Pensions, Economics and Public Policy

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CHAPTER 9

_____ The Impact of Pensions _____
_____ on Capital Markets _____

The sheer magnitude of pension moneys begs attention by economists.
In 1984, private pension plans in the United States held $1 trillion in
assets; public plans held an additional $295 billion. In the year 2000,
these amounts will, together, grow in real terms to almost $3 trillion.
The challenge for economists is to consider whether the creation of a
huge pension ownership class over the last half of the 20th century has
had, or will have, any significant impact on the economy and, if so,
which form it will take. What does pension growth mean for capital
accumulation and economic growth for the United States? For the al-
location of capital? For efficiencies of capital markets? And are there
any implications for government regulation of pension trusts? Some of
the issues related to these questions are addressed in this chapter. No
definitive answers are provided, only suggestions about the research
agenda.

PENSIONS AND NATIONAL SAVINGS

Without giving it much thought, perhaps anyone's first reaction to the
pension asset numbers cited in Chapters 5–7 would be that in the
absence of pensions, the level of capital accumulation in the United
States would be markedly lower. Recall from Chapter 7 that 23 percent
of all corporate equity and 50 percent of all corporate bonds are held
by private and public pensions. How would the capital projects fi-
nanced by these instruments exist without the availability of pension
moneys?

The first pension finance issue addressed by economists pertained precisely to this question.[1] As a first-order approximation, it is utterly unlikely that as of 1984, pensions have caused capital accumulation to increase by $1.3 trillion. While some portion of this capital stock may have been caused by the creation of pensions, much of it would have been accumulated even without pensions by workers saving in vehicles other than pensions. In fact, for reasons discussed below, it is theoretically possible that pensions led to a *reduction* in the nation's capital stock! What we are really asking, then, is whether the capital stock in 1984 would have been any different had pension tax law never been enacted.

A useful way to begin thinking about this issue is to consider that the amount individuals save for their retirement is not an accident: retirement consumption represents an important element in any worker's lifetime budget. It is not legitimate to assume that workers would not save for retirement in the absence of pensions. Workers must retire at some point in their lives and must consume at some level during retirement, and hence they would presumably save some portion of their income for retirement with or without pensions.

In short, a large portion of pension savings really represents a switch in the *vehicles* used to save for retirement. If pensions have become more popular as a means to save for retirement then perhaps life insurance policies and personal ownership of stocks and bonds have become less popular. While pensions may have affected the *composition* of retirement savings, they have not necessarily affected *total* savings made for retirement. In fact, they could reduce savings.

That is to say, given the efficiency with which workers can save for retirement through a pension, it must be true that, for any given retirement age and level of retirement consumption, workers can attain the same level of wealth at retirement by saving at a lower rate over their lifetime. This is illustrated easily in Figure 9–1. The figure shows the savings made by an individual through either a pension or a tax-exposed savings vehicle to attain a total savings of $100,000 to spend during retirement, beginning at age 65. The assumption is made that the worker faces a 33 percent flat tax rate over his entire life.

If the worker can save tax free in a pension arrangement, and if the interest rate is 10 percent, he can accumulate $100,000 at age 65, beginning at age 35, by saving $785 per year. This gives the worker at age 65 $150,000 which is subject to a 33 percent tax; after tax, the worker

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[1]The pension-savings issue was addressed as early as 1965. See Phillip Cagan, "The Effect of Pension Plans on Aggregate Saving: Evidence From a Sample Survey," National Bureau of Economic Research Occasional Paper No. 95 (New York: Columbia University Press, 1965); also see George Katona, *Private Pensions And Individual Savings*, Monograph No.40 (Survey Research Center, Institute for Social Research, Ann Arbor: University of Michigan, 1965).

FIGURE 9-1 Accumulation of Savings with and without Pensions
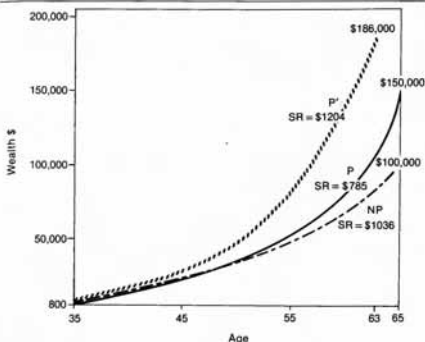
Legend: P—Wealth using a pension vehicle to accumulate $150K
            before tax at age 65.
        NP—Wealth using a nonpension vehicle to accumulate $100K
            after tax at age 65.
        P'—Wealth using a pension vehicle to accumulate $186K
            before tax at age 63.
        SR—Savings rate.

has $100,000 to spend during retirement. In the figure, this wealth path
is described by the schedule labeled P. In contrast, if the worker saves
in a tax-exposed vehicle and pays a 33 percent marginal tax, savings
accumulates at a 6.7 percent interest rate, not 10 percent. Under these
circumstances, to attain the same $100,000 after tax at age 65, the worker
must save $1,036 per year. The worker's wealth at any given time is
shown by the schedule labeled NP in the figure. It starts at a higher
level ($1,036) but exhibits a lower slope because the interest rate at
which the savings accumulates is lower.

What is noteworthy about the figure is that the worker's savings
rate is *higher* without a pension than with a pension (compare $1,036
and $785). This is so because to attain the same retirement after-tax
wealth, the nonpension worker must save consistently at a higher rate

than the pension worker. This is to be distinguished from the *accumulated* value of savings (wealth) at any given point in time. Pensions reduce wealth at early ages and increase it at later ages (see figure). For all workers, the effect of pensions on overall accumulated (pretax) wealth is ambiguous.

For example, if the density of workers is equal at all ages between 30 and 65 then in the example depicted in the figure, pensions increase the level of accumulated retirement savings, and hence the capital stock. Assuming one worker at each age and integrating appropriately, total retirement savings with pensions is $1.25 million; without pensions, $1.0 million. Depending on the age distribution of workers, the interest rate, and other variables, pensions could either increase or decrease capital accumulation. But other things constant, pensions should reduce the overall savings *rate*.

This, however, is not the whole story. Recall that in Chapter 8 it was argued that because pensions made retirement less costly, workers would demand more of it; they would tend to retire at earlier ages and consume at higher levels during their retirement. These behavioral reactions will have secondary effects on capital accumulation. To illustrate, suppose that the introduction of pension law ultimately causes the worker in our example to retire two years earlier at age 63. If death occurs at age 80, this means that to maintain the same level of consumption over two additional years of retirement, savings must be increased by roughly $13,000. Also suppose that, given the availability of pensions, workers decide they can "afford" to consume at a 10 percent higher rate during retirement; thus, at retirement (now age 63), the worker in the example must save $113,000 plus 10 percent ($11,300), a total of approximately $125,000.

To attain this level of wealth by age 63, the same worker must save $1,204 per year through a pension. This yields $186,000 at age 63 before the 33 percent tax, $125,000 after tax. The wealth schedule generated by this retirement savings policy is shown by the dotted line labeled P' in the figure. Thus, in this example, the behavioral reactions induced by pensions are sufficiently strong to increase the overall savings rate. In addition, the overall impact of pensions on accumulated savings is positive. In the example, assuming one worker at each age, and integrating appropriately, it turns out that overall retirement savings for all workers is $1.5 million at any point in time compared to $1.0 million in the no-pension world.

To summarize, the impact of pensions on the overall retirement savings rate is ambiguous. On the one hand, pensions make savings more efficient, and hence the individual needs to save at a lower rate to ultimately accumulate the same wealth. On the other hand, because pensions make retirement consumption less "costly," workers demand more of it: this causes workers to increase their savings

rate during work years. The net impact of pensions on the savings rate is ambiguous. If pensions increase the savings rate, their impact on retirement and retirement consumption must be significant.

The impact of pensions on *accumulated savings*—and hence the nation's capital stock—is theoretically ambiguous but more likely to be positive. Even without behavioral reactions, pensions could well increase the capital stock: the behavioral reactions (more demand for retirement) reinforce the positive influence. But the actual effect is not necessarily positive: it depends on the age density of workers, the savings rate over the lifecycle and the interest rate. Do pensions actually cause bigger capital stocks? The issue must be answered empirically.

Unfortunately, while it is easy to ask the question, it is not so easy to answer it. Among other factors, it is hard to obtain good estimates of individuals' pension and nonpension wealth. In addition, individuals covered by pensions may be more likely to be "savers" than "spenders," which introduces a spurious positive relation between all types of savings, including pensions. Notwithstanding these difficulties, studies generally support the notion that pensions offset *some* nonpension savings but not on a one-to-one basis. Studies show that the trade-off is closer to 50 cents: for each $1 of pension wealth, workers reduce their nonpension wealth by 50 cents.[2] Thus, based on research completed to date, pensions appear to *increase* the level of national savings.

The story, however, still does not end here. Recall from Chapter 4 that (defined benefit) pension plans are typically underfunded: on average, 25 percent of promised pensions are not held in the pension trust. Thus, if workers offset private savings in response to anticipated benefits, but firms do not actually deposit all workers' implicit "deposits" into the pension plan, national savings would be reduced by the act of underfunding. But the underfunding effect could itself be offset if stockholders react by saving funds (perhaps elsewhere in the firm) to offset the negative savings implications from underfunding.[3] Actual tests of the stockholder savings offset have not been performed.

While measurement problems make it difficult to estimate a precise impact of pensions on savings, certainly there is little in the data to suggest that pensions have reduced private savings. More strongly, the data generally support the notion that pensions have led to at least

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[2]Studies that support this conclusion are: Alicia H. Munnell, "Private Pensions and Saving: New Evidence," *Journal of Political Economy* 84 (October 1976), pp. 1013–31; Peter A. Diamond and Jerry A. Hausman, "Individual Retirement and Savings Behavior," *Journal of Public Economics* 23 (February 1984), pp. 81–114; and Louis Dicks-Mireaux and Mervyn King, "Pension Wealth and Household Savings: Tests of Robustness," *Journal of Public Economics* 23 (February 1984), pp. 115–40.

[3]The stockholder reaction to underfunding is discussed in Martin S. Feldstein, "Do Private Pensions Increase National Saving?" *Journal of Public Economics* 10 (December 1978), pp. 277–93.

TABLE 9–1 Net Purchases, Equity, Selected Years, 1950–1983: Households and Pension Plans ($ billions)

	Net Purchases		Net New Issues[b]
Year	Households	Pensions[a]	
1950	$ .4	$ .5	1.5
1955	.1	.7	1.9
1960	–2.1	2.1	1.6
1965	–5.3	3.6	.3
1970	–4.6	7.4	7.7
1975	–5.7	10.7	10.9
1980	–15.9	25.4	17.0
1983	–31.1	40.9	35.0

[a]Pension data was adjusted to reflect pension ownership of pooled funds; household net purchases were reduced, accordingly. These holdings are taken from the Federal Financial Examination Council, Trust Assets By Banks and Trust Companies, Washington, D. C., 1982.

[b]Data in this column exclude net issues of mutual fund shares which represents a double count of original equity issues.

SOURCE: Federal Reserve Board, Sector Statements of Savings and Investments, Annual Flows 1948–1983, Washington, D. C., 1984.

some increased savings, though it is difficult to say how much with any degree of precision. If the 50-cent trade-off holds up, $650 billion of private-plus-public pension assets could represent capital stock in 1984 that otherwise would not have existed without the advent of pensions.

SWITCHING THE FORM OF SAVINGS

Whether pensions have replaced private savings on precisely a one-to-one basis or not, one fact appears clear: to a large extent, pension assets are replacements for private savings for retirement. That is, in the absence of pensions, a substantial portion of assets held by pension plans otherwise would have been owned by workers directly to finance retirement. Does the switch from privately held assets to assets held collectively by pension plans hold any implications for the *allocation* (as distinct from the *magnitude*) of capital in the United States?

Certainly, the aggregate capital ownership data confirm the switch in asset ownership from households to pension plans. Such data are shown for selected years from 1950–1983 in Table 9–1. The data show that households have been shedding ownership of corporate equity securities while pension plans have been acquiring them. The net result of this switching process is summarized in pension plans' ownership shares of corporate equities and bonds. These data were summarized in Chapter 7 (see Table 7–4): in 1950 pension plans owned less than 1 percent of all corporate equity, 13.1 percent of corporate bonds. In 1984,

TABLE 9-2 Pension Share of Institutional Ownership of U.S. Corporations

(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Share of all Equity[a]			Share of N.Y.S.E.[b]		
Year	Institutions	Pensions[c]	Pension Share (3) ÷ (2)	Institutions[d]	Pensions	Pension Share (6) ÷ (5)
1955	14.3%	2.2%	.153	15.0%	1.8%	.120
1960	16.4	4.1	.250	17.2	4.9	.284
1965	20.0	6.3	.315	21.3	7.1	.333
1970	24.4	9.6	.393	26.1	11.7	.448
1975	34.5	17.7	.513	35.3	17.0	.482
1980	33.6	19.3	.574	35.4	19.2	.542
1983	39.5	23.1	.585	—	—	—

[a] Federal Reserve Board, Flow of Funds, Accounts, Year-end Assets and Liabilities Outstanding (1949–78, 1960–83). These data exclude equity held in pooled funds. To include these holdings, auxiliary information is used from the Federal Financial Examination Council, Trust Assets By Banks and Trust Companies, 1982.

[b] New York Stock Exchange, Fact Book, 1984.

[c] Includes public and private pension plans assets.

[d] A portion of equities owned by life insurance companies was allocated to pensions based on data from the 1984 Life Insurance Fact Book, American Council of Life Insurance; a major portion of equities held by life insurance companies are included in pensions.

these same shares were 23 and 50 percent. In 1955, pensions owned less than 2 percent of the stock traded on the New York Stock Exchange; in 1980, they owned 19 percent.

To be sure, the switch from privately held assets to pensions has exacerbated the growth of institutional holdings of corporate securities. This influence is clearly shown in Table 9–2. In 1950, institutions held 15.3 percent of equity securities; in 1983, 39.5 percent. In 1950, pensions accounted for 15.3 percent of institutional holdings; in 1983, 58.5 percent. Similar numbers characterize ownership of stock traded on the New York Stock Exchange. Thus, pension plans can be implicated in issues surrounding the emergence of institutional control of corporate America. Much has been written about the role of institutions in capital markets and many interesting issues surround these developments. So far, convincing evidence has not been uncovered that would suggest that institutional control of corporate securities has fundamentally altered the capital flow in the economy.[e] But this is still considered virgin territory for research.

In the same vein, it is also interesting to consider whether pensions, as such, represent a "special" institution, whether pensions and pen-

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[e] This conclusion is supported by several studies. For example, see U.S. Securities and Exchange Commission, Institutional Investor Study Report (Washington, D.C.: U.S. Government Printing Office, 1971); and J. David Cummins, John Percival, and Randolph Westerfield, The Impact of ERISA on the Investment Policies of Private Pension Funds and Capital Market Efficiency. Study submitted to the U.S. Department of Labor, 1979.

sion law bring new dimensions to institutional investing issues. The sheer size of pensions is what beckons these inquiries: if pensions are influenced to undertake portfolio choices that are inconsistent with otherwise unconstrained long-term decisions, the ramifications for the economy as a whole and for the well-being of pension participants in the long term could be significant.

PENSION PUZZLES

The plausibility of the argument that pensions may encounter "special" problems in their capital allocation decisions finds its motivation from the introduction of another level of fiduciary responsibility. That is, investment advisers and managers are subject to constraints imposed by common trust law and securities laws and regulations. In the case of pensions, these moneys carry the same regulatory controls and the same trust responsibilities that registered money managers have with any other moneys they manage. But, in addition, fiduciaries of the pension plan—designated corporate officials and registered money managers—are also subject to other government regulations, and in particular, the "prudent man" rule[5] and prohibited transactions rules[6] set out in ERISA. They must also recognize that the right of suit rests not with participants who are restricted to a particular state court but (under ERISA) with the federal government itself and including those who can file suit in any federal court in the nation. Do these aspects of ERISA influence pension plans' decisions in ways that ultimately affect capital allocation in America?

At this point, no one knows the answer to this question. But research results in related areas have uncovered several puzzles which suggest that some apparently peculiar financial decisions are being made in the pension plan. It is not known whether these puzzles will ultimately be explained by factors not yet considered by economists who study pensions or whether legal and regulatory influences are indirectly responsible for apparently bizarre pension characteristics.

The Underfunding Puzzle

In the previous section, the tax benefits of pension plans were discussed and, in particular, it was shown that the tax-exempt status of the pension plan means that pension benefits can be financed with a *lower level of*

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[5]The concept of the prudent man is found in Common Trust Law. But ERISA introduced more flexibility, applying the standard to the entire portfolio rather than particular investments (it embraced modern portfolio theory). Arguably, fiduciaries and the courts are still trying to determine which investment practices violate the more general, more ambiguous standard.

[6]Common Trust Law prohibits self-dealing. But ERISA adds a layer of parties-in-interest to the pension with whom the fiduciary cannot deal without an exemption from the U.S. Department of Labor.

contributions compared to nonpension vehicles. In the pension plan, *all* earnings in pension assets are available to pay benefits; earnings outside the pension plan are subject to corporate taxation. Recall that a savings rate of $785 per year in a pension plan over 30 years would, at a 10 percent of interest, generate $100,000 in present value benefits at age 65; to accumulate the same benefits by saving outside the pension plan (assuming a 33 percent effective corporate tax rate), an annual contribution of $1,036 would be required. The tax implication of pensions is simple: firms should fully fund, or even overfund, their pension plans.[7]

Despite this obvious implication, it is well known—and substantiated by funding data presented in Chapter 4—that most pension plans are not fully funded or overfunded: they are significantly *underfunded*. The tax implications of not fully funding the pension plan are staggering, and hence a natural question that arises is, why don't plan sponsors fully fund their pension plans? This is a genuine puzzle which leads most economists to begin questioning the rationale that lay behind firms' pension funding decisions. Are firms unwilling to fund beyond legal liabilities for fear of signaling to workers that the pension promise is real? An affirmative answer could call into question the conclusions of Chapter 3 at least for some firms. Alternatively, could IRS maximum funding rules actually constrain some firms from taking full tax advantage of pensions? Is underfunding concentrated in industries characterized by low effective corporate tax rates? Are some firms able to earn supernormal returns by using the funds in the firm, a practice not allowed pension funds (beyond 10 percent of the plan's holdings) by ERISA? Or, are pension plan sponsors ill-informed or irrational?

The ensuing chapter is devoted exclusively to the development of a theory of persistent underfunding, a theory consistent with rational corporate behavior and independent of government regulations. But inquiries along these lines will continue in attempts to uncover the rationale that lay behind financial decisions in the pension plan.

The Bonds Puzzle

Not only are pension plans underfunded, they also hold portfolios that underutilize the full tax advantages uniquely available to them. To demonstrate this point, suppose we characterize equilibrium in the capital markets. Taxpaying individuals hold the majority of all stock and corporate bonds.[8] It is therefore reasonable to assume that they determine marginal rates of return in the economy. These individuals

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[7]See Irwin Tepper and A. Affleck, "Pension Plan Liabilities and Corporate Financial Strategies," *Journal of Finance* 29 (December 1974), pp. 1549–64.

[8]For example, institutional data in Table 9–2 suggest that taxpaying individuals hold over 60 percent of all corporate equity shares.

TABLE 9–3 Equilibrium Across Risk-Adjusted Rates of Return

	Bonds	Equity
Gross rate of return	10.0	11.0
Corporate tax rate (33%)	–0.0	–3.3
Rate after corporate tax	10.0*	7.7*
Personal income tax rate (33%)	–3.3	–0.0
Capital gains tax (13.2%)	–0.0	–1.0
Rate of return net of taxes	6.7	6.7

*Denotes rates of return accruing to tax-exempt entities.

are not concerned with rates of return gross-of-taxes; they look at returns after all taxes are paid. In equilibrium, all (risk-adjusted) rates of return in an expected sense must be equated across securities: otherwise, investors will drive up the price of securities expected to do particularly well and vice versa. For example, adjusting for risk and maturity, municipal bonds typically pay a rate of interest approximately one half as high as corporate bonds, reflecting the fact that investors in the 50 percent tax bracket have equalized after-tax interest rates.

A characterization of such an equilibrium is presented in Table 9–3. The illustration assumes that taxpaying investors face a 33 percent personal (flat) tax rate and that corporations also pay an effective (flat) tax at the corporate level equal to the same 33 percent rate. In this case, we know that the capital gains tax will be 13.2 percent (40 percent times the 33 percent personal marginal rate). We also know that bonds and stock must yield the same (expected) risk-adjusted rate of return after all taxes. In the example shown in the table, the risk-adjusted net rate of return is set at 6.7 percent for stocks and bonds. But the interesting exercise is to work backwards to derive the pretax rates of return required to ensure that net rates of return are equalized. This is important when considering the optimal investment strategy of an entity like a pension plan that is not subject to personal taxes.

It turns out that if the rate of return before all taxes is 10 percent for bonds and 11 percent for equity, the net rates of return after all taxes are equalized across both securities. That is, no corporate tax is assessed on corporate bond interest (interest is deductible for corporate tax purposes) but a 33 percent corporate tax is assessed against the firm's profits (equity return). Thus, after corporate taxes, the bond rate of return to individuals is left intact at 10 percent; the equity rate of return is 7.7 percent. To a tax-paying individual, this inequality in rates of return is soon erased by a personal tax assessment: the individual must pay a 33 percent marginal tax on bond income, leaving 6.7 percent after tax; and must pay a 1.0 percent capital gains tax on equity earnings (= .132 × 7.7 percent), which leaves an identical 6.7 percent net return.

TABLE 9–4   Share of Bonds in Pension Portfolios, 1978

Bond Share	Plans	Assets ($ billions)
< 25%	1,041	$30.4
25–49%	2,038	46.2
50–74%	1,309	12.5
75–100%	1,266	6.3
Total	5,654	$95.4

SOURCE: Sample of plans with over 100 participants from 1978 plan year Annual 5500 Pension Plan Report filed with the U.S. Department of Labor.

While the tax-paying individual expects the same net risk-adjusted rate of return from stocks and bonds, the same expectation does not characterize tax-exempt entities. If taxpayers are indifferent between bonds and equities, it must be true that tax-exempt entities will prefer bonds because gross of personal taxes, the bond rate of return exceeds the equity rate of return. In the example in Table 9–3, the bond rate of return gross of the personal tax is 10 percent; the gross equity rate of return is 7.7 percent. The implication for pension plans is clear: they should hold all-bond portfolios.

Yet the facts clearly show they do not. The share of pension bond portfolios held in bonds is shown in Table 9–4 for the year 1978. While 22 percent of plans (holding 7 percent of pension assets) held portfolios comprised of 75 percent or more in bonds, the majority did not. Fully 54 percent of plans (holding 80 percent of pension assets) held less than one half of their portfolios in bonds. Clearly, pension plans are not acting in a way that maximizes the advantages of their tax exempt status. While at first it might appear risky to hold an all-bond portfolio, the firm sponsor should be able to balance this risk by holding equity securities at the firm level. Alternatively, stockholders could hold more equity at the personal level.[*]

In general, it is hard to understand why pension plans forgo their maximum potential rate of return. Do they perceive an all-bond portfolio as imprudent? Do equity components in the pension confer some other type of as yet unrecognized advantage to the plan sponsor? Are equities held in the plan to explicitly convey the notion to workers that they will ultimately receive a pension that is tied to the weighted rate of return in the pension portfolio? Research to date simply cannot explain this apparently peculiar tendency of pension plans to eschew the all-bond prescription.

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[*]See, for example, Fisher Black, "The Tax Consequences of Long-Run Pension Policy," *Financial Analysts Journal* 36 (July 1980), pp. 3–10; and Irwin Tepper, "Taxation and Corporate Pension Policy," *Journal of Finance* 36 (March 1981), pp. 1–14.

TABLE 9–5 Pension Rates of Return on Equity

	(1)	(2)	(3)
	Period	Pensions[a] (Percent × 100)	Mutual Funds[b] (Percent × 100)
	1961–1981	6.7	7.3
	1972–1981	4.3	7.6
	1977–1981	9.1	12.7
	1979–1981	15.6	18.2
	1981	–5.0	–1.6

[a]Pensions funds rates of return on actively managed equity components evaluated by A. G. Becker Securities.

[b]Mutual fund rates of return are taken from Lipper Mutual Funds.

SOURCE: Alicia H. Munnell, "Who Should Manage the Assets of Collectively Bargained Pension Plans?" New England Economic Review (July 1983), pp. 48–54, Table 8. Munnell's data in part are taken from Roy A. Schotland, "Why Mutual Funds Are Top Performers," Pensions and Investment Age, July 20, 1981, p. 13.

Pension Rates of Return Puzzle

Perhaps the most intriguing puzzle of all is the apparent fact that pension plans somehow manage to earn lower rates of return than other types of investors. The data that support this notion are shown in Table 9–5. The data report the rate of return earned on actively managed equity accounts for pension plans; these returns are compared against rates of return earned by a broad range of mutual funds. The facts speak for themselves: for all periods of comparison, pensions earned a lower rate of return on their equity accounts than on mutual funds. Over the entire period 1961–1981, pensions earned a 6.7 percent rate of return on their equity accounts; mutual funds earned a 7.3 percent rate of return, 9 percent higher than pension funds. During the period 1972–1981, the wedge is much higher: mutual funds earned rates of return 76 percent higher than pension funds' equity accounts.

It is not known what accounts for the wedge between the rate of return in pensions and mutual funds. Do pensions hold lower risk equities? Encounter higher management fees and transactions cost? Do the results mask social investing tendencies? Less than arm's-length (i.e., illegal) transactions between some plans and plan sponsors or their affiliates? There are no answers to any of these questions. But again, the rate-of-return puzzle raises suspicions that, somehow, financial decisions in pension plans result in performance that is lower than it otherwise could be.

Some insight and verification of the problem is available in a recent case study of portfolio performance of 119 pension plans over the period 1974–1979.[10] The study showed that virtually all plans in the sample

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[10]See Dennis E. Logue and Richard J. Rogalski, Managing Corporate Pension Plans: The Impacts of Inflation Washington, D.C.: (American Enterprise Institute, 1984).

failed to earn any positive real rate of return over the period, and they also performed worse than a whole array of market indexes. Perhaps more revealing, the study found that the pension plans with the worst performance were the ones that were not patient investors. Plans exhibiting tendencies to "time the market" incurred large losses during the period of the study. Given the long horizon of pension investors and the damning implications of the efficient market theory,[11] it can legitimately be asked whether pension plans *should* be anything else but long-term patient investors. Advances in this area await results of a more exhaustive study of pension rates of return.[12]

The underfunding puzzle, the bonds puzzle, and the rate of return puzzle, together with other facts—for example, pensions' use of large numbers of money managers, and their avoidance of mutual funds and index funds—combine to form a composite of behavior which suggests that either the economic functions of pension plans are more complex than commonly understood or legal and regulatory constraints are more constraining and more influential than previously considered.

CONCLUSION

Probably the most startling aspect of the role of pensions in capital markets is that we know so little. It is difficult to establish whether pension tax law has exerted a positive or negative impact on the savings rate, and capital accumulation in the economy. The improvement in efficiency with which workers can save for retirement means that the same retirement consumption can be attained with a lower savings rate. But the "reduction" in the cost of retirement and retirement consumption no doubt has led workers to demand more retirement, which in turn suggests that pensions work to increase the savings rate for retirement. Other factors also influence the impact of pensions on accumulated savings for retirement. Research to date appears to support the notion that pensions have augmented the nation's capital stock but not on a one-for-one basis.

What is less controversial is that pension law has caused a switch in the form of retirement savings: assets in pension plans for the most part would otherwise have been held by households directly. Households have been shedding corporate securities, and pensions have been

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[11]The efficient market theory merely says that all available information is incorporated in the market; hence, it is very difficult for any investor to "beat" the broad performances of the market itself. As such, the theory implies that patient (passive) investing will yield the same risk-adjusted rate of return as the active portfolio, except the patient policy will conserve transactions costs and management fees.

[12]One such study is now ongoing. See Steven A. Berkowitz and Dennis E. Logue, *Corporate Pension Fund Performance*. Report to the U.S. Department of Labor, Spring 1986, forthcoming.

accumulating them for over 40 years. But what does this mean for capital markets?

The reshuffling of moneys into pension plans means in general that another level of fiduciary responsibility has been created. Pension fiduciaries (as well as the registered money managers they hire) are subject to trust law, and since 1974, ERISA. No one knows if this extra level of potential regulatory and legal impact has had any effect. Certainly, there are many behavioral characteristics of pension plans that make it appear that pension plans and their sponsors are making peculiar financial decisions. Despite large tax penalties, most pensions neither fully fund nor hold principally bond portfolios. Moreover, the rates of return they earn are peculiarly low relative to other investors.

The sheer magnitude of pensions makes it interesting and important to understand the effect of this institution on capital markets. Yet very little is known about the pension–capital markets relation. This is to be contrasted to labor market issues surrounding pensions, about which much is known. But while much study has been devoted to the impact of pensions on labor markets, the capital market side has received much less systematic attention. This will be an important and exciting area of economic research over the next 10 years.