS. Until recently, the Department of Defense funded the retirement system purely on a pay-as-you-go basis, with annual appropriations covering each year's benefit payments. Congress recently passed legislation putting the MRS on an accrual basis, recognizing a charge in each year that reflects the present value of the cost of the promises extended rather than the payments actually made. The consistent application of such a reporting and funding system could make a considerable difference in the recognition of the costs of military pensions by Congress and taxpayers.

Computing an estimate of the equivalent current cost of promises extended requires the choosing a method of "funding" as well as mak-

ing a variety of economic assumptions. Deciding which funding method to use involves choosing which pattern of accrual to recognize across the employee's working life. All funding methods would recognize charges adequate to build a fund by the end of the employee's working career that would, with interest earnings, suffice to pay the pension benefits the employee will receive. But such a fund could be built up through contributions early, late, or all across the employee's career. Thus, a timing pattern must be chosen.

The funding method we use here is a common choice. Endorsed in proposals to put the MRS on an accrual basis, it is referred to as the *entry age normal* funding method. This approach spreads the cost of the pension obligations across the employee's working career in proportion to salary payments. If, at a particular point in the career, the employee has received one-third of the total present value of wage payments that he or she will receive while working, then the entry age normal pension-funding method would recognize accrued pension costs equal to one-third of the total present value of projected pension payments. This fraction of salary, constant across the employee's career, is known as the *full funding rate*. It represents the proportional markup over regular salary payments necessary to cover the cost of pension obligations associated with any given year of service. It is a simple way to characterize how expensive the pension system is relative to wages or other benefits. Of course the system has many different employees, entering at different ages and with different employment histories, rates of separation from the service before retirement, and ages at retirement. The entry age normal method uses an average funding rate which, if applied to all salaries, would be adequate on a statistical basis to cover the costs of the pensions that will be received by those who stay long enough to receive them.[11]

Because the entry age normal method projects the number of pension recipients and the pensions they will receive, we need a simulation model to analyze the future of the pension system. Results depend on the accuracy of projected plan experience, including the rates of disability, withdrawal, retirement, and death. In addition, a variety of economic assumptions must be specified, including the anticipated rate of increase in salaries (since benefit payments will depend upon future salaries), the rate of inflation, and the rate of return on fund "assets," which determines how much must be put aside today to meet (with accumulated interest) the pension obligation flowing from this year's service. Since we ultimately care about the costs stated in today's dollars, the calculations are carried out in real—that is, inflation-adjusted—dollars. This means that we need to specify the real rate of increase in salaries and the real rate of return on investments; the rate of inflation has only a minor effect on these real-valued calculations.[12]

It might appear that since the entry age normal method must project future events, the value of liabilities to be recognized may depend upon future actions. That is, it might appear that the method takes on too much, accruing to today the unfunded liabilities for future service, the benefits of which have not yet been received. The method avoids this pitfall. After accruing to today the cost of all future benefit payments, the method subtracts the value of future contributions to the plan as if they were made at the full funding rate. To put it another way, the entry age normal method recognizes as liabilities all future benefit payments, but recognizes as assets the amount of future full funding that would provide for the benefits earned as a result of future work. Thus, the future service credits are both added and subtracted under the entry age normal method. This leaves the liabilities we should recognize for service already completed (net of any assets already put aside, which in the case of the MRS is zero). The entry age normal methodology computes exactly what we want, the present value of our present net obligations to employees for services already provided. This amount, known as the *unfunded liability* of the system, is an important characterization of the net debt that taxpayers owe to current and future military retirees as a consequence of services they have already rendered. It represents an appropriate measure of current obligations.

The entry age normal method was used to simulate the current system as of September 1982. The results are a baseline against which to view possible reform proposals. Plan experience rates of retirement, disability, and separation were taken from data published by the Defense Department Office of the Actuary. Longevity salary increases were estimated from the existing distribution of average salaries by years of experience. The real rate of increase in the general salary schedule was estimated from historical data from the past three decades to be about 0.5 percent per year. The real rate of return on fund assets was taken to be 1 percent per year; this return is consistent with returns on low-risk investments such as government securities over the preceding three decades. These figures are similar to those used by the Office of the Actuary in its assessment of the financial condition of the MRS.

Two minor adjustments in the treatment of disability payments were made to capture the full cost of military retirement benefits. Disability payments to former armed services personnel are paid out of several different budgets. Some veterans with disabilities may elect to receive their payments through the Veterans Administration rather than through the MRS. Moreover, the military recognizes a distinction between temporary and permanent disability. In the simulations presented here, we treated all disabilities that eventually became permanent as permanent from their inception, and included all payments for them (whether by the Department of Defense or the VA) as liabilities of the MRS. Second,

since disability payments are tax-exempt, we converted them to pretax cash-equivalent payments.[13] The foregone tax payments on disability income reduce the Treasury's income tax receipts. Although the payments do not show up in the Defense Department budget, they are properly viewed as liabilities of the MRS and have been treated here as such.

The model underestimates the costs associated with the MRS because it excludes the medical, commissary, and other ancillary (tax-exempt and largely off-budget) benefits enjoyed by retired personnel and their dependents. Only cash benefits (and tax benefits in the case of disability payments) are included here. Retirement benefits in the MRS are computed as a fraction of "basic" pay; a broader concept, known as *basic military compensation* (BMC), has been developed to present a more accurate view of total current compensation offered to members of the armed forces. BMC includes the value of some housing, medical, commissary, and other benefits. Reference is often made to BMC rather than to basic pay when comparing military and civilian compensation, and the MRS funding rate is frequently described as a fraction of BMC to make it more comparable to the funding rates of civilian retirement systems. This convention underestimates the value of MRS obligations because it widens the basis of comparison by including the ancillary benefits enjoyed by members of the armed forces while they are in the service, without including the continuing medical and commissary benefits as part of the retirement system. Unfortunately, there are few good estimates available of the value or cost of these benefits for retirees, and the usual convention—ignoring them—is therefore followed here as well.

Table 3.4 presents a summary of the baseline simulation results. Valued on an entry age normal basis, the MRS currently represents an accumulated liability of over $525 billion. The present value of payments that will eventually be made to current annuitants and employees is over $665 billion; of this, approximately $140 billion will be paid in return for services yet to be rendered. Thus $525 billion is a measure of the current value of pension payments to be made in return for work already provided. No assets have been put aside as yet to meet this obligation. It represents a debt equal to approximately 40 percent of the more widely recognized explicit national debt for which the Treasury must actually borrow funds. Military retirement debt is formed merely by the extension of a promise; it requires no appropriation, nor is it subject to a debt ceiling like that imposed for the explicit debt.

MRS debt amounts to approximately $150,000 for each current employee and annuitant. Since a relatively small fraction of current employees will stay in the service long enough to qualify for retirement benefits, the value of these claims for each employee who collects

Table 3.4 Baseline Simulation Results

Present value of future benefits	$667.8 billion
− Present value of future full funding	140.3 billion
= Net unfunded liability	527.5 billion
÷ Current annuitants and enrollees[a]	3.4 million
= Unfunded liability per member	154 thousand

	Full Funding Rate	
	As Fraction of Basic Pay (percent)	As Fraction of Basic Military Comp. (percent)
Disability	6.3	4.7
Nondisability	51.3	38.0
TOTAL	57.6	42.7

Sources: Data: Department of Defense 1983; results: author's calculations.

Assumptions: Plan experience: as reported by the Office of the Actuary. Rates of increase: CPI = 5 percent; salaries—general = 0.5 percent, longevity from plan experience. Real rate of return on assets: 1 percent.

[a]Excludes part-time drill reservists.

benefits is much larger. MRS claims represent a large fraction of the accumulated wealth of those who receive or who will qualify for benefits.

In order to fund the MRS on a current basis, a payment equal to nearly 58 percent of basic pay, or 43 percent of BMC, would be required. Funding rates of between 10 percent and 20 percent are common in private plans, and lower rates are not unusual. Even accounting for ancillary benefits to make earnings comparable to gross wages received in the private sector, the funding rate required to provide for just the cash part of military retirement benefits is substantially higher than that of the most generous private plans.[14] The MRS thus represents a considerably greater component of compensation than is typical for private pension plans.

3.1.3 The Current System: Summary

The military compensation system is dominated to an unusual degree by its deferred (pensions) component. Only about 15 percent of armed services employees will eventually qualify to receive benefits, yet over 30 percent of military compensation is delivered through the retirement system. This is an enormous dedication of public resources to the nation's defense. The MRS represents a quietly accumulating component of the national debt, rarely accounted for as such, that has grown to be approximately 40 percent as large as the explicit national debt. It is a large fraction of total compensation and a very different form in which to pay it than traditional salaries and benefits. It accrues

over the employee's working life in a pattern radically different from regular salary and benefits. It therefore may—indeed, *should*—have considerable impact on recruitment and retention. Since the commitment of resources is so large, we should inquire whether they in fact result in their intended effect—and whether similar impacts could be obtained at less cost to taxpayers.

3.2 The Grace Commission Proposal

The military retirement system has attracted widespread comment in recent years, and many have offered suggestions about how the system might be altered. No major study, however, has proposed as sweeping a set of changes as that advanced by the Grace Commission—and no study has attracted as much attention or generated as intense a debate.

The sections of the Grace Commission report on the MRS and the civil service retirement system are replete with commentary on how these public sector pension arrangements differ from those found in the private sector. The commission comments at length about the relative expense of the system and about how it came to be so distinctive. The President's Private Sector Survey on Cost Control (PPSSCC) report argues (1984, p. III–285) that "liberal" government pension systems were introduced in the 1920s because of a perception that public sector wages were lower than those for comparable skill levels in the private sector. In the meantime, the PPSSCC report asserts, government and private sector wage compensation differentials have been eliminated or dramatically reduced, with no corresponding reduction in the government pension component. According to the Grace Commission, this represented an unseen but very dramatic shift upward in the total compensation offered to government employees relative to their private sector counterparts.

The Grace Commission study team largely rejects the notion that the MRS should be viewed as a manpower management tool rather than as a retirement system per se (p. III–298). The PPSSCC report implicitly argues that military personnel apply relatively high discount factors to pension benefits that will be received long in the future. If taxpayers discount the anticipated costs less than recipients discount the benefits, the provision of compensation in the form of deferred pensions is inefficient indeed. The Grace Commission argues that "force management objectives could be better met by a combination of adjustments in other elements of the military compensation package, such as bonuses or salaries, and a revised retirement system" (p. III–298).[15]

If armed services personnel do not value deferred retirement benefits highly, then the current system (which puts over 30 percent of its total compensation "expenditures" behind a retirement system designed to

attract and retain long-term employees) represents an enormous dedication of resources to little effect. The costs total about 7 percent of the defense budget; a material increase in the efficiency with which they are spent could result in a noticeable decrease in cost or increase in defense effectiveness.

These arguments turn, however, on a number of poorly known parameters of the retirement system. We have only limited knowledge of the extent to which armed services personnel value deferred retirement benefits relative to current salary or in-kind benefit payments. The Grace Commission proposals would represent a radical alteration of those benefits. They embody a sharply different conception of the value and impact of the retirement system as a retention incentive than that which underlies the current system.

3.2.1 Proposed Changes

The Grace Commission report suggests three basic types of modifications in MRS benefits. First, it proposes two changes in the benefits formula: (1) a reduction in service-year credits from 2.5 percent to about 2.1 percent per year; and (2) a change in the final salary base from a three-year to a five-year average. Reducing service-year credits has a straightforward impact—it cuts benefits by a little over 15 percent for all recipients. Altering the salary base from an average of the highest-paid three years to the highest-paid five years is less easy to gauge. Since years are added into the average starting with the highest salaried years first, the addition of two more years to the average must reduce the benefits paid. The size of the reduction depends upon the rate of general schedule and longevity salary increases. If, for example, as the Office of the Actuary estimates, general schedule increases proceed at 5.5 percent per year and longevity increases in the final years are about 3.5 percent per year, then the average of the three last years of salary is about 92 percent of salary in the last year, whereas the average of the last five years of salary is only about 85 percent of the last year's salary. Thus, pension benefits based on a five-year final average will be only 85/92ds as large as if they were based on a three-year final average; pension benefits would be reduced by about 8 percent. These two proposed adjustments to the benefit formula together would reduce benefits by a little over 23 percent.

The second modification proposed by the Grace Commission is a change in the cost-of-living adjustments to pension benefits. Under the current system, pension benefits are fully indexed to changes in the CPI.[16] The Grace Commission regards this as far too liberal an adjustment and recommends instead that benefits after the age of sixty-two be indexed at only one-third the change in the CPI. The rationale is that a part of the retiree's pension package is likely to be provided

by Social Security payments, which are fully indexed. The Grace Commission sees no reason to have all of the package adjusted for inflation. This change would substantially reduce the value of pension benefits to be received. As an example, consider a sixty-two-year-old retiree who will live to be seventy-five. Suppose inflation proceeds at 5 percent per year and the real rate of time discount is 1 percent. A retiree starting in the current system with $1,000 per month will receive benefits worth, in present value terms, about $146,000. A retiree starting with the same amount under the system recommended by the Grace Commission will receive benefits worth only about $116,000—a reduction of about 22 percent.

The third—and most radical—modification recommended by the Grace Commission would change the availability of benefits. Under the current system, retirement benefits are available immediately upon attainment of twenty years of service. The Grace Commission proposes instead that a retirement annuity be available only on a deferred basis if the retiree is less than fifty-five years of age (which includes the vast majority of military retirees). A full annuity would be available at age sixty-two. Reduced benefits would be available at any time after age fifty-five, but with a penalty of 0.5 percent for each month before the age of sixty-two that the benefits are started. A crucial feature of this proposal is that the benefits would still be based on an average of the last five years of salary, *without any adjustment for inflation.* Thus, in the years following retirement and before retirement benefits begin, the value of the annuity to be received would be eroded in real terms by continuing increases in the price level. The quadruple effects of (1) the *deferral*—having to wait to receive the benefits, (2) the *compression*—receiving benefits for a shorter period, (3) the *penalty*—receiving reduced benefits if the annuity begins before age sixty-two, and (4) the *erosion*—receiving benefits based on nominally denominated salaries paid in years long past, would dramatically reduce the value of pension benefits.

As an example, consider a retiree attaining twenty years of service at age forty-two who will live to be seventy-five and who would start under the current system with a retirement benefit of $1,000 per month. Suppose that inflation proceeds at 5 percent annually and that the appropriate real discount rate is 1 percent. Under the current system, this retiree would receive benefits worth about $336,000. Under the Grace Commission proposal, he or she would have to wait until age fifty-five or later to begin collecting even reduced benefits (or until age sixty-two to receive benefits with no penalty). Supposing that he or she elects to receive benefits starting at age fifty-five, the nominal benefit paid will start at $1,000 per month, in spite of the fact that inflation has eroded the value of each of these dollars to about 53 cents.

The value of benefits received would then be only about $39,000, even if the benefits were fully indexed to inflation once they began. Under the Grace Commission proposal, benefits would in fact be fully indexed only until age sixty-two; thereafter they would be indexed only at one-third the change in the CPI, as previously discussed. With these indexing provisions, the value of the benefits would be reduced to about $34,000. These proposed changes in the availability of benefits reduce the value of benefits for this hypothetical employee by over 85 percent. If we include the proposed change in the indexing of benefits, the reduction is by nearly 90 percent. The proposed alteration in the availability of benefits is thus by far the most powerful of the modifications suggested by the Grace Commission.

Figure 3.1 shows the effects of the modifications proposed by the Grace Commission. The flows of benefit payments under both the existing and the proposed system are shown in real terms. Thus the benefit flow under the current system is simply a level annuity from the date of retirement (assumed to occur at age forty-three in this illustration) until death (assumed to occur at age seventy-five). The flow is fixed in real terms at the level given by 2.5 × 20, or 50 percent of the three-year average of final salaries, which, under the assumptions used above, would be about 46 percent of salary in the final year.

Under the Grace Commission proposal, by contrast, the benefit level is first pegged at 2.1 × 20 or 42 percent of the five-year average of final salaries, or about 35 percent of salary in the final year. The payments do not begin until twelve years later, however, and by then have

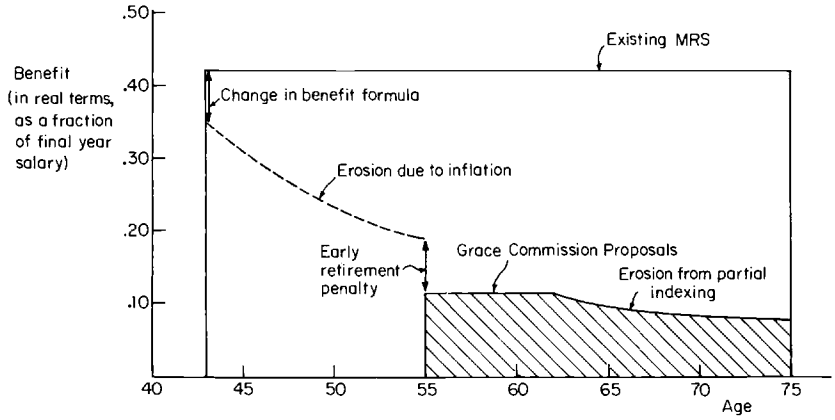

Fig. 3.1 Retirement benefits under the existing MRS and under the Grace Commission proposal.
Source: Author's calculations. See text for assumptions.

been eroded by inflation in real terms to a purchasing power equivalent of about 19 percent of final salary in the last working year. If benefits are elected at age fifty-five, they are reduced by 42 percent as a penalty for early retirement. Payments thus start, in real terms, at about 11 percent of final salary. They are then indexed fully for inflation during the next 7 years, until age 62, where they begin to decline in real terms since they will be indexed at only one-third the rate of inflation.

The result is that the annuity received under the Grace Commission proposals (shown in real terms in fig. 3.1 by the shaded region) is dramatically smaller than that under the present system. Moreover, it is received considerably later. In present value terms, the Grace Commission proposed retirement benefit is only a small fraction of that available under the current system. Table 3.5 shows the value of accumulated pension wealth under the Grace Commission proposals for our illustrative service member at various ages and under a variety of discount rate assumptions. These figures are in marked contrast to those for the current MRS, shown in table 3.3. For the early years after retirement eligibility at twenty years of service, accrued pension rights under the existing system are more than ten times greater than those under the Grace Commission proposals.

The changes proposed by the Grace Commission are dramatic. Their adoption would be a wholesale overhaul of the existing MRS. They would substantially alter both its costs and its incentive structure.

3.2.2 Impacts on Incentives

The Grace Commission proposals would substantially realign the incentive structure built into the MRS. First, and most obvious, the

Table 3.5 **Value of Accrued Pension Rights under the Grace Commission Proposals, for the Illustrative Employee at Various Discount Rates and Ages**

	Annual Discount Rates			
Age	.01	.03	.06	.09
32	9	5	2	1
37	23	13	6	3
42	49	32	17	10
45	76	52	31	19
50	150	115	79	56
52	195	155	113	84

Source: Author's calculations. See text for assumptions.

Notes: All figures are in thousands of inflation-adjusted dollars. These figures give the value of pension accruals at various years in the employee's career. They are denominated in real terms. They are reported as present values in the years shown.

provision of substantially smaller benefits might affect the recruitment of armed services employees interested in a long-term career. Second, the pattern of accruals to pension entitlements is considerably different under the Grace Commission proposals than under the existing MRS.

The incentive effects of the Grace Commission proposals depend on the likely selection of the timing of benefit commencement by retirees if the PPSSCC suggestions are adopted. Under the proposed rules, benefits will be available to retirees starting at age fifty-five, but only with a penalty of 0.5 percent per month below the benefit that would be payable at age sixty-two. However, if benefits are elected early, they will be fully indexed until age sixty-two. Thus if inflation is proceeding rapidly enough, or if retirees discount future payments rapidly, then they will likely elect to begin their annuities as soon as possible. Table 3.6 shows the present value, measured at age fifty-five, of the pension benefits received by a retiree, as a function of the elected date of commencement. The present value of benefits is reported in multiples of the base annual amount of payment. All calculations are in real terms. In assessing these values, a real discount rate of 1 percent and an inflation rate of 5 percent are assumed. As table 3.6 makes clear, the value of pension benefits, assessed at age fifty-five, is considerably higher if the retiree elects to receive them immediately than if he or she defers them further, in spite of the penalty applied to payments that begin before age sixty-two. The value of an earlier, longer, more

Table 3.6 **Present Value of Pension Benefits Received from Annuities Starting at Alternative Ages under Grace Commission Proposed Rules**

Age at Start of Annuity	Age 55 Present Value of Pension Benefits Received
55	9.0
56	8.9
57	8.6
58	8.3
59	7.9
60	7.5
61	7.0
62	6.4

Source: Author's calculations.

Notes: All figures are multiples of base annuity amounts, shown in present value terms as of age 55.

Assumptions:

Retiree lives to age 75
Inflation at 5 percent per year
Real discount rate of 1 percent per year
Full indexing from ages 55 to 62
Indexing after age 62 at one-third of change in CPI

inflation-adjusted pension is higher, even if it starts out at a lower level in nominal terms. Waiting from age fifty-five to sixty-two for the pension to begin reduces the total present value of benefits received by nearly 30 percent. More rapid inflation or a higher rate of discount would make these results even more dramatic, raising the value of annuities begun at an early age in comparison to those begun later. These results indicate that it is likely that virtually all retirees would elect to have their benefits begin at age fifty-five under the regime proposed by the Grace Commission.

Under the presumption that retirees will elect annuities beginning at age fifty-five, we can readily compute the cost of pension obligations accrued during each service year. Table 3.7 shows the cost of base pay, other compensation, and pension compensation under the Grace Commission proposals at various ages for the same illustrative employee discussed earlier for the existing system. Once again, a real discount rate of 1 percent is used to evaluate the cost of benefits extended, on the theory that taxpayers should and do use a relatively low real rate of discount.

As Table 3.7 indicates, pension compensation under the Grace Commission's proposed rules accrues late in the employee's working life,

Table 3.7 **Annual Cost of Base Pay, Other Compensation, and Pension Compensation, for an Illustrative Military Employee under Grace Commission Rules**

Age	Base Pay	Other Pay	Pension Compensation[a]	Total Compensation
22	15.0	5.3	0.0	20.3
32	22.2	7.8	0.0	30.0
33	23.1	8.1	1.9	33.0
37	27.0	9.5	3.3	39.7
42	32.9	11.5	6.4	50.8
43	34.2	12.0	7.2	53.4
44	35.5	12.4	8.2	56.2
45	37.0	12.9	9.4	59.3
46	38.4	13.5	10.6	62.5
47	40.0	14.0	12.1	66.0
48	41.6	14.6	13.7	69.8
49	43.3	15.1	15.5	73.9
50	45.0	15.7	17.5	78.3
51	46.8	16.4	19.8	83.0
52	48.7	17.0	22.4	88.1

Source: Author's calculations. See text for assumptions.

Notes: All figures in thousands of inflation-adjusted dollars. These figures give the value of compensation in the year in which it is received. They are denominated in real terms.

[a]Assumes a 1 percent real rate of discount to reflect government cost rather than value to the employee.

with larger and larger accruals for continued years of service beyond the twenty required for eligibility.[17] Thus the cost of the pension component of employee compensation under the Grace Commission's proposed regime is heavily stacked toward the later years of work, as it is under the existing system. The commission proposals, however, apply considerably less resources in total and in a pattern somewhat later in the employee's career than the current system. Table 3.8, which compares the Grace Commission pension compensation costs with those of the existing MRS for this illustrative employee, makes it clear that the Grace Commission pattern tries to induce continued service by providing increasing resources each service year.

Whether the Grace Commission proposal would result in greater recruitment or retention of armed services personnel than the current system depends crucially on how benefits are viewed by recipients. Table 3.9 shows the value of pension benefits assessed at real rates of discount of 1, 3, 6, and 9 percent. Under the proposed Grace Commission rules, the pension component of compensation provides a continuing inducement to keep working, even if the employee has a very high real discount rate. This is in sharp contrast to the incentives provided by the current MRS, which provides a positive inducement

Table 3.8 **Pension Compensation Costs by Age for Existing MRS and Grace Commission Proposal**

Age	Pension Compensation Costs[a]	
	Existing System	Grace Commission Proposal
32	0.0	0.0
33	0.0	1.9
37	0.0	3.3
42	0.0	6.4
43	21.8	7.2
44	21.6	8.2
45	21.4	9.4
46	21.0	10.6
47	20.4	12.1
48	19.8	13.7
49	18.9	15.5
50	17.9	17.5
51	16.7	19.8
52	15.3	22.4

Source: Author's calculations. See text for assumptions.

Notes: All figures in thousands of inflation-adjusted dollars. These figures give the value of compensation in the year in which it is received. They are denominated in real terms.

[a]Evaluated at a real discount rate of 1 percent to reflect costs rather than value to recipients.

Table 3.9 **Value of Pension Compensation under Grace Commission Rules, for Illustrative Employee, Computed at Various Discount Rates**

	Annual Discount Rate			
Age	.01	.03	.06	.09
32	0.0	0.0	0.0	0.0
33	1.9	1.0	0.4	0.2
37	3.3	1.9	0.9	0.4
42	6.4	4.2	2.3	1.3
43	7.2	4.8	2.7	1.6
44	8.2	5.6	3.2	1.9
45	9.4	6.5	3.9	2.4
46	10.6	7.5	4.6	2.9
47	12.1	8.7	5.5	3.6
48	13.7	10.0	6.5	4.4
49	15.5	11.6	7.7	5.3
50	17.5	13.4	9.2	6.5
51	19.8	15.4	10.9	7.9
52	22.4	17.8	12.9	9.7

Source: Author's calculations. See text for assumptions.

Notes: All figures in thousands of inflation-adjusted figures. These figures give the value of compensation in the year in which it is received. They are denominated in real terms.

to stop working in the years after eligibility is reached if the employee has a high real discount rate.[18] For sufficiently high rates of discount, the inducement to continue working is relatively slight, but the claim can at least be made that additional years of work are increasingly rewarded under the Grace Commission rules; exactly the opposite is true under the existing MRS. On the other hand, the absolute incentive provided by pension accruals to continue working is much greater for the current system than under the Grace Commission rules if the employee's real discount rate is relatively low.

3.2.3 Cost of the Grace Commission Military Pension System

The modifications proposed by the Grace Commission would change the pension entitlements of current members of the MRS, in some cases dramatically. The modifications would have a material impact both upon the full funding rate of the system and upon its current unfunded liabilities. Table 3.10 presents the results of a simulation of the Grace Commission proposal under the actuarial and economic assumptions used for the simulation of the existing MRS. Since the behavioral experience rates—rates of retirement, separation, and so on—are assumed to be the same as in the baseline simulation, we are effectively assuming that the Grace Commission modifications would have no

Table 3.10 Grace Commission Simulation Results

Present value of future benefits	$428.0 billion
− Present value of future full funding	33.5 billion
= Net unfunded liability	394.5 billion
÷ Current annuitants and enrollees[a]	3.4 million
= Unfunded liability per member	116 thousand

	Full Funding Rate	
	As Fraction of Basic Pay (percent)	As Fraction of Basic Military Comp. (percent)
Disability	5.7	4.2
Nondisability	8.1	6.0
TOTAL	13.8	10.2

Sources: Data: Department of Defense 1983; results: author's calculations.

Assumptions: Plan experience: as reported by the Office of the Actuary. Rates of increase: CPI = 5 percent; salaries—general = .05 percent, longevity from plan exp. Real rate of return on assets: 1 percent.

[a]Excludes part-time drill reservists.

impact upon retention of armed services employees.[19] The Grace Commission proposes to phase in the new regime over the next decade; this phase-in period is modeled in the simulation presented here.

In terms of annual costs, the contrast between the Grace Commission proposals and the existing MRS is marked. The full funding rate (as a fraction of BMC) is reduced under the Grace Commission suggestions to 10.2 percent from 42.7 percent—annual costs of the retirement system are cut by three-quarters. The disability component of the system is hardly altered; the cut in the nondisability portion amounts to nearly 85 percent. The Grace Commission proposals would dismantle the MRS as it has been known to date. These modifications would be equivalent in cost savings to a reduction of approximately 33 percent in BMC. They thus would have have an impact roughly similar to a one-quarter reduction in the cost of the total military compensation package.

In terms of accumulated debt, however, the change is much less dramatic. The unfunded liability of the system is reduced by about $130 billion, or by about one-quarter. While the present value of total benefits that will paid to existing annuitants and plan members drops by nearly $250 billion, over $100 billion is a reduction in pension benefits that would have been earned in the future under the current system. Thus while it represents a considerable change in the current and future costs of military compensation, the Grace Commission revision has a relatively minor impact upon the already accumulated debts of the MRS.

3.3 Conclusion

The military retirement system represents a substantial commitment of future federal revenues. Current obligations exceed one-half trillion dollars, about 40 percent as much as the explicit national debt. The incremental obligation taken on each year has an equivalent current cost in excess of 40 percent of other military compensation and in excess of 55 percent of basic military wages.

The MRS is explicitly not viewed by the armed services solely—or perhaps even largely—as a device insuring the availability of retirement income to its veterans. Rather, it is viewed as one component of the recruitment and retention effort through which the services attempt to minimize the total cost of achieving a given level of defense effectiveness. The MRS is explicitly designed as part of the incentive system to develop and keep long-term, high-skill employees for a career of appropriate length—and then encourage them to retire.

Viewed this way, the MRS represents an enormously expensive recruitment and retention effort. Military salaries in 1982 exceeded $27 billion. The current equivalent cost of associated pension obligations is in excess of $15 billion. It is difficult even to speculate about what impact funds of this magnitude, applied directly as current payments in a carefully designed and selective system of retention and re-enlistment bonuses, might have on the ability of the armed services to retain key personnel.

Why do we have this military compensation system, with such a large fraction of the payment for current services deferred, to be paid out of future revenues? Several answers are possible. One is that the system is an efficient accommodation between taxpayers and armed services personnel. For example, taxpayers might discount the future more than do pension beneficiaries, so a trade in which taxpayers pay later instead of currently is better for both parties. There may, however, be many inefficient reasons why taxpayers count these future costs less than the recipients count their future gains. One plausible hypothesis asserts that the costs are largely masked from both current and future taxpayers through poor reporting.[20] The reporting of military pension liabilities has hardly been of a form or volume designed to attract much attention from taxpayers. Moreover, the accrual of military pension obligations has not been scrutinized as a use of Defense Department resources to the same degree as more direct expenditures. Imagine a $15 billion line item in the Defense Department budget for expenditures on recruitment and retention; such a program would be very carefully examined. Few would be prepared to argue that the current MRS has been held up to a similar level of inquiry.

The Grace Commission proposes to rectify at least some part of this imbalance. Convinced that the MRS does little to retain or attract key personnel, the commission has argued for a wholesale revision of the system. The proposal begins with minor modifications of the benefit formula, continues with an overhaul of the cost-of-living increases offered to annuitants, and finishes with a dramatic reduction in the immediacy of the availability of benefits. These revisions would reduce the cost to the taxpayer quite substantially—by as much as three-quarters. But they would similarly reduce the value of benefits to recipients. Indeed, the value of benefits to recipients would be reduced by even more than the cost to taxpayers if recipients discount the future more than do taxpayers at large.

It is tenable to contemplate the kind of revisions suggested by the Grace Commission if we believe that armed forces personnel discount the future so much that they are largely uninterested in the generous pensions we currently provide them. In this case, the retirement benefits we pay for are wasted, and they should be substantially revamped because they are a large fraction of total compensation cost. But if we believe that future pension recipients value their retirement income, then the very generosity of the current system argues that it cannot be scrapped without substantial impact. Little in the way of hard evidence guides us about the impacts of the MRS on retention. This has led many to observe that the "serious reforms" of the MRS proposed by the Grace Commission may be neither serious nor reforms.

In the absence of strong evidence suggesting that the real discount rates used by armed services personnel—to assess vital long-term life income questions such as the value of pension benefits—are quite high, wholesale revision of such a sizable component of the military compensation system as the current retirement system is a risky course. On the other hand, the enormous costs of the current system—and the likelihood that we would look more carefully for benefits from this system if we were collectively more aware of its costs—call for substantially more attention than we have been giving to whether this component of the Defense Department budget is cost-effective.

Notes

I am grateful for the support of the National Bureau Public Sector Payrolls Study. Members of that study and of the NBER Pensions Study have provided helpful comments and encouragement. Maj. Henry A. Leonard provided a wealth of clarifying facts and observations as well as helpful editorial suggestions. Monica Friar provided expert research assistance in tracking down the

relevant data and in modifying a general pension simulation model to capture the intricacies of the military retirement system. Maria Hanratty, who has been engaged in independent research on some of these questions, has helped me understand the military retirement system and the Grace Commission proposals to modify it. Susan Bender contributed excellent editorial assistance; she would be the first to criticize the convoluted phraseology and punctuation of this sentence.

1. Some would question the word *obligation* or *debt* as used here, arguing that there is no contract to pay pensions, so the nation can repudiate them readily if it chooses to. This argument misses the crucial point that these promises are backed by a very considerable voting lobby. Moreover, the system has been in place in its current form for long enough to embody an implicit promise to current members of the armed forces. It is hard to believe that they would all continue to serve if the system were suddenly changed.

2. Congress has recently moved to recognize these costs more directly in the federal budget, starting in FY 1985, through accounting for the MRS on an accrual basis. The system remains unfunded, however, and little attention has so far been paid to annual MRS costs.

3. The history of the MRS is described concisely by the Office of the Actuary (Department of Defense 1983). Additional detail can be found in Glasson 1968.

4. The retirement annuity for those who entered before September 1980 is not subject to averaging; it is based solely on salary in the final year.

5. As a matter of policy, these adjustments are still being granted. But Congress has deferred or reduced them in several instances since 1982.

6. Starting in FY 1985, accrual basis entries indicating the annual cost of the MRS are included in the budget. The system remains unfunded, however.

7. In making this computation, a fair rate of return is first allowed on the existing pension wealth from the preceding year. The excess in the change in pension wealth over the normal rate of return on the existing amount is considered pension compensation in that year. This adjustment is made because to maintain its value without any payment being made against it, the current pension wealth must be considered as accruing interest at the normal rate of return for riskless assets (here taken as 1 percent in real terms).

8. With the exception of very senior officers and enlisted personnel, the military requires retirement after the thirtieth year.

9. The appropriate estimate of the discount rate used by armed services members is the subject of continuing debate. A number of studies have found personal discount rates in excess of 10 percent. Most are based on research designs that assume individuals can readily compute the impacts of taxes and compound interest on the value of alternative packages of compensation. Most seem to have confused their survey participants about how they were supposed to treat inflation—that is, whether they were answering questions about nominal or real interest rates. Many observers regard these estimates as unrealistically high. Nonetheless, they have been used in a number of military manpower studies, including the *Fifth Quadrennial Review of Military Compensation* (Department of Defense 1984) and a recent study by the Congressional Budget Office. See Congressional Budget Office 1984 and Black 1983.

10. Some recent studies, including the *Fifth Quadrennial Review of Military Compensation* (QRMC V) and the Grace Commission report, have either implicitly or explicitly used even higher discount rates than this. It is hard to imagine that people consistently apply discount rates substantially in excess

of the rates they can reasonably expect to earn on their investments. In particular, it is hard to explain why, if their discount rates are so high, they save at all.

11. A common alternative funding approach recognizes as pension obligations only the present value of benefits already earned and credited. This method, known as the *accrued benefits method,* does not seem appropriate as a means of valuing MRS obligations. It would recognize no obligation to armed services personnel until they reach their twentieth year of service because if they separate before that time they would receive no benefits. Since remaining in the service is largely at the discretion of the employee, and since very large pension benefits are provided when twenty years of service are attained, it is only reasonable to recognize the statistical obligation to employees with fewer than twenty years of service. The accrued benefits approach may be sensible for private sector plans where employees still serve at the will of the employer, but it does not appear to be a very accurate way to value public sector plans. And even in the private sector, the "at will" labor contract is an endangered species being modified by court action and common practice. Employers with complete freedom to dismiss workers are rare indeed.

12. The rate of inflation enters only through the averaging of the final three years of salary, which is carried out in nominal terms. It is also relevant if Congress continues to withhold or delay or reduce cost-of-living adjustments.

13. The rate of conversion assumed a marginal income tax rate of 30 percent.

14. A common criticism of the MRS (as well as other federal retirement plans) is that its benefits are too generous largely because they are fully indexed to the cost of living. About two-fifths of the cost of the MRS is due to its cost-of-living protection; in the absence of any cost-of-living increases, it would still have a funding rate over 30 percent of basic pay.

15. In computing its estimates of cost savings from the changes it suggests, however, the PPSSCC report proposes to add very little in the way of recruitment or retention resources to offset the effects of the changes it recommends in the MRS. The report presents no systematic evidence about what bonus and salary package would be required to offset the effects of the proposed changes, or estimates of what such a package would cost.

16. This is not entirely automatic. Since 1982 Congress has delayed or reduced several scheduled MRS cost-of-living adjustments.

17. Other proposed changes would institute vesting at ten years of service instead of twenty so that smaller pensions could be received by employees with even shorter working careers. But the low benefit credits and the long deferral before benefits would be received make these claims of little value.

18. The Grace Commission proposed rules differ in this respect because while a higher discount rate reduces the value of the pension benefits to be received, they are deferred at least to age fifty-five, regardless of the date of retirement. Raising the discount rate reduces the value of the pension for early retirement more than for later retirement and leaves a positive accrual to pension claims from work in the later years of the career.

19. Since part of the point of the analysis is to see whether a large impact upon retention is likely to be observed if these changes are adopted, this assumption is undesirable. Unfortunately, we currently lack any credible way to estimate effects on retirement rates.

20. The recent change to accrual accounting in the budget may improve this.

References

Black, Mathew. 1983. Personal discount rates: Estimates for the military population. Systems Research and Applications Corporation.

Congressional Budget Office. 1984. Modifying military retirement. April.

Department of Defense. 1984. Executive Summary. In *Fifth quadrennial review of military compensation.*

———. Office of the Actuary. Defense Manpower Data Center. 1983. *Valuation of the military retirement system, FY 1982.*

Ehrenberg, Ronald G. 1980. Retirement system characteristics and compensating wage differentials in the public sector. *Industrial and Labor Relations Review.*

Glasson, William H. 1968. *History of military pension legislation in the United States.* New York: AMS Press.

Kotlikoff, Laurence, and Daniel Smith. 1983. *Pensions in the American Economy.* Chicago: University of Chicago Press.

Kotlikoff, Laurence J., and David A. Wise. 1984. The incentive effects of private pension plans. NBER Working Paper No. 1510.

Lazear, Edward P. 1983. Incentive effects of pensions. NBER Working Paper No. 1126.

———. 1984. Pensions as severance pay. In *Financial aspects of the U.S. pension system,* ed. Z. Bodie and J. Shoven. Chicago: University of Chicago Press.

Leonard, Herman B. 1984. The federal civil service retirement system: An analysis of its financial condition and current reform proposals. NBER Working Paper No. 1258.

Office of Personnel Management. 1980. *Board of Actuaries of the Civil Service retirement system fifty-seventh annual report.* Washington: Government Printing Office.

———. 1984. U.S. civil service retirement system *Annual Report.*

President's Private Sector Survey on Cost Control [Grace Commission Report]. 1984. Summary volume published as *War on waste: President's private sector survey on cost control,* by J. Peter Grace. New York: Macmillan, 1983.

Wise, David, and John Shoven, eds. 1985. *Pensions, labor, and individual choice.* Chicago: University of Chicago Press.

Comment Harvey S. Rosen

Chapters 2 and 3 provide analytical descriptions of the military pension system. In general, one should expect two things of such papers. First, they should use the available data to present the facts clearly and interestingly. Second, they should whet our appetites for more research. That is, the presentation of facts should suggest interesting puzzles that cannot be solved without more theoretical or statistical

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analysis. Both chapters succeed at these tasks. In these comments I briefly summarize the main facts and discuss some of the puzzles they suggest.

Chapter 2. Phillips and Wise

Phillips and Wise focus on the lifetime compensation of military personnel and "comparable" civilians. Economists who set out to compare the compensation of individuals in different occupations in a given year, let alone over a lifetime, are well aware that many assumptions are required. A standard approach is to estimate a regression of compensation on various personal and job characteristics for each of the groups under consideration and then to compare the results. (The standard method is not without problems. Issues of selectivity, bias, omitted variables, etc. often arise.) As long as the list of regressors includes an experience variable, (or some other regressor that changes with time), the estimates can also be used to generate an age-earnings profile. This procedure is not available to Phillips and Wise because they did not have access to microdata on the economic and demographic characteristics of military personnel. Therefore, civilian and military people are compared without holding most of their "characteristics" constant. In particular, the comparisons are over all jobs and all firm sizes. In this context, it is important to note that Phillips and Wise focus virtually all their attention on the pecuniary aspects of the compensation bundle, that is, salaries and pensions. Phillips and Wise are sensitive to these limitations; still, we must keep them in mind when reviewing the results.

Some of the interesting facts that emerge are:

—The nonsalary components of compensation are very different in the two sectors.

—When enlisted persons are compared to civilians who have completed high school, it turns out that for about twenty years, the remuneration is about the same. After the twenty-year point, however, the military people are much better paid because of pensions that become available at that time.

—Enlisted persons have lifetime compensation packages (i.e., salary plus pensions) that are 1.35 to 1.68 times higher than civilians with high school educations. When officers are compared to civilians with a college diploma, the comparable ratios are 1.61 to 1.93. Thus the potential compensation associated with a military career is substantially greater than that associated with a civilian career.

—A large peak in military separation rates occurs at twenty years of service. Thus the military pension system appears 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 military.

I found Phillips and Wise's characterization of the status quo convincing (subject to the data problems noted above) and have just a few comments on their procedure:

—Most of the discounting in the chapter assumes a 3 percent real discount rate. Unlike Leonard's chapter, not much sensitivity analysis is done to see whether different values would affect substantive results very much. Probably not much would change, but the exercise would make the results even more convincing.

—The salary figures do not take into account the personal income tax. To the extent that marginal tax rates are not constant and the income streams have different patterns, this could make a difference.

—The chapter observes that only 60 percent of the employees in the private sector have pensions. It is not clear, however, what we are to make of this observation. Does it mean that the military-civilian differentials estimated by Phillips and Wise are underestimates of the true values? Or does it mean that in the civilian jobs without pensions, there is an increase in salary to make up for lower pension benefits?

—To make the analysis of civilian income streams more realistic, Phillips and Wise assume that the typical civilian makes two job changes. How was this figure chosen? Is there any optimization story behind it?

Some of the topics for future research suggested by the chapter are:

—What would happen to the results if a more careful job were done of holding "worker quality" fixed?

—Can any of the differences between military and civilian compensation be explained by compensating differentials? Do differences in personal freedom, hours of work, and/or potential hazards account for any of the pay differential? Can a compensating differentials framework help account for the larger difference between officers and college graduates than that between enlisted men and high school graduates? Phillips and Wise hint that differences in ability may be greater in the college civilian versus officer comparison, but perhaps the nonpecuniary aspects of military employment matter more to those who have had a college education.

—At the time of entry into the military, is the value of the pension to be received twenty years in the future understood? If the dollar amount is known, what discount rate do individuals apply in finding its present value. Unfortunately, I cannot think of a way to examine both questions simultaneously.

—If differences between remuneration are not due to compensating differentials, and if the abilities required for the two types of jobs are indeed comparable, then one would expect to observe queues to enter the military. Are there data on excess supply (e.g., number of rejected applications) that could be used to improve our understanding of these decisions?

Chapter 3. Leonard

Many of the same issues that came up in the Phillips and Wise Chapter also arise here, so my discussion can be a bit briefer.

Leonard discusses some of the same "facts" as Phillips and Wise, but packages the results slightly differently, so they are useful to read. Compared to Phillips and Wise, however, Leonard puts less emphasis on comparisons of military and civilian sectors, and more on simulating the effects of possible changes in the military retirement system. Also, Leonard explores some implications of the fact that the military pension system is unfunded. In effect, then, the obligations that taxpayers owe to current and future military retirees as a consequence of services they have already rendered are part of the national debt. Leonard finds that this component of the national debt is large even compared to the conventionally measured national debt.

Some of the important results reported by Leonard are:

—A substantial fraction of the cost of compensation for long-term armed services personnel is incurred in the last years of their careers.

—The value of the military pension is quite sensitive to changes in the value of the discount rate. This finding is important given that on the basis of previous research, we know very little about the magnitudes of personal discount rates. (Certain human capital and permanent-income hypothesis models allow investigators to estimate discount rates; the results tend to vary substantially across studies and to be larger than one would guess.)

—For all "reasonable" discount rates, the present value of the pension received at twenty years is large. Even with a 6 percent real interest rate, the pension plan is equivalent to a $200,000 bonus. However, the lucrativeness of staying in the military past the twenty-year point is sensitive to the discount rate.

—To fund the military retirement system on a current basis, one would require a funding rate of 58 percent of basic pay. In the civilian sector, the comparable figure is 10 percent to 20 percent.

—If the changes suggested by the Grace Commission were implemented, the present value of military pension benefits would fall by between 85 percent and 90 percent.

Leonard's chapter raises some interesting questions:

—Is the fact that military pensions are part of the national debt perceived by citizens in the rational way suggested by (say) Barro (1974)? Will macroeconomists who put the national debt in their regressions get better fits if they include the unfunded military pension component? If people currently unaware of the existence of the military pension debt begin to become aware of it through publicity, what will be the behavioral consequences?

—What effect would the Grace Commission recommendations have upon retirement decisions in the military?

—Leonard is more adventuresome than Phillips and Wise in speculating about why the system looks the way it does. His speculations suggest some questions:

(*a*) What is the purpose of the military retirement system? The claim is that it develops and keeps long-term, high-skill employees. Is this the right goal? If so, is the current system an efficient way to achieve it?

(*b*) As a political issue, how did the system get this way? Is it solely a device to fool taxpayers into underestimating military compensation costs? Or is the system, because of differing discount rates between military and civilian persons, an efficient way to structure compensation? What are the political coalitions behind the system?

(*c*) A further political question is raised by the key role that the inflationary erosion of pension benefits plays in the recommendations of the Grace Commission. Why does money illusion seem to play such an important role in attempts to change public policy?

Conclusion

In conclusion I want to stress how beneficial it is to have these two chapters lay out the basic issues in such a clear way. My guess is that we will see a good deal of sophisticated econometric work to answer many of the puzzles that have been raised in these two chapters. However, if the literature on the behavioral effects of the Social Security system is any guide, there is a good chance that as a group, these future papers are going to be inconclusive. My guess is that researchers in this field will continue to refer to these two chapters for their cogent and useful analyses.

Reference

Barro, Robert J. 1974. Are government bonds net wealth? *Journal of Political Economy* 82: 1095–117.

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