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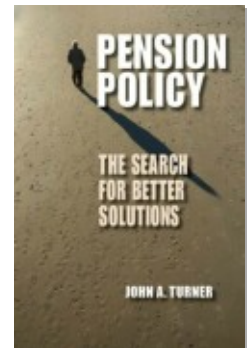
Published by W.E. Upjohn Institute

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Pension Policy: The Search for Better Solutions.

First ed. W.E. Upjohn Institute, 2009.

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Financing Pensions for Adequacy and Security

This chapter begins by considering some fundamental issues in pension financing: who ultimately bears the cost, and how to deal with inherent conflicts of interest. It considers issues common to both defined benefit and defined contribution plans, as well as issues affecting them separately. It addresses a central issue in pension policy—the choice between defined benefit plans and defined contribution plans.

FINANCING ISSUES COMMON TO DEFINED CONTRIBUTION AND DEFINED BENEFIT PLANS

Who Bears the Costs of Pensions?

Economic theory holds that it does not matter whether pension contributions are made by the employer or the employee. In either case, competition in labor markets causes wages to adjust so that the net compensation of the employee, including the accrual of future benefits, is the same regardless of whether the employer provides a pension, and this net compensation is tied to the employee's productivity. Thus, if the employee receives a pension, the employee's wage is reduced by the value of the pension. Noneconomists tend to view this theory's stated result with skepticism, and behavioral economics may eventually decide that who makes the contribution matters because of an effect resulting from the visibility of the contribution to workers. It may be also that the theory holds true in some circumstances and not others.

The argument that employees bear the costs of pensions is particularly strong, however, in the case of collective bargaining. It is clear that employees trade off higher benefits in return for higher wages when negotiating agreements.

On the other hand, the argument that employees bear the costs of pensions is particularly weak when considering the defined benefit pension costs of unanticipated improvements in life expectancy. Unanticipated improvements in life expectancy raise the pension accruals associated with past service. The economic theory of compensating differentials arguably only applies to the effect of current nonwage compensation costs on current wages. Thus, while improvements in life expectancy raise the costs of providing benefits equally through a defined benefit plan, and workers may bear the costs to the extent that the improvements are anticipated at the time the worker is accruing benefits, the costs associated with unexpected improvements in life expectancy may be borne by employers. Consequently, unexpected increases in life expectancy may be a reason why employers want to switch to defined contribution plans.

Conflicts of Interest

U.S. pension law requires plan sponsors to act solely in the interest of plan participants. However, plan sponsors face a conflict of interest because they also have a duty to act in the interest of their corporate shareholders. For example, this conflict of interest may occur in defined contribution plans, where, because of the need for diversification, it is generally not in the interest of participants to be heavily invested in the stock of their employer. However, it may be in the employer's interest in the case of takeover attempts to have employees holding a large block of company stock. Also, employees may more closely ally their interests with those of the company when they own company stock.

Conflicts of interest are inherent in economic relations. They occur when one party is acting as an agent for another party; this is called the agency problem. The conflict of interest concerning the plan sponsor's duty to its shareholders could be resolved by requiring plans to be managed by independent third parties, as is done in Japan. However, this arrangement simply substitutes another conflict of interest for the existing one: a for-profit entity managing a pension fund has a duty to its shareholders that conflicts with the interest of the pension participants. In this case, the conflict can be dealt with by requiring clear disclosure of fees paid so that participants, or the plan sponsor, can make an informed choice between competing pension fund managers.

Joint Trustees for Plan Management

Joint trustees are one way of dealing with conflicts of interest and the agency problem for pension plan management. With joint trustees, the board of trustees is composed of both employer and employee representatives. The United States is one of the few countries that have single-employer defined benefit plans where those plans are managed entirely by the employer. U.S. multiemployer plans are jointly trusteeed. In the United Kingdom, Australia, and elsewhere, single-employer defined benefit plans are managed by a joint board of workers and employer representatives. In Australia, the trustee boards are made up of equal numbers of employee and employer representatives. The trustees must meet minimum standards of fitness established by regulation, and are licensed by the Australian government.

In theory, joint trusteeship better protects the interests of the employees than does relying on the good intentions of employers. Which approach yields better outcomes for pension participants is an empirical question that has not been investigated.

The Choice of Defined Benefit Plans versus Defined Contribution Plans

Perhaps the most significant aspect of pension financing, with major consequences for participants, is whether pensions are provided through defined benefit plans or defined contribution plans. Both types of plans provide employees with the opportunity to earn tax-favored returns on their retirement savings, to benefit from economies of scale in investment transactions, and to have a commitment mechanism for saving, which is beneficial to people who lack the self-control to save independently (Aaronson and Coronado 2005).

Employers have shifted pension coverage dramatically from defined benefit to defined contribution plans, not only in the United States but also in the United Kingdom. The shift has been less dramatic in Canada and Ireland, and little shift has occurred in Japan (Turner and Hughes 2008). The shift in the United States has been primarily to 401(k) plans, and a shift among other types of defined contribution plans to 401(k) plans has also occurred. Possible causes of this shift can broadly be fit into two categories: 1) changes in the economy that affect the demand

for defined benefit pensions, and 2) changes in regulation that affect the supply or cost of providing defined benefit pensions.

A third, noneconomic factor that affects the demand for defined benefit pensions is changes in ideology. Conservative ideology tends to favor individually managed defined contribution plans. Defined contribution plans are preferred for ideological reasons by some people. It is felt that they are superior in terms of enhancing individual choice and individual responsibility for retirement. In addition, financial service providers may prefer defined contribution plans as providing greater fee income than defined benefit plans.

Changes in the economy include the decline in unionism and the decline in manufacturing. Unions favor defined benefit plans, and defined benefit plans tend to be offered in manufacturing industries. Changes in the economy also include a workforce that is increasingly mobile, and defined contribution plans are more favorable to a mobile workforce than defined benefit plans. Changes in government regulation include regulations favoring 401(k) plans, such as allowing tax deductibility of employee contributions; this deduction is not allowed for private sector defined benefit plans.

Defined contribution plans face less restrictive regulations than defined benefit plans in the United States. Defined benefit plans are required to offer annuities as an option, and require mandatory spousal consent if other options are chosen, while 401(k) plans do not face that requirement. Defined benefit plans allow workers to receive benefits while still working for the sponsoring employer starting at age 62, while the corresponding age for 401(k) plans is 59 ½. Employers sponsoring defined benefit plans are required to provide benefits for a larger fraction of their workforce than is the case for 401(k) plans. Employee contributions to 401(k) plans are tax deductible, but employer contributions are not tax deductible when made to defined benefit plans.

The shift from defined benefit to defined contribution plans has spurred a policy reaction: the attempt to “DB-ify” defined contribution plans. Examples of such proposals include automatic enrollment in defined contribution plans, having professional management of defined contribution plan investments, having phased purchase of annuities in defined contribution plans, and making annuities the default form of benefit receipt.

DEFINED CONTRIBUTION FINANCING ISSUES

While pension financing decisions for single-employer defined benefit plans are made by employers in the United States, such decisions for defined contribution plans are made primarily by employees.

Financial Literacy

A major weakness of the U.S. pension system's being largely based on 401(k) plans is that for it to function well it requires everyone to be an expert on financial market issues. With the move from defined benefit plans to 401(k) plans, increasingly workers must make financial decisions that affect the amount of resources they will have during retirement. Because few workers annuitize their 401(k) account balances at retirement, financial decisions must be made during retirement concerning the management of their accounts.

Many participants do not understand the basic mathematics of finance, do not know basic facts about different financial instruments and their levels of risk, and do not understand basic financial principles, such as risk diversification. For example, few Americans understand the relationship between a change in interest rates and the resulting change in the value of bonds (which is an inverse relationship). Surveys from other countries indicate that financial illiteracy is also a problem there (Lusardi 2007).

Financial literacy cannot be achieved by having a worker attend a couple of seminars. Some financial issues are complex. The economic literature on the effects of financial education indicates mixed success in affecting participant behavior by providing pension participants with more information about their investments. Clark et al. (2004) examine the effect of worker participation in financial education seminars on their retirement savings decisions. Individuals reported that they planned to change their retirement saving behavior based on knowledge gained at the seminar. Women were much more likely to alter their retirement goals and saving behavior than men. Lusardi (2004) also finds a positive effect of financial seminars on participants' decision-making, with the effect being particularly large for participants with less education.

Employee Contributions

Employee contributions to defined contribution plans exceed employer contributions by about 50 percent (USDOL 2008). Employee contributions are generally voluntary in 401(k) plans, but if the employee does not contribute, the employer also does not contribute. Some plans have established automatic enrollment, generally only for new employees, as a way of encouraging greater participation and greater employee contributions. However, some evidence suggests that when automatic enrollment is used, the default employee contribution rate is lower than if automatic enrollment had not been used.

Employee contributions to private sector defined benefit plans are rare because they are not tax deductible. Employee contributions to 401(k) plans, however, are tax deductible, and are a key source of financing. Once a worker has decided to participate in a 401(k) plan, the factor that has the largest effect on the amount of assets accumulated at retirement is how much has been contributed to the plan (Choi, Laibson, and Madrian 2004).

Workers and their families may have a difficult time determining their retirement income needs and how those needs translate into required pension contributions. Workers who underestimate their life expectancy will save insufficiently even if they are saving adequately for their perceived life expectancy. Even for workers with accurate estimates of their life expectancy, there is no simple answer to the question, "How much do I need to save for retirement?" Further, some workers may not contribute to 401(k) plans because they distrust financial institutions (Agnew et al. 2007).

Persistence of Contributions

Many employees do not consistently contribute to their defined contribution plans. While a number of studies have examined determinants of pension contributions in the United States and in the United Kingdom, far fewer have examined the persistency of workers' contributions. One study found that contributors generally persisted in making contributions, but that the contribution rate tended to vary over time. Smith, Johnson, and Muller (2004) use the Survey of Income and Program Participation (SIPP) to look at the persistency of employee

contributions to 401(k) plans for up to 12 years. Nineteen percent of contributors were intermittent (i.e., had breaks in their contributions), 24 percent were rising contributors (increasing their contribution rate over time), 8 percent were falling contributors, and 23 percent were fluctuating contributors. Only 27 percent of individuals were steady contributors (i.e., made persistent contributions at a stable contribution rate). While the study finds that workers raise their contribution rates after reaching significant life course milestones, such as the birth of a child, it did not find changes in contributions associated with negative income shocks or changing consumption needs.

Paul Smith (2001), using a sample of tax returns from 1987 to 1996, finds a high rate of initial drop-off in pension contributions to Individual Retirement Accounts (IRAs). Of those contributing in 1987, only 45 percent were still contributing in 1992, and 40 percent contributed through 1996. Sarah Smith (2006) uses the British Household Panel Survey to examine the persistency of contributions to individual account defined contribution plans. Her results suggest a link between pension contributions and changes in an individual's income needs, as measured by financial circumstances, health, having a baby, and moving to a new house. Data from Canada indicate that between 1991 and 1993, about half of participants in Registered Retirement Savings Plans (RRSPs, similar in some respects to IRAs) contributed in only one or two of the three years (Maser 1995).

Policy Options

Several strategies may help in encouraging workers to contribute to their 401(k) plans.

Match. Offering an employer match for employee contributions increases participant contributions. One study finds that a 1 percent increase in the employer match rate led to a 0.25 percent increase in employee contributions (Engelhardt and Kumar 2003).

The “reverse match” is a policy innovation that places less responsibility on workers and more on employers. With a reverse match, the employer automatically contributes for all covered workers, assuring that all workers covered by the plan receive at least a minimum contribution to their plan. The employee then has the opportunity to contribute

to the plan in proportion to the contribution of the employer, which could be on a dollar-for-dollar basis or at a higher employee contribution ratio of two-to-one. This type of option could be encouraged by companies' receiving regulatory relief from nondiscrimination testing. Nondiscrimination testing is required to assure that highly compensated employees do not benefit disproportionately from the pension plan.

Loans. Certain defined contribution plan features besides the match rate may affect the amounts participants contribute. One study found that the ability of plan participants to borrow from the plan increased their contributions by about 1 percentage point (Munnell, Sundén, and Taylor 2000). Another study found that participants in plans that allow borrowing contribute, on average, 35 percent more to their pension accounts than participants in plans that do not allow borrowing (GAO 1997).

Active enrollment. A study of one firm found that active enrollment with no default option, which is enrollment where employees are required to make a decision, improved participation but led to lower average contribution rates (Choi, Laibson, and Madrian 2006). Active enrollment participants had lower contribution rates than standard enrollment participants until the fourth year of participation. The explanation for the lower average contribution rates among active enrollment participants may be that active decisions bring employees with weaker saving motives into participation earlier in their tenure.

Autoescalation. One approach to encourage workers to increase their contributions automatically over time has been given the acronym SMarT—Save More Tomorrow (Thaler and Benartzi 2004). The Save More Tomorrow plan is designed to make it easier for workers to commit to participating in a 401(k) plan, to keep the commitment, and to increase their contributions over time. Under this plan, workers voluntarily agree to save part of their future wage increases—the first payroll deduction occurs a year following the date on which the commitment is made. In the future, today's workers generally will have higher wages than they do currently as they gain more experience, as productivity increases in the economy, and as the price level rises. Therefore, workers will face no absolute reduction in their nominal take-home pay in

order to save more, as long as they receive wage increases that exceed the payroll deduction.

Wages increase in both nominal and real terms over time. This plan, however, is not dependent on real wage increases. It assumes that workers are subject to “wage illusion,” meaning that they are fooled by inflation and misperceive nominal wage increases as real wage increases that raise their wages above the amount necessary to keep pace with inflation. Workers commit to save part of their nominal wage increase through their pension. Alternatively, autoescalation can occur as an increase in the percentage of wages contributed, regardless of whether future wages increase.

The SMarT approach has five essential aspects: 1) the increased contribution occurs one year following the decision to participate, 2) the increased contribution is taken out of increased income, 3) the increased income of the worker is measured in nominal terms, 4) participation is voluntary, and 5) participation is open to all workers who are eligible to participate in the pension plan.

In the firms that have implemented it, the SMarT approach has succeeded in encouraging workers to participate in 401(k) plans and to increase their contribution rate over time. In its first implementation, 78 percent of the people who were offered the option chose it, 98 percent of the people who took the option remained in it through two annual pay raises, and 80 percent remained in it through three annual pay raises (Thaler and Benartzi 2004).

Investment Choices

With the growth of 401(k) plans, workers’ investment decisions play an increasingly important role in determining their retirement income. While traditional defined benefit plans are generally managed professionally, workers have responsibility for managing the investments in their 401(k) plans.

Traditional economic theory assumes that investors are rational wealth maximizers who do not make systematic errors. More recent economic theory and empirical studies, however, increasingly suggest otherwise. Many workers are uninformed about financial markets and lack interest in learning about them. Consequently, they may have biased or otherwise inaccurate information and make predictable mis-

takes. Not only are they poorly informed, they make irrational decisions when confronted with risk and uncertainty.

These information problems can be addressed by participant education (McCarthy and Turner 2000). However, information provided by financial service providers may be affected by the self-interest of the provider—for example, it may come with little or no discussion of the amount of fees the provider charges and the magnitude of the effect of fees on reducing account balances.

A different information problem is that economists do not agree on what workers should do concerning the management of their pension portfolios. A leading scholar in the field writes, “There is currently no consensus on the optimal asset allocation strategy for investors” (Poterba 2001). For example, most financial planners encourage workers to hold less risky portfolios as they approach retirement, but Bodie (1995) challenges that view.

Financial information may be so complex that, even if it is supplied, pension investors are unable to make rational choices (Barr 2001). This failure may occur in part because the long time horizon for young workers makes it difficult for them to understand the consequences of their choices.

Having a larger number of choices may seem to be desirable. It would better allow workers to find the options that fit their tastes or needs. However, the paradox of choice is that too many choices may immobilize some workers, because the increased number of choices make it difficult for them to decide. One possible explanation is information overload (Agnew and Szykman 2004). With information overload, workers find the problem too complex: there is too much information to understand, and so they take no action. Studies in psychology have shown that having more choices may render people worse off by hampering their ability to identify the option that best suits them (Iyengar and Lepper 2000).

The question arises as to how many options workers should be given in deciding how to invest their pension assets. An example of many choices leading workers to take the default is provided by the experience of the mandatory account system in Sweden. Workers there have a choice of more than 600 mutual funds. Yet only 18 percent of new entrants into the system in 2001 made an active choice; the rest allowed

their contributions to be placed in the default fund, which is primarily invested in equities (Turner 2004).

Types of Investment Errors Pension Participants Make

The preceding section discussed reasons why participants in 401(k) plans make errors; this section discusses the types of investment errors they make. Pension investor errors include insufficient diversification and inappropriate portfolio adjustments (Turner 2003b).

Insufficient diversification. Failure to understand the basic principles of diversification may lead to investor errors. Specifically, this lack of understanding leads to insufficient diversification between stocks and other instruments such as bonds, and also to lack of diversification within the stock portion of the portfolio. Lucas (2000), examining the portfolios of 250,000 401(k) participants, found that, typically, participants hold poorly diversified portfolios, focusing mainly on stable value funds, large capitalization stock, and stock in their own company.

Naïve diversification occurs when participants attempt to diversify by dividing their investment portfolios equally among all available investment options offered by a pension provider. Thus, if a pension plan offers three options, participants would split their contributions in thirds. This results in an asset allocation to stocks and bonds that depends on the number and composition of stock and bond funds offered by the sponsoring employer (Benartzi and Thaler 2001). One study explored this pattern and found that only a small percentage of workers appear to manage their pension portfolios this way (Holden and VanDerhei 2001).

Overinvestment in the sponsoring employer's stock is another form of insufficient diversification. When workers invest their pension plans in company stock, if the company goes bankrupt they lose both their jobs and their pensions. In plans that allow employer stock as an investment option, 46 percent of participants (about 11 million employees) hold more than 20 percent of their account balance in employer stock (VanDerhei 2002). This sometimes occurs because the company provides the contribution match in company stock. Providing the match in company stock encourages workers to overweight their portfolios in company stock.

Men and lower-paid employees tend to invest a higher percentage of their portfolios in company stock than women and higher-paid employees (Holden and VanDerhei 2001; Lucas 2000). One study reports that when the employer match is in company stock, employees invest 29 percent of their own contributions in company stock. When the match is in cash, employees invest 18 percent of their own contributions in company stock (Benartzi 2001). This pattern is the reverse of what diversification would indicate employees should do. When employees overinvest in company stock, they take on risk that they otherwise could have diversified away, and that is thus not compensated by a higher expected return.

Some lawsuits have involved pension investment in employer stock. Employees have alleged that employers continued to require or permit investment in company stock, even after they realized that the company was having financial difficulties and its stock was no longer a good investment. Lawsuits have also alleged that employers provided incomplete or misleading information about the future prospects of the company. In some infamous instances, top executives have extolled company stock to their employees while dumping the stock they themselves held.

Inappropriate portfolio adjustments. Overconfidence in one's own abilities as an investor may lead to inappropriate portfolio adjustments. For example, overconfidence may cause some investors to trade aggressively. Barber and Odean (2001) define overconfident investors as those who ultimately lower their returns because of excessive trading. Males, and in particular young adult males, tend to suffer from overconfidence in their ability as investors. This may arise from a feeling by some of superior knowledge concerning the mathematics and concepts of finance (*ibid.*). Overconfidence tends to increase the amount of trading by individual investors, raising their transaction costs (Odean 1998). A study of trading at a discount brokerage firm (Barber and Odean 2001) found that single men traded 67 percent more than single women, lowering their returns net of trading costs by 1.4 percentage points per year compared to single women.

Inertia causes the opposite problem. It results in some investors not revising their initial investment allocation when their pension plan of-

fers further options or changing to a more conservative portfolio as their expected retirement date approaches.

Inertia may result from workers not being willing to invest the time to learn how to make portfolio allocation changes. The perception that it is a time-consuming process to make changes may be a factor. Samuelson and Zeckhauser (1988) find that most pension participants in TIAA-CREF never make any adjustments to their asset allocation over their entire careers. Ameriks and Zeldes (2000) find that nearly half of TIAA-CREF participants made no changes over a ten-year period.

Failing to adjust one's portfolio can be a manifestation of inertia. Lucas (2000) finds that pension participants typically do not adjust their portfolios as their time horizon shortens. Portfolios are clustered at similar risk levels across age groups from ages 25 to 50. Equity exposure only decreases materially for the portfolio of the typical participant at age 60 and older.

Agnew (2004) examines the question of how pension participants adjust their asset allocation in response to changes in stock market prices. She finds that participants react to changes in the stock market when rates of return are low by moving out of stocks, which is the opposite of the strategy recommended—that of dollar cost averaging, where workers pick an investment allocation for their contributions and stick with it during the ups and downs of the market.

Policy Options

Several possible alternatives exist to having employees managing their own 401(k) plans.

- 1) The employer could manage the investments of the 401(k) plan. One convenience store chain provides a 401(k) plan for its employees with a trustee-investment structure, where all participants' accounts are aggregated and invested as one pool, and investment earnings are distributed to participants' accounts proportionate to their account balances (Demby 2002). This approach may be desirable in firms with lower-paid employees who may have less experience with and knowledge about investing. However, almost 70 percent of 401(k) participants direct the investment of their entire account balances, and an

additional 17 percent are able to direct the investment of a portion of the assets in their account (USDOL 2004).

- 2) Some plan sponsors have offered managed 401(k) plans, where employees can pay a fee based on their assets to have professional management of their investments (Maas 2005).
- 3) Employers can offer a default option, so that workers do not need to make an investment choice.
- 4) Because of an innovation in mutual funds, some mutual funds adjust their portfolios so that they become more conservative as the worker's expected retirement date approaches. These funds are called life-cycle funds, target-date funds, or age-based funds. These funds have been established to assist workers in managing their retirement funds in a manner that makes appropriate adjustments as retirement approaches. Funds differ in the "glide path" that they take in portfolio adjustments as retirement nears, with some funds being somewhat more conservative than others.

An approach to improving asset allocation in 401(k) plans would be to grant plan sponsors relief from some fiduciary liability if they offered participants alternatives to self-direction of investment choices. This could be done by offering diversified funds that would meet certain standards or by having professionally managed accounts (Gale et al. 2004).

Many workers end up in the default fund in a situation of automatic enrollment. Because of inertia, they then stay with that fund. Thus, the risk and expected return of the default fund warrant careful consideration. Some employers have chosen a low-risk money market portfolio as the default fund because they were afraid of lawsuits if participants lost money. That portfolio, however, would be too conservative for participants over the long run.

The United Methodist church pension fund has a complex default option. It is managed by a computer algorithm, where the default varies depending on the worker's age (single years of age demarcating each group), expected retirement date, and degree of risk aversion (three categories).

This discussion of common errors that individual pension investors make suggests a number of possible pension policy options. These options would restrict the range of investment choices, but such restriction in choice could reduce investor errors. The options are as follows:

- 1) Limit investment in individual stocks, including employer stocks.
- 2) Limit investment in mutual funds with narrow market focus.
- 3) Limit investment in highly risky assets such as high-tech stocks.
- 4) Offer professional management of pension investments as an option.
- 5) Educate workers on common investment mistakes.
- 6) Limit the frequency of investment changes.
- 7) Provide well-chosen default options that participants can use if they do not want to make an active choice.
- 8) Provide as an option a low-cost fund that tracks a major index, such as the S&P 500.

Investment and Administrative Fees

Fees in defined contribution plans pay for managing and investing the accounts. Employers typically hire service providers to operate the plans. Participants can be charged fees for establishing an account, contributing to an account, management of assets in an account, switching between funds provided by a single mutual fund provider, assistance from a financial adviser, withdrawals from an account, and termination of an account.

Generally, the largest fees arise from the costs of managing the investments. These fees include fees for active management, fees for transactions, and fees for the administration of the accounts. Fees for establishing and terminating an account are typically flat fees. A plan may be charged a fee for terminating its arrangement with a particular management company.

Because fees are often hidden, many people do not consider the management of a pension account as having a price. While proponents of defined contribution plans sometimes claim that those plans are more transparent to participants than defined benefit plans, the fees charged to participants in defined contribution plans are often far from transparent, and sometimes disclosures are blatantly misleading. An example of blatantly misleading disclosure is the practice of indicating that a number of services are “free,” when in reality they are paid for by the participant out of general fees charged. Markets do not perform the function of assuring a competitive price when consumers do not understand the costs and have difficulty comparing across products.

One prominent mutual fund company reports on the account statements of the 401(k) funds it manages that it charges zero fees. Nowhere on the statement is it disclosed that the company is not reporting the fees charged through the expense ratio for the management of mutual funds. When questioned about this misleading reporting, company personnel stated that they did not report the fees charged through the expense ratio because that is disclosed in mutual fund prospectuses.

Pension participants pay billions of dollars in fees annually. The issue of fees would be of no consequence, however, if all mutual funds in which pension participants invested charged the same competitive price. In fact, mutual fund fees vary by an order of magnitude. There is also a wide range of fees charged when comparing across countries (Table 8.1). The wide variability in the level of fees charged for mutual funds, combined with little evidence that high-cost funds outperform low-cost funds net of fees (Choi, Laibson, and Madrian 2006), make adequate disclosure important for pension participants. As retirement income systems worldwide move toward defined contribution plans, the topic of fees becomes increasingly important in terms of its impact on national and individual retirement savings.

Because workers typically do not know how much they are paying in fees (Turner and Korczyk 2004), they are unable to make informed choices in managing their retirement income, resulting in a lack of competitive pressure on fees. With better disclosure of fees, pension participants would be better able to decide whether those fees were justified or whether they would prefer to use lower-fee providers. The excess fees paid, compared to what would be charged in a more com-

Table 8.1 Mutual Fund Expenses, Selected Countries, 2002 (% assets)

Country	Management expenses	Total expense ratio	Total shareholder costs
Australia	1.09	1.17	1.41
Canada	1.96	2.56	3.00
Sweden	1.32	1.37	1.51
United Kingdom	1.07	1.18	2.28
United States	0.62	1.11	1.53

NOTE: Management expenses include charges levied each year for management services. The total expense ratio includes all annual expenses charged against account balances, including investment expenses. Total shareholder costs include all annual expenses plus an annuitized form of loads assuming a five-year holding period.

SOURCE: Khorana, Servaes, and Tufano (2007).

petitive market with better informed participants, amount to money that is subtracted from retirement savings and is permanently lost from the retirement income system.

A principle of fee disclosure is that the nature of the disclosure should depend on the level of financial sophistication of the target audience. Behavioral economics has shown that the level of financial sophistication and interest in financial issues among pension participants with defined contribution pensions is fairly low. Fee disclosure for pension participants thus needs to be different from the disclosure that would be appropriate for professional investors.

Because the fees are paid primarily by participants in defined contribution plans rather than by plan sponsors, plan sponsors have less incentive than they do for defined benefit plans to provide tough oversight of fees. Furthermore, the usual conflict of interest arises between a for-profit service provider and a client. The for-profit service provider is interested in charging fees as high as possible, as is consistent with maximizing its profit.

Investments and Politics

In Chile and elsewhere, an argument has been made concerning individuals investing through defined contribution plans that when individuals invest in the stock market, and in that way invest in companies, it turns workers into capitalists. As capitalists, they are more likely to

be pro-business, to be unsympathetic to labor unions, and to vote conservatively. This argument provides an ideological reason to favor or oppose plans such as 401(k) plans.

DEFINED BENEFIT FINANCING ISSUES

With the decline in defined benefit plans, a major issue in defined benefit plan financing is whether the employer decides to stop financing the DB plan.

Plan Freezes

Plan freezes are the most recent aspect of the decline in defined benefit plans. In the 2000s, a number of plan sponsors froze their defined benefit plans. With a hard freeze, which is the most common type (Munnell and Soto 2007), no new benefits are accrued in the plan. A freeze differs from a termination in that the plan is not shut down. A freeze provides the plan sponsor time to continue contributing to the plan to raise its funding, if it is underfunded. A plan freeze is a good alternative for a plan sponsor wishing to stop accrual of benefits but facing a plan that is underfunded. It is expected that frozen plans will be terminated when they have adequate funding. Plan freezes are occurring as a way for plan sponsors to end the financial commitments they have in defined benefit plans.

Sponsors of ongoing plans are required to report the projected benefit obligation (PBO) on their balance sheet. However, if they freeze the plan, they report the accumulated benefit obligation (ABO) on the balance sheet. The accumulated benefit obligation does not take into account pension liabilities arising from future benefit growth, and can be considerably lower than the projected benefit obligation. Thus, freezing a plan can give the impression of considerably improving the financial status of a firm.

Plan Buyouts

A new development in defined benefit plan financing is plan buyouts. Plan buyouts are targeted at frozen plans. A large financial institution, such as a bank, offers to buy the pension assets and liabilities of a frozen pension plan from the sponsoring employer. The financial institution then takes over responsibility for managing the plan.

Accounting Policy

Employers have expressed concern over two aspects of volatility in defined benefit pension financing: volatility in accounting values and volatility in contributions. Accounting policy is much more an issue for defined benefit plans than for defined contribution plans, which are by definition always fully funded. Accounting rule changes have no effect on the underlying economics concerning the costs and the volatility of costs of providing pensions, because accounting rules are just rules for measurement. Nonetheless, they are frequently mentioned as a cause of the recent decline in defined benefit plans. It is argued that investors have not understood the underlying economics of pensions, given the accounting information that has been available. The new accounting requirements apparently have real effects, however, because with the provision of information under the new rules, investors now view pension costs differently from before.

However, just as information in the old accounting rules could be misinterpreted, the same applies for the new rules. Volatility in plan liabilities does not reflect the underlying profitability of a firm. An argument can be made that pension plan volatility should be noted in accounting statements as an extraordinary event that does not affect the long-run profitability of the firm. With this approach, pensions would be listed in accounting statements separately from the accounting for the firm's business activities. This approach would make it easier for investors to evaluate the business performance of the firm without having to take into account the financial performance of the firm's pension fund.

Employer Contributions

Defined benefit pension financing in the United States depends largely on employer contributions. A reason frequently given for why employers have stopped providing defined benefit plans for their workers is the unpredictability and volatility in employer contributions. The unpredictability and volatility are partly the result of investing in risky financial markets, which causes the value of plan assets to vary. But they are also partly the result of government regulations that limit plan sponsors' ability to control the timing of their contributions.

Government regulations prohibit employers from making tax deductible contributions to a pension plan when the plan exceeds a certain level of overfunding. These rules are designed to limit the tax loss to the U.S. Treasury arising from the tax deduction taken for these contributions. Another effect, however, is that firms are prohibited from making contributions when the economy is booming and they have surplus funds to contribute. When the economy is slumping, and the value of the assets in the pension funds has fallen, companies are required to make contributions, even though the contributions come at a time when the companies themselves may be struggling and do not have surplus funds. Thus, the funding rules cause a temporal mismatch between when funding is required and when firms are best able to provide it. By preventing firms from contributing regularly, the rules make it impossible for firms to benefit from dollar cost averaging in funding pension plans.

The volatility of employer contributions could be reduced by allowing employers to contribute, at a minimum, 50 percent of normal cost, no matter what the plan funding level was. This would prevent large swings in contributions, because the floor on allowable contributions would be 50 percent of normal cost rather than zero. The need for this option depends on the extent of overfunding allowed. With the changes in maximum funding rules in the Pension Protection Act of 2006, the need for this option has been considerably reduced.

Employee Contributions

A distinctive feature of the financing of state and local government defined benefit plans is that employee contributions are used for financ-

ing, and in fact play a major role. Data from the BLS indicate that in 1998, some 78 percent of state and local government employees in defined benefit plans were in plans that required an employee contribution (BLS 2000).

In contrast, it is rare for employee contributions to be used for financing private sector defined benefit plans. In 2007, it was required for 3 percent of employees participating in private sector defined benefit plans in private industry (BLS 2007). Mandatory employee contributions were more common in the past, but for reasons that are unclear. A survey of the 50 largest pension sponsors in 1979 indicated that seven had defined benefit plans with mandatory employee contributions (Aaronson and Coronado 2005; Wyatt Company 1980).

The explanation for the difference between employee contributions in the private and public sectors is that employee contributions to state and local government plans are tax deductible, while they are not tax deductible for contributions to private sector plans. Thus, employee contributions are tax deductible both for 401(k) plans and for defined benefit plans for state and local government employees, but they are not tax deductible for employees' contributions to defined benefit plans in the private sector.

Employee tax deductible contributions could be allowed on a voluntary basis, so that employees could buy extra years of service to raise their benefit on a tax deductible basis. Alternatively, employers, in designing defined benefit plans, could be permitted to make employee contributions mandatory. Tax deductible employee contributions are permitted in Canada, the United Kingdom, and nearly all other countries with well-developed pension systems. In Canada, employee contributions cannot exceed half of the employee's annual benefit accrual (International Network of Pension Regulators and Supervisors and International Social Security Association 2003).

Mechanisms for Dealing with Imbalances in Pension Financing

In Japan, if a company is facing financial difficulties it can reduce the generosity of its defined benefit plan so long as employees agree to the reduction. This element of flexibility has been credited as being one reason why defined benefit plans have not declined in Japan, where they

account for all but a small percentage of pension assets (Webman 2007). In the United States, employers cannot reduce the value of already accrued benefits in defined benefit plans. In reality, however, employers are able to do so when they lay off workers who have not reached the age of eligibility for retirement benefits.

Improving life expectancy among workers causes the increasing pension costs that so many nations face in their social security systems, but it also causes increasing costs for employers sponsoring defined benefit plans. For a defined benefit plan, increasing life expectancy after age 65 raises the costs of providing benefits because retired workers receive benefits for more years. The effect of this change over long periods of time can be large. Employers bear the risk of unexpected increases in life expectancy.

Changes in life expectancy generally occur slowly; perhaps this explains why pension researchers and policy analysts have tended to focus on other issues affecting pension liabilities, where short-term change is more dramatic. In most years, changes in interest rates have a larger effect on pension liabilities than do changes in life expectancy. Over a period of decades, however, the effect on pension costs of the increase in longevity can be considerable, while changes in interest rates generally have little effect because the increases and decreases offset each other. The short-run and long-run importance of the effects on pension cost of changes in life expectancy are thus quite different.

The Effect of Increases in Life Expectancy on Pension Costs

To estimate the effect of increased life expectancy on defined benefit pension costs, a simple calculation can be done. A 40-year-old man in 1980 was expected to live to 73 in the population life table for that year, but was expected to live to 78 in 2002 (Oster 2003). This difference in life expectancy would increase the expected length of retirement from 11 years to 16 years, assuming retirement at age 62—an increase in retirement years of 45 percent.

Making a few assumptions, we can estimate the effect of increased life expectancy on defined benefit pension costs. To calculate for a representative worker, assume a retirement age of 62 in both 1980 and 2002, a 4 percent interest rate for discounting the value of future bene-

fits, and no inflation indexing of benefits past retirement. With these assumptions, the growth in life expectancy since 1980 has increased the nominal cost (measured as the present value of benefits) of providing a defined benefit plan per male participant by roughly 30 percent. A higher interest rate would yield a lower figure, while partial inflation indexing would yield a higher figure. This number is less than the 45 percent increase in years in retirement because of the effect of interest discounting, which reduces the present value of distant future benefits.

Thus, these calculations suggest that defined benefit costs have grown more than 1 percent a year per male participant because of the increase in life expectancy. While this figure is a rough approximation, it indicates the possible magnitude of the effect for a typical defined benefit plan. The “feminization” of some pension plans due to more women in the labor force would further increase cost, since that would further raise the average life expectancy of all participants in the plan.

Life expectancy increases in other countries provide further evidence as to the possible effects on pension plans. In the United Kingdom, the effect of increasing longevity on defined benefit plan costs is thought to be one of the reasons why employers are ending those plans in favor of defined contribution plans (Pensions Policy Institute 2007). According to a British survey, the primary reasons for large numbers of employers terminating defined benefit plans are increased costs due to lower real investment returns and greater longevity (White 2003).

The effect of increases in life expectancy on pension costs is greater in the United Kingdom than in the United States. It is greater because the United Kingdom mandates that pension benefits be price-indexed, which raises the cost of benefits provided to retirees at older ages. However, a similar, though smaller, effect of life expectancy on pension costs also occurs in the United States.

Demographers and actuaries foresee improvements in longevity continuing into the future. Pension policy for the long term needs to consider how defined benefit plans will deal with this increased cost. If nothing is done, increased longevity will result in continued increases in costs for employers.

Employers have a number of options to deal with this problem, though some good options are prevented by pension law (Muir and Turner 2007). Some employers cut future benefit accruals. Some em-

ployers are freezing or terminating their defined benefit plans and switching to defined contribution plans, where employer costs are immune to the glacial inevitability of increased longevity.

If pension law were changed so that accrued benefits could be expressed in terms of accrued present value, which is the way employers' liabilities are expressed, rather than as annual benefits, firms would be more encouraged to maintain defined benefit plans. Thus, a possible response to increasing life expectancy—which would require a change in ERISA—would be to index initial benefits received at retirement to increases in life expectancy. With this indexation, workers' lifetime expected present value of benefits would not be affected by increases in life expectancy, but annual benefits at the point of retirement would be cut to take into account life expectancy increases. To shield workers from demographic risk after retirement, no further benefit cuts would occur for improvements in life expectancy occurring during retirement. This approach is used in Sweden for its social security program.

With this proposal, the pension financing risk that, on average, people will live longer is largely shifted from employers to workers. Workers are arguably better able to bear this risk than employers because they are the beneficiaries of the increased life expectancy. They can adjust to the benefit cuts by working longer, which is facilitated by their increased life expectancy. Employers still bear the risk of improvements in life expectancy at older ages that occur after the cohort has reached the early retirement age.

Employers also would still bear idiosyncratic life expectancy risk, which is the risk that a particular worker will live longer than expected. While it is not possible for employers to reduce the cohort life expectancy risk by diversifying across cohorts because all cohorts share in the improvement, plan sponsors can reduce the idiosyncratic risk by diversifying across workers.

A similar approach for dealing with cohort life expectancy risk, which has the questionable advantage of being less transparent to workers, would be to index the plan's normal retirement age to increases in life expectancy. Doing so could also result in a reduction in annual benefits, while maintaining the lifetime expected value of benefits. This change is less transparent because it is presented to workers as an increase in the normal retirement age rather than a benefit cut.

Employer-Provided Plans with Automatic Adjustment Mechanisms

Countries generally have minimum funding requirements for defined benefit plans that require plan sponsors to contribute when the funding ratio falls below a fixed level. The use of other automatic adjustment mechanisms by employer-provided plans is rare but has been done, and may provide useful policy insights.

Iceland. Iceland has mandatory employer-provided hybrid pension plans that cover nearly all workers. Benefits are calculated based on a formula, but the level of benefits is reduced if the plans become underfunded. These plans have been funded by a contribution of 4 percent of wages by employees and 6 percent of wages by employers. In January 2007, the employer contribution was increased to 8 percent. In the past, these plans fixed the contribution rate and occasionally would adjust the generosity of benefits, depending on their funding level. Pension plans that were adequately funded could choose to put part of the contributions into a defined contribution plan. A law passed in January 2007 has made the reduction of benefits automatic when a plan is underfunded. If a plan is underfunded by 10 percent or more in a year or by 5 percent for five years in a row, it must reduce the generosity of its benefits (Social Security Administration 2007).

Netherlands. The ABP plan is the Dutch civil servants' pension fund. It is one of the largest pension plans in the world in terms of assets. It is a privatized plan for civil servants (de Jong and Turner 2001). This plan bases benefits on a benefit formula, as is done in defined benefit plans, but it is a hybrid plan. The plan is financed by contributions from employees and employers. Automatic adjustment occurs through changes in the contribution rate of workers and the indexation rate of benefits in payment for pensioners.

The Board of Governors, which runs the system, changes contribution and indexation rates annually based on the investment performance of the pension fund, using a formula called the contribution/indexation matrix. The calculation of the contribution rates and indexation uses a procedure that smoothes the fluctuations in the rates so that the annual

variation is generally small. The formula determines by how much benefit indexation must decline and contribution rates must increase during periods of weak financial performance, and conversely, by how much indexation can increase and contribution rates can decrease during good times. The ABP's Board of Governors is able to take other factors into account besides the matrix, such as general economic conditions and forecast pay trends, so the adjustment is not fully automatic.

United Kingdom. The United Kingdom has a type of plan called a With-Profits Pension Annuity. With this type of annuity, the individual participant chooses an anticipated bonus rate (ABR). If the participant chooses an ABR of zero percent, the participant is guaranteed that each year's benefit in retirement will be no lower in nominal terms than the starting benefit—this, in other words, is the guaranteed minimum benefit. If the underlying investments perform sufficiently well, the participant will receive higher benefits. If the participant chooses an ABR higher than zero percent, the starting benefit will be higher, but the participant risks that future benefits will be reduced at some point, although to no lower than the initial benefit had an ABR of zero percent been chosen. Rather than the plan's payments varying with the rate of return received each year, however, the plan smoothes the benefit payments over time.

The main factor affecting bonuses is the rates of return earned on the fund's assets. The bonuses paid also depend on the longevity experience of the plan's participants relative to assumed longevity experience. The bonuses received are divided into regular bonuses, which change once a year, and additional bonuses, which change more frequently and may change by greater amounts than the regular bonuses. However, both the regular and additional bonuses are affected by the policy of smoothing payments over time. Insurance companies that provide these annuities take an annual charge related specifically to providing the guarantee. One company takes a yearly charge of 75 basis points for the guarantee, with the charge being reviewed annually. Participants are permitted at any time to convert to a fixed income annuity (Aviva 2009).

A different form of self-adjustment plan has been developed recently. In the United Kingdom, employee contributions to DB plans are tax deductible. The new arrangement adopted by some plans ties the

level of employee contributions to the improvement in life expectancy at retirement age for participants in the plan (Pension Protection Fund and Pensions Regulator 2006).

CONCLUSION

While coverage in defined benefit plans has declined dramatically in the United States and even more so in the United Kingdom, the decline has been modest in Canada and Ireland. Thus, international experience casts doubt on the view held by many that defined benefit plans are dinosaurs and their decline and extinction is inevitable. In both Canada and Ireland, and indeed in most countries with defined benefit plans, employees make tax deductible contributions to those plans.

A factor that appears to have played a role in the decline in defined benefit plans has been the increase in life expectancy, since the defined benefit plans don't have the flexibility to deal readily with this continued increase in cost. In the United States, some plans have reduced their generosity, but generally they make this change only for new hires, which can make date of hire an important issue for some workers. A possible policy innovation, following the notional defined contribution plan in Sweden, would be to permit life expectancy indexing of benefits at retirement. Thus, each year, the generosity of the plan would be adjusted downward slightly to reflect the trend toward greater life expectancy. Under U.S. law, this innovation would not be allowed because it would violate the anticutback rule. The anticutback rule is defined in terms of annual benefits. If it were redefined to take an economist's perspective and use lifetime benefits as the measure, life expectancy indexing would not constitute a cutback in lifetime benefits.

One of the problems with defined contribution plans that has received little notice in the United States is the persistency of contributions. Many workers do not consistently contribute to their plans, resulting in reduced account balances at retirement. Part of the lack of persistency results from job change, but it occurs even among workers who remain with the same employer.

To reduce the volatility and timing problem of employer contributions for defined benefit plan funding, both the maximum and minimum contribution requirements could be eased. First, plans could be allowed to contribute 25 percent of normal cost in any year, regardless of the level of funding. This proposal would set the floor on contributions allowed at 25 percent of normal costs rather than zero. Thus, plan sponsors would be allowed to contribute every year—the pattern desired for pension plans, which are ongoing entities.

To ease the requirements on the minimum required contributions, plan sponsors could be allowed a longer period over which to amortize unfunded liabilities. For example, they could be allowed a period of 15 years, rather than the current seven years set by the Pension Protection Act of 2006.