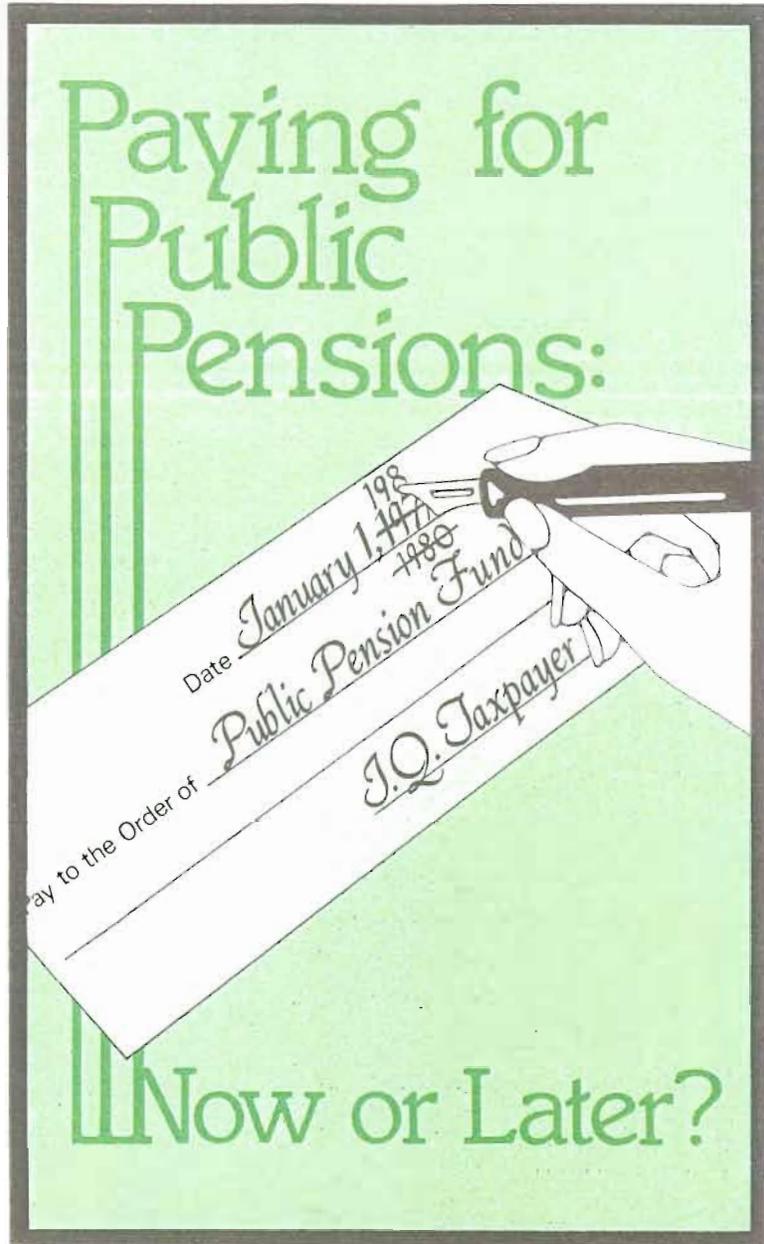


BUSINESS REVIEW

Federal Reserve Bank of Philadelphia

ISSN 0007-7011

NOVEMBER · DECEMBER 1980



Interest Rate Futures:
A Challenge
for Bankers

NOVEMBER/DECEMBER 1980

**PAYING FOR PUBLIC PENSIONS:
NOW OR LATER?**

Robert P. Inman

... Coping with the nation's large and growing public pension debt will test the ingenuity of policymakers.

**BUSINESS
REVIEW**

Federal Reserve Bank of Philadelphia
100 North Sixth Street
(on Independence Mall)
Philadelphia, Pennsylvania 19106

**INTEREST RATE FUTURES:
A CHALLENGE FOR BANKERS**

Howard Keen, Jr.

... Interest rate futures may help bankers protect their portfolios against adverse changes in interest rates.

The **BUSINESS REVIEW** is published by the Department of Research every other month. It is edited by John J. Mulhern, and artwork is directed by Ronald B. Williams. The **REVIEW** is available without charge.

Please send subscription orders, changes of address, and requests for additional copies to the Department of Public Services at the above address or telephone (215) 574-6115. Editorial communications should be sent to the Department of Research at the same address, or telephone (215) 574-6426.

.....

The Federal Reserve Bank of Philadelphia is part of the Federal Reserve System—a

System which includes twelve regional banks located around the nation as well as the Board of Governors in Washington. The Federal Reserve System was established by Congress in 1913 primarily to manage the nation's monetary affairs. Supporting functions include clearing checks, providing coin and currency to the banking system, acting as banker for the Federal government, supervising commercial banks, and enforcing consumer credit protection laws. In keeping with the Federal Reserve Act, the System is an agency of the Congress, independent administratively of the Executive Branch, and insulated from partisan political pressures. The Federal Reserve is self supporting and regularly makes payments to the United States Treasury from its operating surpluses.

Paying for Public Pensions: Now or Later?

By Robert P. Inman*

Retirement is an important moment in the American worker's life—for corporate president, blue-collar technician, soldier, and civil servant alike. Building a secure retirement has become part of the American dream. But how secure that retirement will be has a lot to do with how carefully retirement income has been planned. And public-sector workers at all levels of government are finding that the pensions they have planned on for their retirement years are becoming more and more controversial.

The reason is that public pension programs typically show large funding gaps. Not enough has been put aside in working years to cover promised payments during retirement years, and the difference must be made up somehow if the expected benefits are to be paid. There are ways to deal with the funding gap. But because of its size, and because the whole matter is so complex and sensitive, finding a

timely answer to the public pension funding question will test the ingenuity of policy-makers.

PENSION GROWTH

The past 30 years have seen a significant expansion in the retirement benefits afforded this nation's public employees. In 1950, public employee retirement systems for state and local and for Federal civil service and military personnel paid approximately \$1 billion of benefits to a little more than half a million beneficiaries—an average annual payment of \$1,666 per retiree. By 1977, those numbers had grown to \$27.1 billion of benefits and five million retirees; the average annual benefit now is \$5,400 per retired worker.¹ Thus public employee pensions have become a significant

¹Social Security Administration, Social Security Bulletin, Annual Statistical Supplement, 1975; and "Benefits and Beneficiaries under Public Employee Retirement Systems, 1977," Research and Statistics Note, 1980.

*Visiting Senior Research Economist. On leave, University of Pennsylvania.

portion of public workers' expected compensation and a significant cost to taxpayers.

Public pension obligations seem destined to grow still larger in future years. The aggregate financial position of major public employee retirement systems in the U.S. shows a four-fold growth in the current value of promised pension payments from 1950 to 1975. The workers who were promised pensions in 1975 will be retiring in the 1980s and 1990s with the expectation that the promises made to them will be fulfilled. But the level of public pension assets needed to meet those promises has not kept pace. The gap between promised pensions and accumulated assets—the unfunded liability of the pension system—has grown (see PENSION PROMISE COMMITMENTS . . .). At some point between now and the time these workers retire, either the gap must be closed with increased taxes or they will be denied their full pensions. Even though the gap has been growing larger for some time, current retirees still are receiving their pensions. But tax relief bought in the past through unfunded pensions has created a ticking tax bomb that may explode in the not too distant future. The question confronting policymakers now is how best to defuse it.

PENSION UNDERFUNDING: THE DANGERS

Underfunding public pension plans has one obvious danger—the money to pay benefits may not be there on the day it's due to the pensioner. But it also has more subtle dangers connected with levels of public service consumption and of private savings and capital formation. These dangers depend on how the funding is structured and on what level of government administers the plans.

Benefits and Contributions. Retirement systems currently in effect for employees of state and local governments, the Federal civil service, and the Armed Forces all promise the public employee a pension upon retirement. This pension is to be paid as an annuity equal to a fixed percentage of the worker's preretire-

ment salary. Such public employee pensions are *benefit* plans defined by rules which set the fraction of preretirement salary to be paid as the retiree's annuity.² Defined benefit plans are different from defined *contribution* plans, sometimes used in the private sector, where the amount of the pension is dependent upon only what the employee and the employer actually contribute over the worker's working life to a retirement fund. Defined *contribution* pension plans can be managed poorly and yield low returns, but by definition they can't be underfunded. Defined *benefit* plans, however, can be underfunded whether or not they are poorly managed, since promised benefits are unrelated to contributions.

Should defined benefit plans for public employees be fully funded to make sure that the assets of the plan can meet the pension obligations promised to current workers and retirees? The answer is not obvious. The current social security system is a form of defined benefit pension plan and it is far from fully funded. Indeed, no less an economist than Nobel Prize winner Paul Samuelson has argued that underfunding the social security system is exactly the right thing to do to maximize the well-being of current and future taxpayers and retirees.³

²The rules which set the fraction of preretirement salary—the so-called replacement rate (since the annuity replaces salary)—vary across all public employee plans. But the usual pattern is to give the worker two percent of preretirement salary for each year of service up to a maximum of 50 percent or 60 percent of salary. Therefore a worker who serves 25 years will receive one-half (25 years times two percent) of salary. The definition of preretirement salary also can vary across plans. In the simplest case, it is just the last year's base pay. Some plans allow overtime pay to be included, others average salary over three to five years before retirement, and still others average salary over the worker's whole career. For more detail, see Robert Tilove, *Public Employee Pension Funds* (New York: Columbia University Press, 1976).

³See Paul Samuelson, "An Exact Consumption-Loan Model of Interest with or without the Social Contrivance of Money," *Journal of Political Economy* 66 (December

PENSION PROMISE COMMITMENTS EXCEED EXPECTED FUTURE ASSETS

The accompanying Figure presents new estimates of the funding status of public employee pension plans through 1975.* Columns 1, 5, and 9 give the present value level of pensions promised to public employees in billions of 1972 dollars. Columns 2, 6, and 10 estimate the present value of pensions less employees' and employers' contributions over the working life of the employee. These estimates approximate the employees' net gain in wealth (pension minus contributions) from the pension plan. The military retirement system, which is a pay-as-you-go pension plan, has no accumulated assets. Columns 4, 8, and 12 approximate the uncovered liabilities of each public employee pension. Uncovered liabilities are estimated here as the gap between the present value of the pensions which have been promised and the expected contributions and assets now available to cover those promises.

The gap is sizable, and over the past 25 years it has grown significantly. When 1975 is compared to 1970, it appears that Federal uncovered liabilities have stabilized; yet state and local uncovered liabilities continue to grow. The size of the burden is unsettling: an *additional* \$1,270 per person must be found if 1975 pension promises to public employees are to be met.

The results here are not strictly equivalent to an estimate of what actuaries define as the unfunded liability of a pension plan. Hence the use of the term 'uncovered liability'. The key difference is how employees' and employers' contributions are estimated. The Philadelphia Fed estimate is based upon a continuation of recent funding behavior, while a true actuarial estimate calculates the level of contributions needed to fund all future benefits fully (the normal cost of the plan), thus leaving only the effects of past underfundings in unfunded liabilities. The estimate of uncovered liabilities seems more appropriate for understanding the current economic status and implications of public pensions.

PUBLIC PENSION WEALTH AND ASSETS

(billions of 1972 dollars)

	CIVIL SERVICE				MILITARY				STATE AND LOCAL			
	Gross Wealth	Net Wealth	Assets [†]	Uncovered Liabilities [‡]	Gross Wealth	Net Wealth	Assets [†]	Uncovered Liabilities [‡]	Gross Wealth	Net Wealth	Assets [†]	Uncovered Liabilities [‡]
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1950	39.42	37.76	6.73	31.03	56.87	55.20	0	55.20	32.96	29.82	9.65	20.17
1960	66.91	63.56	14.06	49.50	84.73	81.30	0	81.30	93.25	75.55	25.86	49.69
1970	103.28	95.78	24.25	71.53	133.45	122.42	0	122.42	184.65	144.98	59.37	85.61
1975	129.75	105.72	30.32	75.40	135.88	118.12	0	118.12	239.86	184.09	77.52	106.57

*For details of these estimates see R. P. Inman and L. S. Seidman, "Estimates of Public Employee Pension Wealth," Research Paper No. 60, Federal Reserve Bank of Philadelphia, forthcoming.

[†]Asset data from A. Munnell and A. Connolly, "Funding Government Pensions: State-Local, Civil Service, Military," in *Funding Pensions: Issues and Implications for Financial Markets*, Federal Reserve Bank of Boston, 1977.

[‡]Uncovered liabilities equals net wealth minus assets.

When a pension system is totally underfunded, so that its accumulated assets are zero, it is a pay-as-you-go plan and current taxpayers contribute to cover only the benefits of current retirees. Such a scheme works well as long as future retirees can be assured that payments will be made when they retire and as long as promised pension obligations do not grow much faster than the tax base, placing an oppressive burden on future taxpayers. If either of these two conditions for pay-as-you-go funding is not met, then partial funding or full funding is preferred. For each of the three major public employee retirement systems—state and local, civil service, and military—there are good reasons to believe that a move towards full funding is in order.

State and Local Pensions. The argument for fuller funding of state and local pension plans turns crucially on their being paid for at the state or local level. This arrangement creates a unique incentive to underfund. Current residents of the governing jurisdiction can receive the benefits of local labor services, promise to compensate the workers who provide them through a defined benefit pension, and then fail to contribute towards that promise by not funding today and by moving out tomorrow.

It's easy to imagine the trouble that this can cause in a highly mobile society. State and local pension funding begins to look very much like a fancy dinner party where public services are the main dish and the tab is split evenly among the diners no matter what or how much they consume: each has an incentive to buy the most expensive entree, because all the other diners will be paying part of the extra cost. Since households can move from

town to town and from state to state, and since everyone must live somewhere, people end up sharing each others' local and state pension obligations. Just as at the dinner party where all have an incentive to buy the expensive entree when they share the check, so too here there is an incentive for residents to overconsume their local services. If every group of local taxpayers buys local services and pays public employees with the idea of shifting some of the burden to other taxpayers through underfunding, then clearly the state and local system as a whole will overbuy when underfunding of defined benefit pensions is allowed.⁴

Underfunding also can create significant inequities, since those who pay the cost don't garner a commensurate benefit. Future residents, not current ones, pay a major fraction of the costs of current services. Yet future residents do not receive any of the benefits of such services. Those particularly hurt are taxpayers who leave a jurisdiction that does fund its pensions and who move into a jurisdiction that has large unfunded liabilities to be covered. New residents might claim that these large tax obligations for unfunded pension liabilities are not their responsibility. They could refuse to pay.⁵ In that instance, the burden would shift either to retired workers (who would receive only a fraction of their

⁴In the course of research on public pensions recently conducted at the Federal Reserve Bank of Philadelphia, a significant incentive to overbuy local fire services was discovered for a sample of 70 large U.S. cities that use defined benefit pension plans as compensation for their firefighters. See R. P. Inman, "Public Pensions, Public Unions, and the Local Labor Budget," Research Paper No. 58, Federal Reserve Bank of Philadelphia, forthcoming.

⁵The courts usually have upheld the rights of workers to their full pensions and have required payment, and often the state will assist localities whose pension plans are nearly bankrupt. See, for example, U.S. House of Representatives, Committee on Education and Labor, Subcommittee on Labor Standards, *Pension Task Force Report on Public Employee Retirement Systems*, 95th Congress, March 15, 1978, pp. 98-99.

1958), pp. 467-482. Samuelson's arguments have been analyzed in more detail by M. S. Feldstein, "Perceived Wealth in Bonds and Social Security: A Comment," *Journal of Political Economy* 84 (April 1976), pp. 331-336 and Robert Barro, "Reply to Feldstein and Buchanan," *Journal of Political Economy* 84 (April 1976), pp. 343-349 in their recent debate over the savings effects of social security.

promised pensions) or to a larger pool of taxpayers (if the state or Federal government offers grants assistance to bail out the local plan). Again, tax dollars are redistributed from current nonresidents to current residents. And underfunding is the vehicle that transfers these dollars.

While the mobility of area residents tends to produce inequities when pensions are underfunded, some have suggested that it might generate a cure as well. The cure, like most medicines, has an imposing name—'capitalization'. Capitalization is the process by which all the advantages and disadvantages of owning an asset, including the relative size of its tax liability, are reflected in its price. To work its wonders, capitalization requires that all buyers and all sellers of the assets know fully just what those advantages and disadvantages are—for example, when they sell a house in one community and buy a new house elsewhere. With the residence comes not only a living space but also a tax obligation for any past pension underfunding. More rooms and larger yards presumably are advantages that increase the value of a house, but a tax obligation for past pension underfunding is a disadvantage and should reduce its value. If buyers and sellers were fully informed of the size of the underfunded obligation, then the price of the house should decline by just the dollar amount needed to cover the unfunded pension promises.

How is such perfect capitalization supposed to solve the problems of pension underfunding? First, with the capitalization of any unfunded pension obligations, current residents no longer would be able to escape the full price of the public services they consumed. They would pay for those services through current tax payments or, if they attempted to shift those costs of current services onto new residents with pension underfunding, through a decline in the resale value of their houses. Either way, they would pay the full cost of currently provided services. The incentive to overbuy would be removed.

Second, the redistribution from future residents to current residents or from workers to current residents would cease. Future residents would receive a fully compensating reduction in the price they paid for housing. Current workers would get their pensions because all new residents had been compensated in anticipation of covering, in full, the pensions promised to workers.⁶ Capitalization would operate as a perfect antidote to the major ills caused by state and local pension underfunding.

But the capitalization cure for state and local underfunding works only in special circumstances, and these may be so special as to be uninteresting. Both buyers and sellers of housing must know the true level of pension underfunding. But most state and local pensions are reviewed by actuaries only every three or four years, and even then the results, if publicized, are hard for the layman to interpret. So it probably is unrealistic to look to capitalization as a remedy for pension underfunding at the state and local level. Other measures, directed at increasing the assets of pension funds, may be necessary.

Civil Service and Military Pensions. Civil service and military pensions are different from state and local pensions in one fundamental respect: they are national pension plans whose liabilities are hard to evade. Thus high resident mobility will not occasion difficulties for them as it does for state and local plans. But the underfunding of these pensions will not be problem free.

These plans have the same advantages and disadvantages as the other major underfunded national pension program—social security.

The current pay-as-you-go method of funding social security has come under renewed scrutiny in recent years. Pay-as-you-go has come to be seen for what it really is—a scheme of intergenerational transfers in which current workers subsidize the retirement benefits of current retirees.

⁶The courts are the ones who enforce this promise.

Current workers need not be net losers under social security. They can legislate retirement benefit increases in excess of the taxes they have just paid to the current elderly and then ask the next generation of workers to fund their increased benefits. The increase in benefits over taxes will constitute an increase in the net wealth of the current working population, and the burden of funding passes once again to the next working generation. And this next generation, like its predecessor, can increase benefits in excess of taxes paid and make itself better off as well. And so it goes. Through pay-as-you-go financing and legislated retirement benefit increases, each generation of workers can continue to increase its net wealth at the expense of the next generation.

Unfortunately, however, the game may not go on forever.⁷ If benefits grow faster than worker income, the day may come when one working generation, having been asked to contribute what it considers an excessive share of its earned income, refuses to contribute any more and declares the system bankrupt. The losers would be the retirees who had lost their social security pensions or the last round of workers who had contributed something to the system with no hope of recouping their contributions. Something like this could happen to civil service and military pension plans as well as to social security.

There is a second, more subtle difficulty with national pay-as-you-go pension plans. As Martin Feldstein has pointed out, the increases in net wealth enjoyed by plan members before the system goes bankrupt may encourage these workers to save less and consume more. In effect, the creation of wealth through social security displaces each

generation's incentive to save for its own retirement. Feldstein estimated the size of this effect.⁸ And although Social Security Administration economists have uncovered a programming error that biased the initial estimates sharply upward, Feldstein reports that his corrected estimates are "very similar" to the conclusions reported in the earlier study (*The New York Times*, October 5, 1980). Another recent study estimated that the stock of productive equipment is smaller by some 14 percent as a result of the social security program.⁹

Unfunded civil service and military pensions face both the bankruptcy and the savings loss which threaten social security. There is nothing to prevent current taxpayers from financing civil service and military pensions through Federal government borrowing, thereby shifting the tax burden onto future generations, while continuing to enjoy the services today of those Federal employees. But eventually the debt must be repaid.

⁸See M. S. Feldstein, "Social Security, Induced Retirement, and Aggregate Capital Accumulation," *Journal of Political Economy* 82 (September/October 1974), pp. 905-926.

⁹See L. Kotlikoff, "Social Security and Equilibrium Capital Intensity," *Quarterly Journal of Economics* 93 (May 1979), pp. 233-254.

Professor Barro has presented the ingenious argument that social security wealth, like all government debt, will not affect private savings because households fully anticipate the future taxes which such debt will impose. While the future income from publicly created wealth is expected to reduce current savings (Feldstein's position), families will realize they will have to pay taxes at a later date to cover the associated wealth creation, and in anticipation of this tax increase they will save more (Barro's counterargument). The two effects offset each other, according to Barro, and thus government debt should have no effect on savings.

Deciding who is correct—Feldstein or Barro—will have to wait for the empirical evidence. Some empirical analysis shows a significant public wealth effect on savings, but Barro's work shows no such effect. The Philadelphia Fed work on this question generally supports the conclusion that public wealth does reduce private savings, but the issue still must be treated as an open question.

⁷Though Samuelson thought it might. If the working population and worker productivity together grow at a faster rate than legislated benefit increases, then retirement benefits need not become an excessive share of earned income and Samuelson is correct. The current evidence, however, is against him.

Further, current government employees reduce their private savings in anticipation of their promised retirement annuity. And so do nongovernment employees, since they needn't set anything aside to cover future civil service and military pension costs. Thus the total savings of government employees and nongovernment workers could be decreased with unfunded Federal pensions.¹⁰ This same depressing effect on private savings can occur with underfunded state and local pensions. A recent study of U.S. savings behavior conducted at the Federal Reserve Bank of Philadelphia, for example, has found a significant private savings offset from unfunded public employee pension plans. Of course, the unfunded public employee pension system is much smaller than social security. But in the aggregate the Philadelphia Fed study estimates a 10-percent to 20-percent reduction in the current rate of capital accumulation because of unfunded public employee pensions.¹¹

Thus the underfunding of state and local pensions may create a false incentive to expand the provision of state and local services while at the same time redistributing tax dollars from future residents (and possibly workers if the system goes bankrupt) to current residents. Full capitalization of state and local pension underfunding would prevent these misallocations, but there are good reasons to doubt that full capitalization will occur in very many cases. Further, the underfunding of civil

service and military pensions also raises the specter of bankruptcy. And finally, the underfunding of either state and local, civil service, or military pensions could lead to a reduction in private savings without any compensating increase in government pension fund accumulation. The net effect would be a drop in U.S. capital accumulation. But these difficulties can be dealt with.

DEFUSING THE TIME BOMB

While the new contributions required to fund public pensions are large—approximately \$5,000 for a family of four—the funding need not take place all at once. The outstanding pension bill will come due in small amounts as workers retire over the next 30 years, and so the payments can be spread out over time. Further, the exact payment schedule is less important than the commitment to make those payments.

In 1971 the Federal government made this kind of a commitment to the civil service retirement fund. To stabilize the level of uncovered liabilities, the Treasury began to make additional contributions. Such contributions are expected to reach 33 percent of payroll in the 1980 budget. Yet for Federal pension funds such as the civil service and the military funds, contribution increases must be matched by an increase in taxes or a reduction in spending for the funding increase to be meaningful. If the debt from the civil service pension fund goes down by \$10 billion but general government debt rises by \$10 billion, for example, the whole exercise is just an economically meaningless bookkeeping transfer. Taxpayers still face a \$10-billion liability. It is not sufficient to run surpluses in the Federal pension accounts; full and meaningful funding will require a larger surplus or a smaller deficit in the total Federal budget (see *TREASURY CONTRIBUTIONS . . .*).

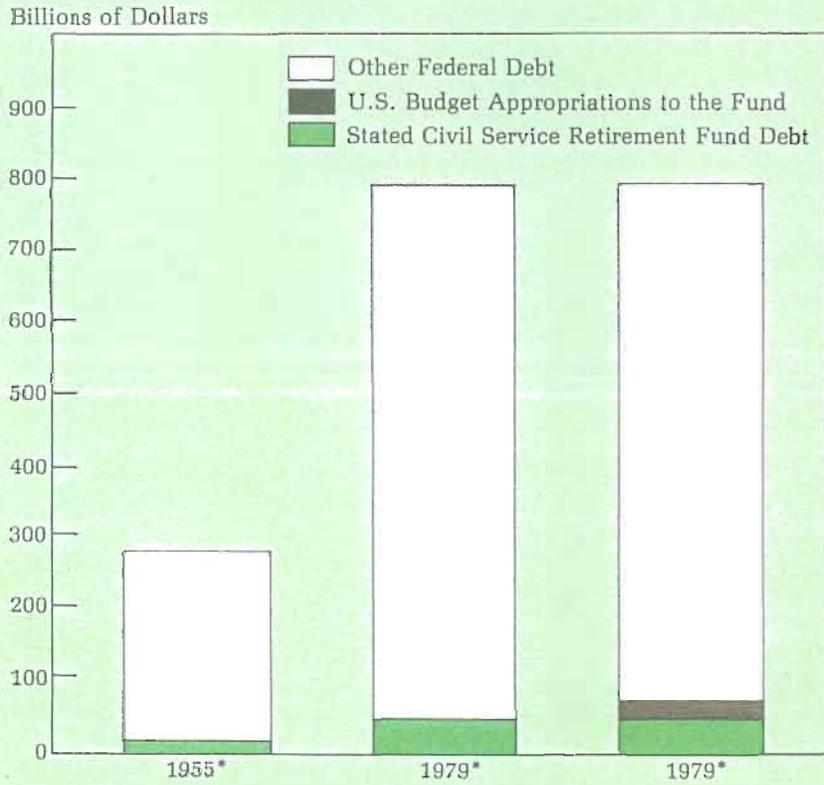
There is evidence also of a growing commitment to increased funding of state and local employee pensions. Federal legislation similar to that which covers private pensions has

¹⁰Professor Barro's arguments against a savings effect with social security apply here as well. Again it becomes a matter for empirical analysis.

A savings offset may occur also with unfunded state and local pensions, but here the argument is complicated further by the possibility of capitalization. Capitalization of unfunded pensions means lower property wealth which should stimulate private savings to replace the lost wealth. Whether capitalization in fact will increase aggregate private savings is an important question for empirical work.

¹¹R. P. Inman, "Public Employee Pensions and U.S. Aggregate Savings Behavior," Research Paper No. 59, Federal Reserve Bank of Philadelphia, forthcoming.

**TREASURY CONTRIBUTIONS
TO THE CIVIL SERVICE RETIREMENT FUND
MAY HOLD THE LINE ON THE FUND'S STATED LIABILITIES
WITHOUT RESTRAINING GROWTH IN THE TOTAL DEBT**



*Fiscal Years

SOURCES: U.S. Bureau of the Budget, U.S. Treasury Department.

been proposed,¹² and this legislation would mandate insurance and funding for state and

local pensions. Whether such legislation passes remains to be seen, but legislators at

¹²The Pension Reform Act of 1974, also known as the Employee Retirement Income Security Act or ERISA. For a useful discussion of the economic implications of

this act, see Jeremy Bulow, "Analysis of Pension Funding under ERISA," National Bureau of Economic Research, Working Paper No. 402, November 1979.

both the Federal and state levels have become aware of the dangers of large unfunded state and local pensions. Massachusetts, for example, ran its public employee pension schemes on a pay-as-you-go basis for many years. But recently the Massachusetts legislature established a pension reserve account to which it is making voluntary contributions.¹³ Local governments also may make voluntary contributions to this fund to cover their local pension liabilities, but to date only 15 of the 99 eligible localities have contributed. Boston, with the largest local pension debt in the state, has not.

Pennsylvania too has felt the urgency of funding local pensions. Sensing the need to rationalize a system of over 1,400 local pension plans governed by more than 40 separate state laws, the Pennsylvania Senate passed a resolution in 1979 calling for a special committee "to undertake a complete and thorough investigation of all aspects of the local pension systems and legislation which would be necessary to correct any deficiencies found therein."¹⁴ In February 1980, the committee submitted its report with a detailed list of recommendations. It included a call for a pension recovery fund to be financed by the state and local governments. This fund is designed to assist communities whose pension plans are nearing bankruptcy and to encourage less immediately threatened communities to increase their own funding.¹⁵ The state legislature has yet to act.

Recognizing the situation and dealing with it are two different matters. Whether the states

will respond with new legislation to regulate their own and their localities' funding practices remains to be seen.

The speed with which the states act will have an important bearing on whether the U.S. Congress steps in to fill the void. Congress clearly is concerned. The U.S. House of Representatives study of public employee pensions notes the high level of underfunding and concludes that it would "be sheer folly for individual plans and the purse collectively to continue to ignore the true level of pension costs by . . . resorting to actuarial gimmickry in order to reduce contribution levels."¹⁶ Legislation has been introduced in each of the last two sessions of Congress to impose funding, disclosure, and investment standards upon state and local pension systems.

But while increased pension underfunding should not be tolerated, rules to improve pension funding are hard to formulate. Any Federal regulation of increased state and local pension funding must be sensitive to the benefit levels, workforce characteristics, and local public economies (is there capitalization?) of each state. Simple, enforceable funding rules that make sense for all states and localities will be very hard to write. Perhaps the most sensible governmental level at which to legislate pension funding regulations is the state level, but most states have avoided this responsibility so far. Whether they will meet their policy obligation in the future or let their public employee pension systems sink still further into debt is the unanswered \$100-billion question.

SUMMING UP

In short, the issue of public pension underfunding is not an easy one to deal with. The sheer size of the funding gap has become staggering with the passing of the years. And no one single approach will cure the funding ills of all public pension programs everywhere.

¹³The legislature rejected, however, the recommendation of their advisory committee to amortize their unfunded liability over 40 years through required percent-of-salary contributions. See A. Munnell and A. Connolly, "Financing Public Pensions," *New England Economic Review*, January/February 1980, pp. 30-42.

¹⁴Senate Resolution 34 passed June 11, 1979.

¹⁵Report of the Special Senate Committee on Municipal Retirement Systems, Senator H. Craig Lewis, Chairman, and S. Howard Kline, Esq., Special Counsel, February 8, 1980.

¹⁶U.S. House of Representatives, *Pension Task Force Report*, p. 181.

But measures can be taken to improve the structure of public pensions. Policymakers at all levels of government are considering methods for gradual reduction of unfunded pension liabilities. The task is not only to find

the right set of formulae for reducing these liabilities without increasing other government debt in the process, but to do so before the funding gap becomes even larger and more unwieldy.