Securing Employer-Based Pensions

An International Perspective

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Chapter 1
Pension Security in an Aging World

Zvi Bodie and Olivia S. Mitchell

Providing adequate retirement income for the aged population is a serious concern confronting policymakers around the world. There is much that countries can learn from each other as they explore alternative ways to design retirement benefit programs using a wide range of financing methods. This volume encourages the sharing of cross-national experiences by making available to a wide audience the lessons learned by practitioners and analysts as they assess public and private pensions around the world. By evaluating what pensions can do well and what they have done poorly in both developed and developing nations, this volume also seeks to help policy experts assess numerous suggestions for constructing better pension institutions now and in the future.

In this introductory chapter we offer a conceptual framework for understanding the different country experiences and policy issues addressed in this book. This framework requires evaluating the roles of the government, employers, and individuals in providing retirement income, and asking why some employers voluntarily sponsor pension plans for their employees. In addition it is important to determine whether a defined benefit or a defined contribution plan offers greater security to employees, which in turn depends on employer funding and pension investment policy. To this end we offer some thoughts on how government regulatory policy affects pensions, focusing on tax as well as pension insurance. A brief description of the book's sections and themes rounds out the chapter, followed by a Glossary of Terms to clarify the pension terminology used in this chapter and throughout the volume.

Retirement Income Systems

In developed nations, the primary function of a retirement income system is to provide people with adequate income in their old age. Prior

TABLE 1 An International Comparison of Social Security Replacement Rates and Pension Coverage

Country	*Social Security Retirement Benefit as a Percentage of Final Earnings*	*Percentage of Labor Force Covered by a Pension Plan*
Australia	28 to 11	92 (compulsory)
Canada	34	41
Denmark	83 to 33	50
France	67 to 45	100 (compulsory)
Germany	70 to 59	42
Italy	77 to 73	5
Japan	54	50
Netherlands	66 to 26	83
Sweden	69 to 49	90
Switzerland	82 to 47	90 (compulsory)
United Kingdom	50 to 26	50
United States	65 to 40	46

Source: Davis (Chapter 8, this volume), Table 3.
Note: Replacement rates given for 1992 and based on final salaries of US$ 20,000–US$ 50,000.

to the Industrial Revolution, the extended family was the primary institution that performed this function. Elderly family members lived and worked with offspring on a family-owned farm, and all drew a common livelihood from it. In many of today's less developed countries, this family-based pattern for old age support still holds true.

Over time, urbanization and other fundamental economic and social changes gave rise to new institutional structures for the care and support of the elderly in much of the industrialized world. An often-used metaphor for describing developed countries' retirement income systems is that of the "three-legged stool." The first leg consists of government-provided old age assistance and insurance programs, the second is comprised of employer- or labor union-provided pensions, and the third is individual and family support (James and Vittas, this volume).

There is substantial variation across households and countries in the mix of these three components of retirement income. For instance, government-provided social security benefit generosity varies widely for the countries included in Table 1. That table reports the social security replacement rate, which is defined here as the annual government pension benefit as a fraction of final salary. At one extreme is Italy, where the government-run social security system provides a replacement rate greater than 70 percent for workers earning a wide range of pay. Table 1 also

shows the proportion of the labor force covered by an occupational or privately sponsored pension plan, and in light of the generous social payments it is not surprising to see that in Italy only 5 percent of the labor force is covered by a voluntarily provided occupational pension. At the other extreme is Australia, where the social security replacement rate is quite low but 92 percent of workers are covered by a compulsory employer-based pension plan (Davis, this volume).

A Conceptual Framework: The Life Cycle Model

Retirement income security and employer-based pensions are often described in the context of a life cycle model of saving. In this framework, people are posited to save during their working years so that they can afford to consume in their non-working retirement period.[1] As we shall see, pensions are only one of the many ways in which forward-looking workers can save effectively.

Some simplifying assumptions are useful in quickly conveying the essence of the lifecycle approach. Assume for the sake of illustration that an individual enters the labor force at age 20, works until retiring at age 65, and dies at age 80. During the working years, this person earns a constant real labor earnings, a portion of which is saved for retirement. These savings are deposited in a fund that earns a zero real rate of interest. At retirement, a constant real retirement benefit is paid, structured such that at death the retirement fund is completely depleted. We further assume that the individual saves an amount during the working years sufficient to provide the same level of real consumption before and after retirement.

Figure 1 depicts the profiles of earnings and consumption just described. The two shaded areas represent, respectively, total accumulated savings during the working years and total accumulated retirement benefits. Absent any net subsidies to the household (and assuming away any bequest motive for the moment), these two areas must be equal for the lifetime consumption plan to be feasible. The equality of these two areas implies that the ratio of consumption over earnings must equal the ratio of years of work to total years of work and retirement. In other words if we define the replacement rate as the ratio of consumption to earnings, this can be derived as follows:

$$\text{Years of work} * (\text{Earnings} - \text{Consumption}) = \text{Years of retirement} * \text{Consumption}$$

$$\text{Years of work} * \text{Earnings} = (\text{Years of work} + \text{Years of retirement}) * \text{Consumption}$$

$$\text{Replacement rate} = \frac{\text{Consumption}}{\text{Earnings}} = \frac{\text{Years of work}}{\text{Years of work} + \text{Years of retirement}}$$

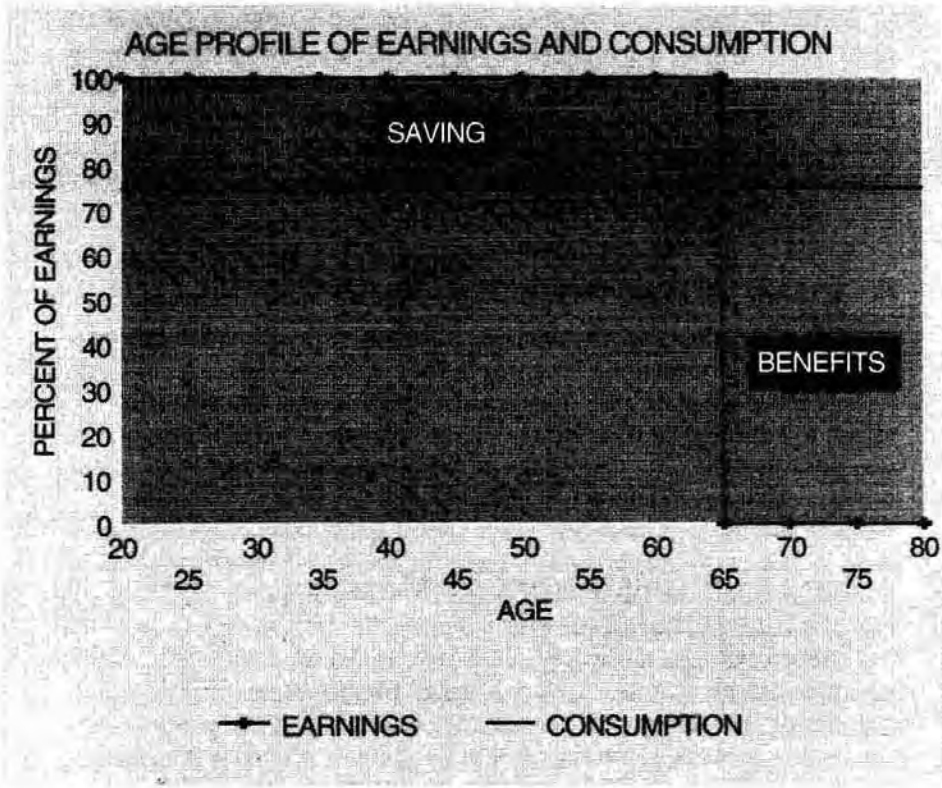

Figure 1. Life cycle earnings and consumption profiles.

In this example, there are 45 years of work and 15 years of retirement, so the replacement rate is equal to 45/60 or 75 percent.

In this example the individual's total or "gross" saving during his or her working years, and the benefits thus generated during retirement, may be divided into three components depending on the institution or provider controlling the fund: government, employer, and individual. The government component of gross saving consists of social security taxes paid by the individual and the employer. The pension component of gross saving that goes to the employer's pension plan is the employee's own contribution, plus the employer's contribution, which is also thought of as the cash compensation foregone to qualify for the future pension benefits. Any residual saving needs must be met by the individual accumulating private assets (e.g., housing, equities).

In the next few sections we explain why these three different compo-

nents of retirement savings arise, and what the role of each may be in the life cycle savings plan.

The Role of the Government in Retirement Income Provision

The role of the government in retirement income provision varies considerably across countries.[2] Despite obvious cross-national differences in the government's role, many of which are outlined in the chapter by Estelle James and Dimitri Vittas, there remains a common theme: in virtually every country the government provides a "floor" of income protection for the elderly, with the aged population's needs met by some mix of national insurance and national welfare systems, in the form of cash and medical insurance. This floor (or "safety net") is usually mandatory and non-assignable.

Several economic justifications are offered for government provision of a layer of retirement benefits for everyone. These include the following[3]:

Informational Inefficiencies

It is costly to acquire the knowledge necessary to prepare and carry out long-run plans for income provision. Although people's lifetime financial plans depend on their individual preferences and opportunities, their goals may be similar enough such that a standard retirement savings plan can prove suitable to many. By providing a basic plan that supplies at least a minimum level of old age support, the government is likely to help everyone save more efficiently than they could on their own.

Adverse Selection Problems

Because one's date of death is not known with certainty, there is considerable risk that people will outlive their retirement savings in contrast to the simplest version of the life cycle model. One way to insure against the risk of exhausting one's savings during retirement is by purchasing a life annuity contract. But the private market for life annuities suffers from adverse selection, since people with a higher than average life expectancy have a high demand for this kind of insurance. As a consequence, an average individual will find the equilibrium price for privately purchased life annuities unattractive, and will tend to self-insure against longevity risk by providing an extra reserve of retirement savings.[4] Universal and mandatory social security is one way of overcoming this adverse selection problem. By making participation in the national plan mandatory, and by

restricting benefit payouts to the form of life annuities, the social cost of adverse selection is greatly reduced.

Free-Rider Problems

An alternative rationale for a government-mandated universal retirement income system is to address the free rider problem, which arises when the citizenry collectively feels an obligation to offer a "safety net" for everyone living in the society. As a consequence, there emerges a de facto promise to provide a tax-funded "safety net" or minimum benefit even when no formal provision is made for one. If this collective commitment is well understood by all, some people might avoid saving for their own retirement, intending instead to rely on tax-funded benefits when old. Similarly, some might take on more risk in investing their retirement savings than they would in the absence of a safety net. In such an environment, mandating universal participation simply forces people to pre-pay for benefits they ultimately will receive from the system. Therefore the purpose of a mandatory system is to protect society against free riders.

While these arguments offer a rationale for why governments might believe it important to mandate a minimum level of universal participation in a national retirement program, they are silent about what the particular level of government benefits should be. These arguments are also silent on whether the government might stop after mandating a plan, leaving it to the private sector to manage the plan once it is mandated. For example, in several countries the other two legs of the retirement income stool are encouraged by government regulation as an alternative to government provision. As Andrew Dilnot shows (this volume), governments often use tax policy to provide incentives for employers and unions to sponsor pension plans that—like the government-run plan—are mandatory and non-assignable. In some of those countries, tax incentives are also given to self-employed individuals and households (who are not otherwise covered) to create a retirement fund for themselves. Use of such funds for other purposes is discouraged by imposing penalties on early withdrawal of money from the fund.

The Role of Employers in Retirement Saving

Pension plans sponsored by employers or unions are often integrated with the government-run plan, either explicitly or implicitly.[5] When combined with the government-provided retirement benefit, these plans are usually designed to replace 70 to 100 percent of pre-retirement earnings of lower and middle income employees in developed nations. Benefits are usually lower for higher-income workers, who must rely on direct

personal savings for a larger part of their retirement income. In this section we examine the motivations for and effects of employer-based pension plans.

Why are employers and/or trade unions logical sponsors of retirement plans for their employees? There are at least four good reasons:

Efficient Labor Contracting

Pension plans are an important incentive device in labor contracts, affecting employee hiring and turnover patterns, work effort, and the timing of retirement.

Informational Efficiencies

Employment-based plan sponsors often have better access than the plan beneficiaries to information needed for preparing long-run financial plans tailored to the needs of the employees. In particular, sponsors may have better knowledge of the probable path of future labor income for their employees. By providing a basic plan that saves enough to provide for replacement of anticipated future labor earnings, the corporate sponsor can potentially save more efficiently than each employee acting individually. In order for the sponsor to provide efficiently for future wage and salary replacement of employees, it is enough to have accurate forecasts of the earnings of the group as a whole and not the individual earnings of each member of the group. It is probably easier (although by no means simple) to forecast group earnings than it is to forecast an individual's future earnings.

Principal-Agent Problems

While plan sponsors and beneficiaries may have conflicting economic interests, in many respects their interests coincide. Employers who acquire a reputation for taking care of their employees' retirement needs may find it easier to recruit and retain higher quality employees. If employees' trust and good will toward the employer develop, then motivation and labor productivity may be enhanced. Employers therefore have some economic incentive to act in the best interests of their employees.

Other possible providers of retirement planning services may be less suitable as beneficial agents of the employee. Insurance agents, stock brokers, and others who are often engaged in providing these services to individual households may be less trustworthy than an employer because they may be interested in selling the individual some product or service that the individual might not choose were he or she well-informed. These

other agents may be motivated to persuade the individual to save too much for retirement or to invest in inappropriate ways. Anyone who has ever tried to find competent and impartial personal financial planning or investment advice is aware of the difficulties.

Access to Capital Markets

Plan sponsors often have access to capital markets that is unavailable to their employees acting as individual savers. A risk faced by an individual employee may be uninsurable directly through the capital markets, but it may be insurable through the employer. In addition, scale economies can be gleaned by large investors where small savers cannot. Of course, financial intermediaries such as insurance companies often can provide a suitable vehicle for the insurance needs of employees. But often a financial intermediary will not be willing to provide enough of the insurance desired by the individual at an efficient price because of problems of adverse selection and moral hazard.

Longevity insurance is an important example of this. In principle, longevity risk is to a large extent diversifiable and can be largely eliminated through risk pooling and sharing. But, as described earlier, the problem of adverse selection can make the private insurance market for life annuities inefficient. Group insurance through pension plans is often seen as a solution to this problem.

Defined Benefit and Defined Contribution Pension Plans

In order to investigate aspects of pension plans more fully it is useful to define a few terms. Pension plans are then described in terms of "who," "when," and "how much" is promised in benefits and how much in the way of contributions is required to sustain the plans.

In the nations that are the focus of analysis in this book, we follow convention in describing two polar types of pension plans: defined contribution and defined benefit plans. In a defined contribution plan, a formula specifies the amount of money that must be contributed to the plan, but not benefit payouts. Contribution rules usually are a predetermined fraction of salary (e.g., the employer contributes 10 percent of the employee's annual wages to the plan), although that fraction need not be constant over an employee's career. The pension fund consists of a set of individual investment accounts, one for each covered employee. Pension benefits are not specified, other than that at retirement the employee gains access to the total accumulated value of contributions and earnings

on those contributions. These funds can be used to purchase an annuity, or become accessible as a lump sum.

In a defined contribution plan, the participating employee frequently has some choice over both the level of contributions and the way the account is invested. In principle, contributions could be invested in any security, although in practice most plans limit investment choices to bond, stock, and money market funds. The employee bears all the investment risk; the retirement account is, by definition, fully funded by the contributions, and the employer has no legal obligation beyond making its periodic contributions. Investment policy for defined contribution assets is essentially the same as for any tax-qualified individual retirement account. Indeed, the main providers of investment products for these plans are the mutual funds and insurance companies that also serve the general investment needs of individuals. Therefore in a defined contribution plan much of the task of setting and achieving retirement income replacement goals falls on the employee.

In a defined benefit plan, by contrast, the pension plan specifies formulas for the cash benefits to be paid after retirement. The benefit formula typically takes into account years of service for the employer and level of wages or salary (e.g., the employer pays a retired worker an annuity from retirement to death, the amount of which might be equal to one percent of the employee's final annual earnings multiplied by years of service). Contribution amounts are not specified, and the employer (called the "plan sponsor") or an insurance company hired by the sponsor guarantees the benefits and thus absorbs the investment risk. The obligation of the plan sponsor to pay the promised benefits is similar to a long-term debt liability of the employer.

As measured either by number of plan participants or total assets, the defined benefit form of pensions dominates in most countries around the world. This is so in the United States, although the trend since the mid-1970s is for sponsors to select the defined contribution form when starting new plans. But the two plan types are not mutually exclusive. Many sponsors adopt defined benefit plans as a "primary" plan, in which participation is mandatory, and supplement them with voluntary defined contribution plans. Moreover, there are some plan designs that are "hybrids" combining features of both plan types. For example, in a "cash balance" plan each employee has an individual account that accumulates interest. Each year, employees are told how much they have accumulated in their account, and if they leave the firm, they can take that amount with them. If they stay until retirement age, however, they receive an annuity determined by the plan's benefit formula. A variation on this design is a "floor" plan, which is a defined contribution plan with a

guaranteed minimum retirement annuity determined by a defined benefit formula. These plan designs usually take into account the benefits provided by the government-run system.

From the employee perspective, the major advantage of the defined benefit approach is that it offers plan participants who stay with the same employer a guaranteed benefit designed to replace their pre-retirement labor income. The main defect of private defined benefit plans in most countries is that they do not currently offer explicit inflation insurance. The major advantages of the defined contribution approach are that it offers participants a more portable and flexible retirement savings vehicle whose value during the pre-retirement years is easier to understand and measure. In addition some employees see the cash-out access to the defined contribution plan's lump sum accumulation to be attractive. Hybrid pension plans, such as cash-balance or floor plans, are often designed to combine the best features of both "pure" types.

When Are Private Pension Plans Funded?

In the present context, we use the term "pension fund" to represent the cumulation of assets created from contributions and the investment earnings on those contributions, less any payments of benefits from the fund.[6] The pension plan is the contractual arrangement setting out the rights and obligations of all parties; the fund is a separate pool of assets set aside to provide collateral for the promised benefits. In defined contribution plans, the value of the benefits equals that of the assets and so the plan is always exactly fully funded. But in defined benefit plans, there is a continuum of possibilities. There may be no assets dedicated to the pension plan in a separate fund, in which case the plan is said to be unfunded. When a separate fund exists but assets are worth less than the present value of the promised benefits, the plan is underfunded. And if the plan's assets have a market value that exceeds the present value of the plan's liabilities, it is said to be overfunded.

Why and how does funding matter? The assets in a pension fund provide collateral for the benefits promised to the pension plan beneficiaries. A useful analogy is that of an equipment trust. In an equipment trust, such as one set up by an airline to finance the purchase of airplanes, the trust assets serve as specific collateral for the associated debt obligation. The borrowing firm's legal liability, however, is not limited to the value of the collateral. By the same token, if the value of the assets serving as collateral exceeds the amount required to settle the debt obligation, any excess reverts to the borrowing firm's shareholders. So, for instance, if the market value of the equipment were to double, this would greatly increase the security of the promised payments, but it would not

increase their size. The residual increase in value accrues to the shareholders of the borrowing firm.

The relation among the shareholders of the firm sponsoring a pension plan, the pension fund, and the plan beneficiaries is similar to the relation among the shareholders of the borrowing firm in an equipment trust, the equipment serving as collateral, and the equipment-trust lenders. In both cases, the assets serving as collateral are "encumbered" (i.e., the firm is not free to use them for any other purpose as long as that liability remains outstanding), and the liability of the firm is not limited to the specific collateral. Any residual or "excess" of assets over promised payments belongs to the shareholders of the sponsoring firm. Thus, the greater the funding, the more secure the promised benefits. However, whether the plan is underfunded, fully funded, or overfunded, the size of the promised benefits does not change.

Why do employers fund their defined benefit plans? Reasons appear to vary across countries. First, funding offers benefit security if there is no government insurance of pension benefits, or only partial insurance. Employees may demand that the future pension promises made to them by their employer be collateralized through a pension fund (Mitchell and Smith, 1994). In the United Kingdom, for example, there is no government pension insurance beyond the minimum guaranteed pension of the State Earnings Related Pension scheme (SERPs). Pension funding in this case provides an important cushion of safety for retirement income (Daykin this volume).

Second, some countries impose minimum funding standards by law. These standards seek to insure that promised pension benefits are paid even in the event of default by the corporate sponsor, and also aim to protect the government (and the taxpayer) from abuse of government-supplied pension insurance. In the United States, for example, a government pension insurance group called the Pension Benefit Guaranty Corporation (PBGC) must continue pension payments offered by defined benefit pension plans even if their sponsoring corporations become bankrupt with an underfunded pension plan. Recent changes in United States pension law have required that the PBGC insurance premium must depend on the plan's extent of underfunding, and have also eliminated the possibility of voluntary termination of an underfunded pension plan (Ippolito 1989; Utgoff 1992). In Canada, pension insurance was offered only by a single province for a limited number of years (Pesando, this volume).

Third, there may be tax incentives for plan sponsors to fund their defined benefit plans. As Dilnot (this volume) notes, the tax advantage to pension funding in the United States and the United Kingdom stems from the ability of the sponsor to earn the pre-tax interest rate on pen-

sion investments. It is no accident that in Germany, where employers face a tax disadvantage if they fund their pension plan, pensions are predominantly unfunded (Ahrend, this volume).

Finally, funding a pension plan may provide the sponsoring firm with financial "slack" that can be used in case of financial difficulties the firm may face in the future (Bodie et al. 1987). In the United States, pension law allows plan sponsors facing financial distress to draw upon excess pension assets by reduced funding or, in the extreme case, voluntary plan termination. The pension fund therefore effectively serves as a tax-sheltered contingency fund for the firm.

Inflation and the Adequacy of Pension Funding

For the purposes of measuring funding adequacy, it is critical to consider the extent to which defined benefit pension promises are protected against inflation. There is considerable controversy among pension professionals in the academic and business worlds about whether it is appropriate to view pension promises as fixed in nominal or real terms. The resolution of this issue determines one's view of the adequacy of pension funding and of the appropriate way for a plan sponsor to hedge the liability.

As previously described, in a defined benefit plan a retiree's pension benefit amount is determined by a formula that takes into account the employee's history of service and wages or salary. Under the terms of the defined benefit promise, the plan sponsor is required to provide this benefit regardless of the investment performance of the pension fund assets. As a consequence, the benefit annuity promised to the employee is the employer's liability. What is the nature of this liability?

To answer this question, one matter that must be confronted is whether promised benefits are protected from inflation at least until the worker retires. Many believe that final-pay retirement benefit formulas, for instance, offer indexation inasmuch as earnings track inflation. But this is a misperception in many countries. In the United States, for instance, social security benefit payments at retirement are indexed to a general wage series, but pension benefits even in final-pay private sector plans are "indexed" only to the extent that (1) the employee continues to work for the same employer; (2) the employee's own wage or salary keeps pace with the general index; and (3) the employer continues to maintain the same plan. In the past few decades these three conditions have not generally held: turnover and plant downsizing have been significant for older workers; real wages have fallen on average; and pension plans have been altered quite frequently over time.[7]

A related concern is that few private sector defined benefit pension

plans offer an explicitly inflation-protected benefit under the plan's formula. However, many plan sponsors in the United States have from time to time provided voluntary increases in benefits to their retired employees, depending on the financial condition of the sponsor and the increase in the living costs of retirees (Clark 1990; Gustman and Steinmeier 1993). Some observers have interpreted such increases as evidence of implicit cost of living indexation (Ippolito 1986). These voluntary ad hoc benefit increases, however, are very different from a formal COLA (cost of living adjustment).

The difference between indexed and non-indexed benefits emerges quite clearly in comparing the way inflation protection of accrued pension benefits is treated in different countries. In the United States, the plan sponsor is under no legal obligation to pay more than the amount explicitly accrued under the plan's benefit formula. Since very few U.S. employers offer pension benefits automatically indexed for inflation, this lack of inflation indexation gives rise to the portability problem. Workers who change jobs wind up with lower pension benefits at retirement than otherwise identical workers who stay with the same employer, even if the employers have DB (defined benefit) plans with the same final-pay benefit formula. In the United Kingdom, by contrast, accrued benefits are indexed to the cost of living up to the age of retirement (subject to a 5 percent per year cap). Thus even a terminated employee has indexation for general inflation up to retirement age, as long as his or her benefit is vested (Daykin, this volume).

Insuring Private Pensions

A major putative advantage of a defined benefit pension plan over a defined contribution plan is that it protects the employee against investment risk.[8] The economic efficiency of this protection against investment risk is enhanced by the provision of guarantees against default risk. To understand the social welfare gains from guarantees of pension annuities, it is critical to distinguish between employees and investors (stockholders and bondholders) in firms that provide pension annuities. The distinction is that, unlike the firm's investors, the employees holding the sponsor's pension liabilities strictly prefer to have the payoffs on their contracts as insensitive as possible to the default risk of the firm itself. The function served by a pension annuity is for the beneficiaries to receive a specified benefit upon retirement. That function is less efficiently performed if the contract instead calls for the benefit to be paid in the joint event that the employee retires and the firm is still solvent.[9]

Even if the sponsoring firm offers an actuarially fair increase in the employee's cash wages to reflect the risk of insolvency, it is still likely that an

employee might prefer a pension annuity with the least default risk. Employees typically have a large non-diversified stake in the firm already.[10] They may have invested in firm-specific human capital, which loses value if the firm does poorly. Thus, few employees would consciously agree to accept default risk on their pension benefits in order to increase their expected cash wages. This is true even when the employee has all the relevant information necessary to assess the default risk of the firm. In most cases, the employees do not have the relevant information, and this fact makes the welfare loss even greater.

For example, consider the profile of a "typical" defined benefit plan beneficiary. The vast majority of those covered by PBGC guarantees in the United States are blue collar and white collar workers for whom pension benefits constitute a large portion of total retirement savings. These employees are very unlikely to have asset portfolios of sufficient size or the investment expertise necessary to hedge the non-diversifiable risks of their defined benefit pension asset. Only the most highly compensated managerial employees of the firm might have the financial wealth and knowledge required to diversify away the risks of their defined benefit pension claims. But to hedge this risk, they would effectively have to take a short position in the sponsoring firm's equity. Typically, managers and employees are prohibited from shortselling the firm's securities by the provisions of their incentive compensation package.

In contrast, an investor in the stocks or bonds issued by the sponsoring firm is explicitly taking an interest in the fortunes of the firm itself. The function of these securities is to allow investors to participate in the risk and return prospects of the firm. Investors can diversify away much of the default risk associated with any one specific firm as part of their total portfolios. Employees with a substantial part of their wealth in firm-specific defined benefit pension annuities usually cannot achieve such optimal diversification. They are like investors who are constrained to hold a large fraction of their wealth in the form of long-term bonds issued by a single firm, which is also their employer.[11] Thus, both their tangible and human capital are significantly exposed to the fortunes of a single firm.

The above reasoning establishes a rationale for insuring defined benefit pensions against the risk that the plan sponsor will default on its promise to provide benefits. It does not establish a rationale for the government to provide such insurance. Indeed, James Pesando's analysis (this volume) of the pension systems in several developed countries reveals that the number of governments that provide such insurance is remarkably limited.

Whether or not a national government offers pension insurance, there is a case for government oversight. If a significant part of the private

pension system failed to deliver the benefits promised to millions of people who had relied on those benefits for their retirement security, the government would surely step in to provide at least some of those benefits. Thus, even in the absence of a formal system of pension insurance, the government is the de facto "guarantor of last resort."

Pension Investment Policy and Benefit Security

As already stated, in a defined contribution pension plan the beneficiary's retirement income depends directly on the performance of the assets in the fund.[12] The employee bears the entire investment risk; the retirement account is, by definition, fully funded by the contributions, and the employer has no legal obligation beyond making its periodic contributions. For defined contribution plans, investment policy considerations are essentially the same as for a tax-qualified individual retirement account: a trade-off between risk and expected return.

In a defined benefit plan, the sponsor's investment policy does not, in general, affect the retirement benefits received by the plan's beneficiaries. For well-funded plans or for plans sponsored by financially healthy employers, the promised benefits are paid regardless of the pension fund's investment performance. Nevertheless, investment performance in defined benefit plans can affect benefit payments if the plan sponsor defaults with inadequate assets to cover promised benefits, and government insurance is insufficient to cover all the resulting shortfall (i.e., the insured benefits are capped at some level).

Even for defined benefit plans that have fully funded the entire benefit promise, investment policy can matter if the sponsor pursues any policy other than strict "matching" of assets to the plan's liabilities to the beneficiaries. For example, for pension funds that invest heavily in equity securities, a funding shortfall can quickly develop if interest rates decline (thus increasing the present value of promised benefits) or if stock prices fall precipitously. If a funding shortfall is not subsequently covered by either the plan sponsor or the government insurer, then some of the promised benefits will not be paid.

Funding of Pensions in the Public Sector

In a strictly unfunded pay-as-you-go government-operated pension system, retirees' benefits depend entirely on the stream of revenue generated by taxes levied on currently active workers. If this were exactly true, benefits would fluctuate with changes in economic fortunes, rising when tax collections rise and falling in recessions. In practice this does not happen in lock-step, since most government pensions are of the defined

benefit variety and promise to deliver retirement benefits according to a specified benefit formula. Nevertheless, without funding, benefit payouts are susceptible to cuts when the public sector experiences a rising ratio of retired to active workers and/or large government deficits. In this event benefits accrued under that formula may be altered as a way of reducing this form of government debt.

As a case in point, consider the 1983 reform of the United States social security system. A changing demographic structure for workers led many to become concerned that there could be dramatically reduced benefits in the future in a pure pay-as-you-go system. Hence, a key provision of that reform was to require substantial pre-funding of future benefits. To do this, the social security payroll tax rate was raised and the excess of current revenues over current benefit payments was invested in government bonds held in a trust fund.

While this reform apparently funds the plan, some are less sure about the result. In a private plan, funding is used to insure against default by the plan sponsor. Under social security, the promise to pay benefits seemingly has the same level of full faith and credit of the government as the bonds used to fund the plan. Yet there seems to be a belief that pre-funding will ensure that, when workers reach retirement, they will indeed receive benefits approximating those promised under the current benefit formula (i.e., the one in effect when they were active in the labor force).

A problem with this view is that there remains a potential risk associated with benefits promised under a government-run retirement income system. Even if those currently in the government are committed to maintaining the current schedule of promised benefits, they cannot credibly fully bind future governments to do so. This arises from a paradox of power: the government is too powerful to bind itself credibly to any set of existing rules (Diamond 1993). Indeed, it has become evident in many countries that that benefit formula and the method of financing those benefits can be and often is changed. In the United States, for example, the Congress has changed both in the past and it can surely do so again in the future. In Europe benefit promises have been eroded by inflation to the same end (Turner and Rajnes, this volume), and perhaps more strikingly, public pensions in Chile were recently radically restructured, replacing the defined benefit public social security system with a mainly private defined contribution plan (Myers 1992).

Another example that highlights the importance of funding in securing promised pension benefits in government-run plans is the case of underfunded state and local government retirement plans in the United States (Mitchell and Smith 1994). In more than one instance, firefighters, police officers, and other public employees have been required to

defer or even forgo a portion of the retirement benefits they had been promised because taxpayers were unwilling to shoulder the financial burden they impose. Had these plans been fully funded as pension benefits were accruing, it is doubtful that these public employees would now be asked to forego any of their pension benefits.[13]

These examples bring out an important difference between government and private sector obligations. A private sector plan sponsor cannot unilaterally repudiate its legal liability to make promised payments. It can default because of inability to pay, but it cannot repudiate its legal obligations without penalty. On the other hand, a government—because it has the power to legislate changes in the law—can sometimes find ways to repudiate such obligations without immediate and obvious penalty. Indeed, an integrated system in which private plan sponsors supplement government-provided pension benefits to achieve a promised "replacement ratio" of pre-retirement earnings can be seen as a type of private-sector insurance against the political risks of the government-run system (Merton, Bodie, and Marcus 1987; Myers 1977).

In sum, a mixed public-private system of retirement income provision is a way of reducing the risks of each separate component through diversification across providers. Public sector pension plans can change the law to reduce promised benefit levels. Private sector pension plan sponsors are committed by law (and perhaps reputation) to pay promised benefits, but they may default. And sometimes, as an additional linkage reinforcing the first two legs of the retirement income stool, the government may insure private pension benefits against the risk of default.

Overview of the Volume

Before turning to this book's individual contributions, the reader may find useful an overview of the volume and its parts. The chapters are divided into three sections, with the first set of studies devoted to pensions in developed nations; the second focusing on pension issues in developing countries; and the final section unifying the discussion by concentrating on regulatory issues affecting pensions the world over. We discuss each in turn.

Policymakers in developed countries sense rising concern about old-age retirement income security, particularly in the light of aging trends and overstressed government budgets which undermine retirement income programs. Nowhere is this more evident than in the United Kingdom, where a pension investment scandal focused awareness on severe British pension problems. In Chapter 2, the United Kingdom's Chief Actuary Christopher Daykin begins with an unusually clear statement of the complex British multiple-tier pension system. For the first tier the

national government guarantees a modest flat rate indexed benefit, on top of which employees may join either a state-provided earnings-based pension system or a private system. The private system includes two options, either an employer-sponsored pension (if a firm has "contracted out" from the government second-tier), or a personal pension plan. Most of the private pensions are of the defined benefit variety.

As Daykin shows, coverage by group pensions is very high among employees of large organizations, and contracting out is extremely popular. Nevertheless, there is no common regulatory framework governing these pensions, there are few legal requirements concerning the responsibilities and authority of trustees, and funding as well as reporting requirements are rather relaxed by United States standards. In addition, pension plan liabilities in Britain are not formally insured, though in the event of company bankruptcy, a pension plan has the option to buy back workers' rights in the state-guaranteed earnings-based system. While this multiple-pillar arrangement has some strengths, it also suffers from some important vulnerabilities. Many of these are the subject of current efforts to reform the British pension system identified by Daykin, but as he points out, some of the important risks remain less than fully insured. Daykin also raises other salient issues in this chapter regarding the future of pensions, including mobile employees' desires to maintain pension membership as the European Community relaxes migration barriers. In his commentary on this work, Anthony M. Santomero raises additional questions about whether current redesign efforts will go far enough to secure private pensions in that nation.

Common themes are sounded in a companion chapter about occupational pensions in Germany by Peter Ahrend, a German benefits attorney. As in the United Kingdom, in Germany a national social security system underlies an employer-sponsored second tier. Most unusual to pension experts from other nations is the German practice of holding only "book reserves" in a pension fund, which means that retiree benefit payments depend entirely on the sponsoring company's assets. Since there is no separate trust fund established for pension accumulations, the pension promise represents a long-term claim against the corporate balance sheet, and the sponsoring company is allowed to defer its taxes by virtue of these book reserves.

Ahrend goes on to describe a German mutual insurance arrangement covering guaranteed vested benefits and retiree benefits after age 60 in the event of company bankruptcy; this arrangement, first established in 1974, is operated on a pay-as-you-go basis and is backstopped by a federal bank. While the arrangement has apparently worked fairly well thus far, the pension system is facing new threats of late, including the fact that employment has not grown quickly in the last decade, the population is

aging, and many pension plans are "closed" to new entrants. In addition, recent European Court of Justice cases have held that men must be permitted to retire as early as women. All these changes may further challenge the plans' health.

In her assessment of the German pension system, Lucy apRoberts argues that differences in tax structures as well as labor-management relations may explain why German pensions are completely invested in the sponsoring company, while United States pensions are more diversified. In Germany as well as in France, employees frequently have a stronger say in corporate management than in the United States. Marc Twinney discusses factors militating change in pensions worldwide, and finds some lessons for German pensions as well as those in North America. In particular he argues that pre-funding pension obligations is likely to become more common, particularly as international companies are judged in terms of their credit ratings. He also warns that pension accounting practices for many German firms do not meet accounting and valuation standards demanded by international capital markets.

In the final chapter on developed country pensions, the state of pensions in Japan is discussed by Noriyasu Watanabe, a Japanese pension expert. He notes that social security in Japan was recently restructured into two components, a flat benefit plus an earnings-related segment and a supplementary private plan. Nevertheless, the rapid aging of Japan's population has prompted the government to predict payroll tax rates of 35 percent by the year 2025, in order to preserve promised (pay-as-you-go) benefits payable at age 60. Private defined benefit pension plans developed after World War II under a regulatory structure allowing book reserves as in Germany; in these plans, most benefits are payable as sizable lump sum benefits (about US$ 200,000 at retirement).

Three interrelated and very deep-seated challenges are identified as key to the future development of pensions in Japan. First, as Watanabe says, "good accounting rules for pension systems have not yet been established." This leads to the second problem: employees fail to understand their exposure to pension risk and their lack of legal recourse in the event of company failure. Finally, financial and insurance markets are facing deregulation in Japan, leading to increased competition among institutions managing the funds. In his commentary on this chapter, Robert Clark broadens the discussion to include challenges to the Japanese retirement system wrought by rapid population aging and low mandatory retirement ages. Indeed, many developed nations would be well served by studying how the Japanese adapt their pensions to the new social and economic environment, inasmuch as that nation's population is aging more rapidly than the population in most other OECD countries.

The second section of this volume carries on some of the themes devel-

oped in the first, and shows clearly that retirement policy in emerging economies confronts many of the same problems as in developed nations. This is somewhat ironic, because development specialists for the past several decades have sought to solve the most immediate problems facing poor countries—widespread morbidity and mortality, insufficient food production, and inadequate jobs for the working-age population—only to find that their successes imply the burden of an increasingly aging population.

These phenomena, and how pensions can respond to such massive socioeconomic changes, are taken up in the chapter by Estelle James and Dimitri Vittas from the World Bank. These authors review a range of nationally mandated provident funds beginning with Malaysia's, established in 1951, and others in Asia and Africa. Most recently, in 1981, Chile replaced its national, unfunded, social security system with a mandated privately managed, defined contribution plan into which 10 percent of pay must be contributed. Many development experts attribute at least some of Chile's economic boom over the last fifteen years to the rapid growth of the pension system, including the rapid deepening of the capital market and excellent rates of return. Nevertheless this purely private system potentially limits the flexibility with which governments can exercise fiscal and monetary policy, tends to produce high administrative costs, and does not guarantee a minimum income to retirees. Partial answers to these issues are offered by the authors.

Two sets of commentaries provide an interesting counterpoint to this chapter. Alan Auerbach emphasizes the risks associated with mandated savings schemes and is skeptical that they can be used either to redistribute income or to generate "cheap capital." Donald S. Grubbs agrees that forced savings systems are needed when employees are too shortsighted to make provision for themselves, but argues that a government-run system that invests in private assets may potentially be more cost effective than the Chilean model. In any event, he holds that a universal defined benefit plan is needed to guarantee a floor of retirement income, a floor that a defined benefit contribution plan does not promise.

Conditions are somewhat more primitive elsewhere in the developing world. As John A. Turner, pension specialist from the United States Department of Labor, points out, the countries of central and eastern Europe confront a particularly difficult set of issues in contemplating retirement policy and the role pensions can play. Turner and colleague David M. Rajnes review several economic preconditions needed to set up pensions, and point out that both Hungary and the Czech Republic have experienced grave difficulties investing in foreign securities inasmuch as they lack foreign exchange. Ownership of domestic assets is made difficult by the slow pace of privatization, though in Slovakia, for in-

stance, workers have gained shares in jointly held Investment Privatization Funds. Of course inflation is an ever present worry threatening real returns, made worse by bankrupt social security systems, confusion over property rights, and lack of regulation regarding financial malfeasance. Lessons of the British, the German, and of course the Chilean models are assessed with regards to the feasibility of their applicability in these European nations.

The third and final section of this volume examines the main ways in which governments mold the private pension environment. The policies deemed most important in the present context are (1) taxation of pension contributions and benefits, (2) regulation of pension financing, and (3) pension insurance. Many countries make a formal stance on these policy issues, often explicitly as part of a coordinated approach to encouraging retirement saving, while other times they act implicitly. But as the analysis chapters demonstrate, these three government policies profoundly influence the shape and strength of the pension institution in all nations.

In a very useful analysis Andrew Dilnot of the Institute for Fiscal Studies offers a taxonomy to be used in thinking about how governments tax pension plans. He notes that taxes may be levied at one of three points: when contributions are made, when plan assets earn income, and when benefits are received. In the United States, for instance, the government (more or less) allows tax-protected contributions and inside buildup but taxes pension benefits at payout. As the discussion notes, this yields a quite different outcome than a system that taxes inflows but exempts payouts, particularly during inflationary times.

Of special interest to pension tax experts is the situation of pension taxation in New Zealand and Australia, described in some detail. While both countries recently simplified their tax structure for pensions somewhat, Dilnot still holds that there is no feasible tax system that both raises revenues and is fiscally neutral. On the other hand, he does point out that available statistical evidence on the likely effects of taxes on pension savings suggests that the behavioral responses are likely to be small. The discussion concludes with a critical analysis of the concept of tax expenditures, which he concludes makes little sense theoretically or practically.

In her comments on this chapter, Angela Chang emphasizes that curtailing the favorable tax treatment of pensions may undermine their contribution to old age saving. She then goes on to outline additional research questions that require analysis, including the matter of how and whether to permit pension participants to take lump-sum distributions from their pensions and, if so, how much to tax them. Sylvester Schieber sketches exactly how inflation affects real pension returns under dif-

ferent scenarios and emphasizes that, in the United States at least, government tax policy toward pensions often conflicts directly with the goal of increasing retirement income.

While policy experts discuss pension taxation, those interested in the role of pensions in corporate finance emphasize pension funds' investments, as well as the risks and returns they bring to sponsoring companies. Just how widely these differ across the Organization for Economic Cooperation and Development (OECD) nations is the subject of E. Philip Davis's chapter, seen from his international vantage point at the European Monetary Institute. Davis finds dramatic variability in the ways in which pensions are financed across the OECD nations, beginning with different practices as between funded versus pay-as-you-go or unfunded plans. Looking across a dozen developed nations, he shows that countries with smaller social security systems tend to have larger private funded plans, while nations that have "generous" tax provisions have larger private funded plans, and that pensions are larger where contracting out is available.

How pension assets are invested, conditional on there being some sort of funding, also varies widely across nations. This is in part due to widespread regulation of portfolio composition—as in Japan, where equities and foreign assets may not exceed a threshold level; in Germany, where foreign asset holdings are limited to 4 percent and equities held at 20 percent; and in France, where at least 34 percent of mutual societies' funds for pensions must be deposited in state bonds. These regulations are apparently quite effective in influencing what pension plans hold: in Sweden, for instance, pensions held only one percent in equity, but more than half the funds in mortgages and mortgage-related bonds, while equity made up over 60 percent of pension holdings in the United Kingdom. Davis documents wide variation in fund performance resulting from these vastly different holdings.

In his provocative comments on this chapter, Marshall Blume offers several caveats to Davis's arguments. He questions whether funded plans can solve the problems with which pay-as-you-go systems cannot cope. Blume's answer is "perhaps not," particularly if the preferred solution is to lower pension benefits offered to today's retirees. He goes on to critique the author's views that unfunded plans crowd out private saving and that pensions should invest in equities. Based on his own reading of the data, neither conclusion is persuasive.

Plan termination insurance is the subject of James Pesando's work. This Canadian economist and long-time pension expert asks why governments sometimes insure pensions, and comes to the conclusion that no country has yet determined the economically sensible risk-adjusted premium needed to pay for this type of bankruptcy coverage. He notes that

of 11 Canadian jurisdictions (10 provinces and the national government) only one, the Province of Ontario, adopted a form of pension insurance in 1980, which it is now pulling back from by halting the offering of inflation-indexed pension coverage. The author also delves into pension guarantee funds in the United States, Germany, and the United Kingdom, and concludes that these cross-subsidize less profitable firms by taxing more productive ones. In his view, some of the coverage is associated with redistribution toward certain firms or industries, rather than inefficiencies in the market for insurance.

Pesando's chapter is discussed by two commentators who disagree with each other to a very substantial degree. On the one hand, Dallas Salisbury salutes the transfer function of pension insurance mechanisms, believing as he does that pension insurance can only be operated by the government precisely because the strong would not be willing voluntarily to subsidize the weak. On the other hand, Carolyn Weaver believes that moral hazard makes pension insurance unworkable as insurance, and notes that few countries have quantified the risk governments carry when guaranteeing private pension benefits. These problems deserve additional research, and will certainly receive more debate.

Conclusions

The conceptual framework for understanding cross-national experiences and policy issues addressed in this book may be summarized by providing brief answers to the key questions mentioned at the outset.

What are the roles of the government, employers, and individuals in providing retirement income?

In most developed nations, and increasingly in emerging economies, the retirement income system can be viewed as a three-legged stool. The first leg is government-provided pension and welfare programs for the aged; the second is employer- or labor union-provided pensions, and the third is individual and family support. This volume demonstrates substantial variation in the mix of the three sources of retirement income, across households and regions of the world.

One can view a mixed public-private system of retirement income provision as a way of reducing the risks of each separate component through diversification across providers. Private sector pension plan sponsors are committed by law (and perhaps reputation) to pay promised benefits, but they may default. Public sector pension promises are backed by the government's taxing authority, but governments sometimes alter benefit promises by changing the legislated benefit formulas after the fact. As an

additional linkage reinforcing the first two legs of the retirement income stool, there may be government insurance of private pension benefits.

Why do some employers voluntarily sponsor pension plans for their employees?

Companies find that pensions achieve many useful labor force objectives. Pension plans are an important incentive device in labor contracts, affecting employee turnover, work effort, and the timing of retirement. Employers who acquire a reputation for taking care of their employees' retirement needs may find it easier to recruit and retain higher quality employees. Workers desire pensions when their companies can help them tailor their long-run financial plans to their needs, and may find that employers are more suitable beneficial agents of the employee than are other potential providers of retirement planning services. Additionally, plan sponsors often have access to capital markets that may be unavailable to employees acting individually, permitting them to insure risks that are uninsurable privately through group provision.

Which type of pension plan offers greater security to employees — defined benefit or defined contribution?

The major advantage of a defined benefit pension is that it offers plan participants who remain with the same employer a specified benefit designed to replace a portion of their pre-retirement labor income. The main defect of a private defined benefit plan in most countries is that it does not usually offer explicit inflation insurance, and benefit payments are subject to default in the event of corporate bankruptcy. In contrast, the major advantage of a defined contribution pension is that it offers participants a more portable and flexible retirement savings vehicle whose accumulation value prior to retirement is easier to understand and measure. Hybrid plans, such as cash-balance plans, combine features of both "pure" pension types.

Why do some employers fund their defined benefit pension plans while others do not?

Funding in private plans offers benefit security when there is no government insurance of pension benefits, a factor that is recognized in some countries by requiring minimum legal funding standards and by supplying tax incentives for plan sponsors to fund their defined benefit plans. In public pension plans, funding can offer some protection against changes in benefit formulas in times of fiscal stress. In addition, funding a pension plan may provide the sponsor with financial "slack" useful should the firm face future financial difficulties.

What effect does a pension fund's investment policy have on benefit security?

In a defined contribution pension plan, a beneficiary's retirement income depends directly on the investment performance of the fund assets, and as with any investment, performance will depend on the assets' risk and expected return patterns. In a defined benefit plan, the plan sponsor's investment policy can affect benefit payments if the plan sponsor defaults with inadequate assets to cover promised benefits and if there is insufficient government insurance to cover all the resulting shortfall (i.e., if no government insurance is available, or if insured benefits are capped at some level).

What form of government regulation of employer-provided pensions is desirable?

In some countries, the government provides explicit insurance against default risk on private-sector defined benefit pension promises. But whether or not the government offers pension insurance, there is a case for government oversight. If a significant part of the private pension system fails to deliver the benefits promised to millions of people who had relied on those benefits for their retirement security, governments are asked to step in to provide at least a minimum old-age income benefit. Thus, even in the absence of a formal system of pension insurance, governments often become the de facto "guarantor of last resort."

Notes

[1]See Friedman (1957) and Modigliani and Brumberg (1954).

[2]This section draws on Bodie (1990a) and Bodie and Merton (1993).

[3]See Bodie (1989), Diamond (1977), Kotlikoff (1987), McGill (1977), Merton (1983), and Wachter (1988).

[4]Rothschild and Stiglitz (1976) analyze theoretical models of adverse selection in an insurance setting. Friedman and Warshawsky (1988) study the private annuities market empirically, and conclude the annuities are priced unattractively for the average individual.

[5]This section draws on Bodie (1990a), Gustman and Mitchell (1992), and Gustman, Mitchell and Steinmeier (1994).

[6]For a survey of pension funding practices in various countries, see Bodie (1990c), Davis (Chapter 8, this volume), and Turner and Dailey (1990).

[7]Hutchens (1993) discusses problems of job loss and displacement of older workers; earnings patterns are discussed by Katz and Murphy (1992); and Luzadis and Mitchell (1991) show that defined benefit pension plan formulas have changed rapidly over time.

[8]For a further discussion of pension insurance, see Bodie and Merton (1993) and Pesando (Chapter 9, this volume). For a more general discussion of the role of the government and private sectors in providing guarantees against default risk, see Merton and Bodie (1992).

[9]Ippolito (1986) argues that, when workers are represented by a union, they accept default risk of the sponsoring firm (through the pension plan) as a way of binding the union to bargain more cooperatively with management. Under his assumptions, therefore, a defined benefit plan with default risk is efficient. Pesando (Chapter 9, this volume) offers additional arguments to support this view.

[10]The risk exposure is especially large for a lifetime employee of a single firm, as is quite common in Japan (Watanabe, this volume). Even if the employee is willing to bear risk, we know from portfolio theory that efficient risk bearing calls for broad diversification across various firms and asset classes. Here, the employee's entire pension benefit is tied to the fortunes of a single firm.

[11]Should employees wish to invest in their company's securities, they often can do so through a variety of special employee stock ownership programs. These investment programs are usually voluntary. By contrast, participation in an employer's defined benefit plan is usually a condition of employment. See Bodie and Munnell (1992).

[12]This section draws heavily on Bodie (1990b, 1991).

[13]If pension benefits were funded as they accrued, local governments would have to recognize the cost of providing them in their current budgets. In the past, promising more pension benefits without funding them was a way for local government to offer increases in compensation without public accountability. The cost of actually paying the benefits when they came due would then become a problem for later generations of politicians. This may help explain why there is a reluctance to fully fund these benefits; see Mitchell and Smith (1994).

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Glossary of Terms

Defined Benefit and Defined Contribution Pension Plans

Pension plans are classified into two types: defined contribution (DC) and defined benefit (DB). As the names suggest, in a DC plan a formula determines contributions (e.g., 10 percent of annual wages), whereas in a DB plan a formula defines benefits (e.g., one percent of final pay per year of service). In a defined contribution plan, the employee receives at retirement a benefit whose size depends on the accumulated value of the funds in the retirement account. The employee bears all the investment risk, and the plan sponsor has no obligation beyond making its periodic contribution. In a defined benefit plan the plan sponsor or an insurance company guarantees the formula benefits and thus absorbs the investment risk. In some countries governments insure a portion of defined benefit pension promises in the event of corporate sponsor bankruptcy; defined contribution benefits are not, however, insured by governments.

Pension Funding

With defined benefit plans, there is an important distinction between the pension plan and the pension fund. The plan is the contractual arrangement setting out the rights and obligations of all parties; the fund is a separate pool of assets set aside in a trust to provide collateral for the promised benefits. In defined contribution plans, the value of the benefits and the assets are equal by definition, so the plan is always exactly fully funded. But in defined benefit plans there need not be a separate fund, in which case the plan is said to be unfunded. In an unfunded plan, the sponsor's own assets back the pension claims.

Vesting and Portability

Employees are vested in their pension plan if they retain their pension benefits even if they stop working for the employer sponsoring the pen-

sion plan. Vested benefits are not necessarily portable, where portability refers to the ability of a vested worker to take pension benefits from one employer to another. In the United States, employees who have accrued benefits under one employer's defined benefit plan usually cannot transfer those accruals to another employer, even if they are vested. The result is that benefits of employees who change jobs are not protected against inflation. In the United Kingdom, occupational pensions permit greater portability.

Pension Indexing

There are two types of indexing: market indexing and inflation indexing. Market indexing consists of managing an investment portfolio so as to match the performance of some broad market index of stocks, bonds, or a combination of both. Inflation indexing consists of tying benefits to an index of the cost of living. Market indexing became a common investment strategy of pension funds during the 1980s in the United States, but automatic inflation indexing of private pensions is still rare.