19 Pensions and retirement

Jonathan Barry Forman

1 Introduction

A Background: a brief history of retirement

Since ancient times, there has always been a significant percentage of the population that lived into their 50s, 60s and 70s. In the Roman Empire, for example, some 6 or 8 per cent of the population was over the age of 60 (Dilley 2004). Of course, in ancient times, most people worked as long as they could. There was no organized system of retirement. Instead, property ownership typically stayed with your parents until they died, and most ancient societies placed a high value on honoring and supporting one’s parents. Just as the ancients looked to their families for support in old age, today Americans look to institutions: employer-sponsored pension plans and government-sponsored Social Security.

With the advent of the industrial revolution and urbanization, production shifted from the household level to larger and more efficient enterprises (Munnell and Sass 2006). At the same time, life expectancies increased dramatically. An increasing number of workers lived into old age but were no longer valuable as industrial workers.

In response, large employers and national governments created retirement programs, which defer income from working years to retirement years. The earliest programs were set up by large governments, followed by railroads and public utilities, large manufacturers, and eventually the service sector. In the United States, for example, early pensions included military and civil service systems, and the American Express Company established the first formal private pension plan in 1875 (Greenough and King 1976). By 1920, many major railroads, utilities, banks, mining and manufacturing companies had established pensions, and in 1935 the United States established its Social Security program.

1 For example, the life expectancy of a person born in 1900 was just 47.3 years, but the life expectancy of a person born in 2004 is 77.9 years. US Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Health Statistics (2007), p. 175 (table 27).

2 Social Security Act, Public Law No. 74-271.
After World War II, collective bargaining agreements greatly expanded the availability of employer-sponsored pension plans. The Welfare and Pension Plans Disclosure Act of 1958 laid the foundation for the regulatory and disclosure system that governs employer-sponsored plans today. Finally, after almost a decade of wrangling, Congress enacted the Employee Retirement Income Security Act of 1974 (ERISA). ERISA protects the pension benefits of most private-sector workers through sweeping vesting, funding, reporting, fiduciary and disclosure rules on plans; it also established the Pension Benefit Guaranty Corporation. More recently, the American Jobs Creation Act of 2004 established a new regime for taxing most nonqualified deferred compensation arrangements, and the Pension Protection Act of 2006 tightened the funding rules for private pension plans. The Pension Protection Act also encourages automatic enrollment in Internal Revenue Code (hereinafter IRC) § 401(k) plans and makes it easier for 401(k) plan sponsors to provide investment advice to participants.

B Overview of the current US pension system

American workers now receive nearly one-third of their compensation in the form of fringe benefits. For example, fringe benefits made up 30.2 per cent of the average employer cost for employee compensation of civilian
workers in March 2007 (BLS 2007a). Employers are generally required to provide legally mandated benefits for such programs as Social Security, unemployment compensation and workers’ compensation, and these now account for 7.9 per cent of compensation. In addition, many employers provide such other benefits as pensions and other deferred compensation, health benefits, paid leave, educational assistance and dependent care assistance.

The most important fringe benefits are health care and retirement plans, and Table 19.1 shows the percentage of private-sector workers participating in the major employer-sponsored health care and retirement plans (BLS 2006). The overall coverage rate for retirement plans has held relatively steady in recent years, with about half of private-sector employees participating in an employer-sponsored retirement plan; but, as more fully explained below, there has been a shift away from traditional defined benefit plans and toward defined contribution plans, especially 401(k) plans. Table 19.1 shows that the probability of having pension and health care coverage is greater for white-collar workers, for full-time workers, for union workers and for workers at larger firms. The empirical evidence also shows that the probability of fringe benefit coverage is greater for older workers, whites, highly educated workers and higher-income workers (Schwabish, 2004; Table 19.5 below).

It is important to note that the United States has a ‘voluntary’ pension system. Employers are not required to have pension plans, but if they do, they are subject to regulation. The Employee Retirement Income Security Act of 1974 (ERISA) governs most private retirement plans.

Most pension plans qualify for favorable tax treatment. Basically, an employer’s contributions to a qualified plan on behalf of an employee are not taxable to the employee when made.\(^9\) The pension fund’s earnings on those contributions are tax-exempt.\(^10\) Workers pay tax only when they receive distributions of their pension benefits, and, at that point, the usual rules for taxing annuities apply.\(^11\) Meanwhile, the employer is allowed a current deduction (within limits) for its contributions to the plan.\(^12\) The federal government routinely identifies these deviations from normal income tax rules as tax expenditures in the tax expenditure budgets it prepares annually. For example, the 2009 Federal

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\(^9\) IRC § 402.
\(^10\) IRC § 501(a).
\(^11\) IRC §§ 72, 402.
\(^12\) IRC § 404.
Budget estimates that the tax exemptions for pension contributions and earnings cost the Treasury $118.8 billion in fiscal year 2008 (Executive Office of the President and Office of Management and Budget 2008, Table 19.1).

C The international experience

Developed nations use four basic approaches to encourage the private sector to provide pensions for their workers (Rein and Turner 2004). Like the United States, some countries have voluntary private pension systems and use tax incentives to encourage employers to cover their employees (‘voluntary with incentives’).

Japan and the United Kingdom use a second approach called ‘contracting out.’ Under this approach, employers and workers may reduce their

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Table 19.1 Percentage of workers in private industry participating in health care and retirement benefits, by selected characteristics, March 2006

<table>
<thead>
<tr>
<th>Worker characteristics</th>
<th>Retirement benefits</th>
<th>Health benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All retirement plans</td>
<td>Defined benefit</td>
</tr>
<tr>
<td>White-collar occupations</td>
<td>69</td>
<td>23</td>
</tr>
<tr>
<td>Blue-collar occupations</td>
<td>62</td>
<td>25</td>
</tr>
<tr>
<td>Service occupations</td>
<td>34</td>
<td>8</td>
</tr>
<tr>
<td>Full time</td>
<td>69</td>
<td>24</td>
</tr>
<tr>
<td>Part time</td>
<td>29</td>
<td>9</td>
</tr>
<tr>
<td>Union</td>
<td>84</td>
<td>70</td>
</tr>
<tr>
<td>Nonunion</td>
<td>57</td>
<td>15</td>
</tr>
<tr>
<td>Average wage less than $15/hour</td>
<td>47</td>
<td>11</td>
</tr>
</tbody>
</table>

| Average wage $15/hour or higher | 77 | 34 | 69 | 88 |

Establishment characteristics

<table>
<thead>
<tr>
<th></th>
<th>Retirement benefits</th>
<th>Health benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good-producing</td>
<td>73</td>
<td>32</td>
</tr>
<tr>
<td>Service-producing</td>
<td>56</td>
<td>18</td>
</tr>
<tr>
<td>1–99 workers</td>
<td>44</td>
<td>9</td>
</tr>
<tr>
<td>100 workers or more</td>
<td>78</td>
<td>35</td>
</tr>
<tr>
<td>All workers</td>
<td>60</td>
<td>21</td>
</tr>
</tbody>
</table>

contributions to Social Security if the worker participates in a private pension plan.

A third approach is ‘labor contracting’. In countries where most of the labor force is covered by collective bargaining agreements, most workers are covered by private plans. In some countries (such as the Netherlands), the terms of those collective bargaining agreements are extended to other firms in the same line of business.

Finally, a few countries mandate private pensions (World Bank 1994; Forman 1995). Under this approach, the government can either require employers to provide pension plans for their workers, or it can require workers to have an individual retirement savings account managed by third-party providers. For example, private pension coverage is mandatory in Australia and Switzerland. Chile requires its workers to contribute at least 10 per cent of their wages to the privately managed individual retirement savings accounts that replaced that country’s social security system.13

2 Types of pension plans
Pension plans generally fall into two broad categories based on the nature of the benefits provided: defined benefit plans and defined contribution plans (Internal Revenue Service 2007b, p. 12). Most of these plans qualify for favorable tax treatment and are referred to as qualified plans. In addition, nonqualified deferred compensation plans are often used to provide benefits to executives and other highly compensated workers.

A Defined benefit plans
In a defined benefit plan, an employer promises employees a specific benefit at retirement. To provide that benefit, the employer typically makes payments into a trust fund, contributed funds grow with investment returns, and eventually the employer withdraws funds from the trust fund to pay promised benefits. Employer contributions are based on actuarial valuations, and the employer bears all of the investment risks and responsibilities. Benefits are typically guaranteed by the Pension Benefit Guaranty Corporation.

Defined benefit plans often provide each worker with a specific annual

13 Also of note, a number of countries – including Sweden and Poland – have recently replaced all or a portion of their traditional social security systems with hypothetical individual account systems – ‘notional defined contribution plans’ – that look a lot like American-style cash balance plans (Brooks and Weaver 2005; Williamson 2004; Sundén 2004).
retirement benefit tied to the worker’s final average compensation and number of years of service. For example, a plan might provide that a worker’s annual retirement benefit is equal to 2 per cent, times the number of years of service (\(yos\)), times final average compensation (\(fac\)) \((B = 2 \text{ per cent} \times yos \times fac)\). Under this final-average-pay formula, a worker with 30 years of service would receive a retirement benefit equal to 60 per cent of her pre-retirement earnings \((B = 60 \text{ per cent} \times fac = 2 \text{ per cent} \times 30 \ yos \times fac)\). Final average compensation is typically computed by averaging the worker’s salary over the last three or five years prior to retirement.

\(B \quad \text{Defined contribution plans}\)

Under a typical defined contribution plan, the employer contributes a specified percentage of the worker’s compensation to an individual investment account for the worker. For example, contributions might be set at 10 per cent of annual compensation. Under such a plan, a worker who earned $30,000 in a given year would have $3000 contributed to an individual investment account for her \((3000 = 10 \text{ per cent} \times 3000)\). Her benefit at retirement would be based on all such contributions plus investment earnings. Defined contribution plans are also known as ‘individual account’ plans because each worker has her own account, as opposed to defined benefit plans, where the plan’s assets are pooled for the benefit of all of the employees.

There are a variety of different types of defined contribution plans, including money purchase pension plans, target benefit plans, profit-sharing plans, stock bonus plans and employee stock ownership plans (ESOPs).

Profit-sharing and stock bonus plans may include a feature that allows workers to choose between receiving cash currently or deferring taxation by placing the money in a retirement account according to IRC § 401(k). Consequently, these plans are sometimes called ‘401(k) plans’. The maximum annual amount of such elective deferrals that could be made by an individual in 2008 was $15,500, although workers over the age of 50 could contribute up to $20,500.14

\(C \quad \text{‘Hybrid’ retirement plans}\)

Alternatively, many employers rely on hybrid retirement plans that mix the features of defined benefit and defined contribution plans. For example, a cash balance plan is a defined benefit plan that looks like a defined

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14 Internal Revenue Service 2007(c).
contribution plan (Forman and Nixon 2000). Like other defined benefit plans, employer contributions are based on actuarial valuations, and the employer bears all of the investment risks and responsibilities. Like defined contribution plans, however, cash balance plans provide workers with individual accounts (albeit hypothetical). A simple cash balance plan might allocate 10 per cent of salary to each worker’s account each year and credit the account with 5 per cent interest on the balance in the account. Under such a plan, a worker who earned $30000 in a given year would get an annual cash balance credit of $3000 ($3000 = 10 per cent × $30000), plus an interest credit equal to 5 per cent of the balance in her hypothetical account as of the beginning of the year.

D Individual retirement accounts and Keoghs
Favorable tax rules are also available for certain individual retirement accounts (IRAs). Almost any worker can set up an IRA with a bank or other financial institution. In 2008, individuals without pension plans could contribute and deduct up to $5000 to an IRA (individuals over age 50 could contribute and deduct up to $6000), and spouses could contribute and deduct similar amounts. If a worker is covered by another retirement plan, however, the deduction may be reduced or eliminated if the worker’s income exceeds $53000 for a single individual or $85000 for a married couple (in 2008). Like private pensions, IRA earnings are tax-exempt, and distributions are taxable.

Also, since 1998, individuals have been permitted to set up Roth IRAs. Unlike regular IRAs, contributions to Roth IRAs are not deductible. Instead, withdrawals are tax-free. Like regular IRAs, however, Roth IRA earnings are tax-exempt.

Finally, Keogh plans give self-employed workers an ability to save for retirement that is similar to plans that employers sponsor, and Keogh plans allow self-employed workers to contribute more than they could otherwise contribute to an IRA.

E Nonqualified deferred compensation arrangements
Nonqualified deferred compensation arrangements are contractual arrangements between employers and employees (or independent contractors) that are not qualified plans. In its simplest form, a nonqualified

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15 IRC §§ 219, 408; Internal Revenue Service (2007a).
16 IRC § 408A.
17 IRC § 401(c).
18 See generally US Congress, Joint Committee on Taxation (2006a), p. 11.
deferred compensation arrangement is merely an unsecured, unfunded promise to pay a stated dollar amount at some point in the future. There are a variety of different types of nonqualified deferred compensation arrangements, including top-hat plans, excess benefit plans, ‘make-up’ or ‘mirror’ plans and phantom stock plans.

Nonqualified deferred compensation agreements generally do not receive as favorable a tax treatment as qualified plans. In particular, the employer is generally not entitled to deduct nonqualified deferred compensation until that compensation is includible in the gross income of the employee. On the other hand, nonqualified deferred compensation arrangements are not subject to the limits applicable to qualified employer plans.

F  Retiree health benefits
Also of note, some employers provide health care coverage for their retired workers, although such coverage is on the decline. Only 28.7 per cent of retirees aged 55–64 had health care coverage from a former employer in 2002, down from 39.2 per cent in 1997 (Fronstin 2005). Similarly, only 13 per cent of private employers offered health benefits to their retirees in 2003, down from 22 per cent in 1997.

Private-sector employers are not required to promise retiree health benefits. Furthermore, when employers do offer retiree health benefits, nothing in federal law prevents them from cutting or eliminating those benefits – unless they have made a specific promise to maintain the benefits.

3  Regulation of pension plans
In the more than 30 years since it was enacted, the Employee Retirement Income Security Act has been amended numerous times, and a whole regulatory system has grown up to enforce its provisions. The key agencies charged with the administration of ERISA are the Internal Revenue

19 IRC §§ 83(h); 404(a)(5), (b) and (d).
20 Retirees – at least those over age 65 – typically pay for their health care expenses with a combination of Medicare Part A, Medicare Part B, and a supplemental insurance policy from their employer or otherwise. Retirees also inevitably incur additional out-of-pocket expenses. All in all, it has been estimated that an individual who retires at age 65 in 2005 and lives to age 80 will need $112,000 in savings to pay for Medicare Part B premiums, an employment-based health insurance policy to supplement Medicare, and $1800 a year in out-of-pocket expenses (Fronstin and Yakoboski 2005).
Service (IRS), the US Department of Labor, and the Pension Benefit Guaranty Corporation (PBGC).

Under ERISA, pension plans must be operated for the exclusive benefit of employees or their beneficiaries, and plan assets generally must be held in a trust. To protect the interests of plan participants, ERISA requires significant reporting and disclosure in the administration and operation of employee benefit plans. For example, a typical pension plan will have to file reports with the IRS, the Department of Labor, and the Pension Benefit Guaranty Corporation, and it will have to provide a summary plan description and a summary annual report to each participant.

ERISA also imposes extensive fiduciary responsibilities on employers and administrators of employee benefit plans. In addition, prohibited transaction rules prevent parties in interest from engaging in certain transactions with the plan. For example, an employer usually cannot sell, exchange or lease any property to the plan.

ERISA and the Internal Revenue Code impose many other requirements on retirement plans, including rules governing participation, coverage, vesting, benefit accrual, contribution and benefits, nondiscrimination and funding.


25 IRC § 401(a); ERISA §§ 403(a), 404(a)(1)(A).

26 IRC § 401(a); ERISA § 404.

27 IRC § 4975; ERISA § 406.
A Participation
A pension plan generally may not require, as a condition of participation, that an employee complete a period of service extending beyond the later of age 21 or one year of service.28 Also, a plan may not exclude employees from participation just because they have reached a certain age (for example, age 65). Employees can be excluded for other reasons, however. For example, a plan might be able to cover only those employees working at a particular location or in a particular job category.

B Coverage
Under the minimum coverage rules, a pension plan must usually cover a significant percentage of the employer’s workforce.29 Alternatively, a plan may be able to satisfy the minimum coverage rules if it benefits a certain class of employees as long as it does not discriminate in favor of the employer’s highly compensated employees.

C Vesting
Pension plans must also meet certain minimum vesting requirements.30 A worker’s retirement benefit is said to be vested when the worker has a nonforfeitable right to receive the benefit. Under the five-year, cliff-vesting schedule, an employee who has completed at least five years of service must have a nonforfeitable right to 100 per cent of her accrued benefits.31 ERISA only imposes minimum vesting requirements; plans are free to use a faster vesting schedule. Nevertheless, most plans use five-year cliff vesting. In 2005, for example, 84 per cent of employees in private industry defined benefit plans faced the five-year cliff-vesting schedule, and only 2 per cent of plans provided vesting in less than five years of service.32

28 IRC § 410(a); ERISA § 202.
29 IRC § 410(b). In applying the minimum coverage rules, plans may exclude employees who are under age 21 or have not completed one year of service. ERISA § 202(a)(1); IRC § 410(a)(1). But they cannot exclude older workers from participation ‘on the basis of age’. ERISA § 202(a)(2); IRC § 410(a)(2). The term ‘year of service’ means any 12-month period during which an employee has worked at least 1000 hours. ERISA § 202(a)(3); IRC § 410(a)(3).
30 IRC § 411(a); ERISA § 203.
31 Alternatively, under three-to-seven-year ‘graded’ vesting, an employee must have a nonforfeitable right to 20 per cent of her accrued benefit after three years of service, 40 per cent after four years of service, and so on up to 100 per cent after seven years of service.
D  Benefit accrual
In keeping with the voluntary nature of our pension system, employers have relatively great freedom in the design of their pension plans. ERISA does not mandate any specific benefit levels, nor does it require that benefits accrue evenly over time. Minimum benefit accrual rules do, however, limit the extent to which employers can ‘backload’ benefits in favor of their long-service employees.33

Another benefit accrual rule bars employers from reducing or ceasing an employee’s benefit accruals just because they have reached a certain age (for example, age 65), but employers are permitted to design their plans in ways that result in benefit reductions that merely correlate with age, for example, by restricting the number of years of benefit accrual (for example, 30 years).34

E  Limits on contributions and benefits
The Internal Revenue Code also imposes limits on contributions and benefits.35 In 2008, for example, generally no more than the lesser of $46,000 or 25 per cent of compensation can be added to the individual account of a participant in a defined contribution plan.36 Also, the maximum annual amount of elective deferrals that can be made by an individual to a 401(k)-type plan in 2008 is $15,500, although workers over the age of 50 can contribute up to another $5,000. With defined benefit plans, the highest annual benefit that can be paid to a retiree in 2008 is $185,000 or 100 per cent of compensation. The highest amount of compensation that can be considered in determining contributions or benefits in 2008 is $230,000.37

F  Nondiscrimination
Complicated nondiscrimination rules ensure that contributions or benefits do not discriminate in favor of highly compensated employees.38 Also, plans that provide more than 60 per cent of accrued benefits to key employees are

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33 IRC § 411(b); ERISA § 204. A typical plan must comply with at least one of three alternative minimum benefit accrual rules. For example, under the ‘3 per cent rule’, a worker must accrue, for each year of participation (up to 33 and 1/3 years) at least 3 per cent of the normal retirement benefit that she would receive if she stayed with the employer until age 65.
34 IRC § 411(b)(1)(H); ERISA § 204(b)(1)(H).
35 IRC § 415. These limits appear only in the Internal Revenue Code, and they reflect the government’s desire to limit the ability of high-income workers to utilize the tax benefits of pension plans.
36 Internal Revenue Service 2007(c).
37 IRC § 401(a)(17).
38 IRC § 401(a)(4).
considered top-heavy and must meet more generous minimum vesting and benefit-accrual requirements.\(^{39}\)

**G Other benefit rules**

(i) **Annuity payouts and lump-sum distributions** Defined benefit plans are typically designed to pay benefits in the form of a lifetime annuity. For married couples, joint and survivor annuities and pre-retirement survivor annuities are the default form of distribution.\(^{40}\) In recent years, however, defined benefit plans have been moving away from paying annuities, with more plans offering installment and lump-sum distribution alternatives (Mitchell with Dykes 2003). Defined contribution plans typically make lump-sum distributions.

(ii) **Normal retirement age and age discrimination** ERISA generally defines ‘normal retirement age’ as the earlier of the time specified in the plan or age 65.\(^{41}\) The Age Discrimination in Employment Act of 1967 (ADEA) outlawed mandatory retirement before the age of 65.\(^{42}\) The limit was raised to 70 in 1978 and finally removed altogether in 1986. The ADEA generally prohibits employers from discriminating against workers over the age of 40. Also, since 1988, employers have been prohibited from ceasing benefit accruals for employees who work beyond age 64 and from excluding participants who are hired within five years of normal retirement age.\(^{43}\)

These statutes clearly forbid a cessation of benefit accruals or a reduction in the rate of benefit accruals because of age, but they do not automati-

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\(^{39}\) IRC § 416.

\(^{40}\) Treasury Regulation § 1.401–1(b)(1); ERISA § 205; IRC §§ 410(a)(11), 417. Pension plans that offer an annuity as a payment option are required to provide a qualified joint-and-survivor annuity (QJSA) as the normal benefit payment for married participants. A QJSA is an immediate annuity for the life of the participant and a survivor annuity for the life of the participant’s spouse. The amount of the survivor annuity may not be less than 50 per cent, or more than 100 per cent, of the amount payable during the time the participant and spouse are both alive.

\(^{41}\) ERISA § 3(24); IRC § 411(a)(8).

\(^{42}\) 29 USC §§ 621–34.

\(^{43}\) IRC § 411(b)(1)(H) prohibits a defined benefit plan from ceasing accruals, or reducing the rate of benefit accruals, ‘because of the attainment of any age’. Similarly, IRC § 411(b)(2)(A) prohibits a defined contribution plan from ceasing allocations, or reducing the rate at which amounts are allocated, to a participant’s account, ‘because of the attainment of any age’. Parallel provisions are found in ERISA and in ADEA. ERISA §§ 204(b)(1)(H)(i) and (ii); 29 USC § 623(i).
cally prohibit benefit reductions that correlate with age. In fact, various exceptions expressly allow retirement plans to limit the total amount of benefits or the total number of years used to compute benefits. Still other exceptions to the age discrimination laws allow plans to provide subsidized early retirement benefits and Social Security supplements.

(iii) Premature distributions IRC § 72(t) generally imposes a 10 per cent tax on pension distributions made before an individual reaches age 59½, but there are numerous exceptions. For example, there is an exception for distributions that take the form of a lifetime annuity, and there are exceptions for distributions on account of disability or to cover high medical expenses. Distributions from an Individual Retirement Account can even be used to purchase a residence or pay college tuition.

(iv) Minimum distribution age On the other hand, IRC § 401(a)(9) generally requires participants in retirement plans to begin taking distributions soon after they reach age 70½. Failure to take the required minimum distribution can result in a 50 per cent excise tax penalty on the excess of the amount required to have been distributed over the amount that actually was distributed. In addition, a plan that fails to make the required minimum distributions can be disqualified.

(v) Funding Retirement plans must also meet certain minimum funding standards. These rules help ensure that the money needed to pay the promised benefits is set aside in a trust fund where it can earn income until it is used to pay benefits when the employee retires.

Title IV of ERISA also created the Pension Benefit Guaranty Corporation (PBGC) to administer a new plan termination insurance program. Defined benefit plans generally pay annual termination insurance premiums to the PBGC. In the event an underfunded plan terminates (for example, because the employer goes out of business), the PBGC guarantees payment of pension benefits to the participants, up to $51,750 per participant in

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44 More specifically, distributions typically must begin no later than April 1 of the calendar year following the calendar year in which the employee attains age 70½. Distributions after the death of a plan participant must also meet certain minimum distribution requirements. An exception allows older workers with a pension plan from their current employer to delay distributions until they retire, but workers with pensions from prior employers and IRA holders must begin taking distributions from those plans soon after they reach age 70½.

45 IRC § 4974.

46 IRC § 412; ERISA § 302.
The PBGC paid $4.266 billion in benefits to 631,330 retirees of terminated pension plans in fiscal year 2007.

4 The economics of pension plans

A The life cycle model
Economists typically use a life cycle to model the work, saving and retirement choices of individuals (Clark et al. 2004, p. 99; DeVaney and Chiremba 2005; Ando and Modigliani 1963). The life cycle model assumes that workers try to maintain a consistent level of consumption over their lifetimes. Under the model, individuals start life with no inheritance and end it leaving behind no bequests. Individuals try to smooth out their average annual consumption, by borrowing when they are young, and earning enough during their working years to both repay their loans and save for retirement. Under the model, individuals have perfect foresight so they can save exactly enough so that they can live off their savings until death and die exactly when they run out of money. See Figure 19.1.

The model is useful in helping to explain how people make choices about how much to invest in their schooling when they are young (that is, human capital), about how much to save and about when to retire. Empirical research provides a good deal of support for the life cycle model, but psychological factors are also quite important. That is, attitudes, subjective norms and other factors can also influence individual decisions about saving and retirement (DeVaney and Chiremba 2005).

B Behavioral economics
To be sure, individuals are not completely rational about saving for retirement. Among other things, most people think about retirement in terms of current dollars. They look at the current monthly benefits available to them from Social Security and their traditional defined benefit plans, and they look at the apparently large sums accumulated in their defined contribution plans (and generally available to them only if they retire). As a result, a kind of ‘money illusion’ leads most older Americans to believe that they are better off financially than they really are.

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47 Pension Benefit Guaranty Corporation, Pension Benefit Guaranty Fact Sheet, http://www.pbgc.gov/media/key-resources-for-the-press/content/page13540.html (accessed July 7, 2008). The guarantee is lower for those who retire early or when there is a benefit for a survivor. The guarantee is increased for those who retire after age 65.

48 Pension Benefit Guaranty Corporation (2006), p. 6. At the end of fiscal year 2006, the PBGC had total assets of $68.428 billion and total projected liabilities of $82.504 billion, leaving it with a deficit of $14.066 billion.
Unfortunately, inflation after retirement almost invariably erodes the value of accrued pension benefits. Moreover, older workers often fail to consider how their benefits and needs will change over the course of their retirement (Steuerle et al. 1999). In addition, many older Americans underestimate their life expectancies. Moreover, most workers lack even a rudimentary understanding of the financial resources required for a 20- or 30-year retirement. What looks like an adequate retirement income at age 55, 62 or even 65 may not be enough to live on at age 80 when work is not a likely option and savings have been depleted. In short, many older Americans overestimate their financial ability to meet their future retirement income needs and, consequently, choose to retire too early.

**Figure 19.1 Stages of the simple economic life cycle**

Unfortunately, inflation after retirement almost invariably erodes the value of accrued pension benefits. Moreover, older workers often fail to consider how their benefits and needs will change over the course of their retirement (Steuerle et al. 1999). In addition, many older Americans underestimate their life expectancies. Moreover, most workers lack even a rudimentary understanding of the financial resources required for a 20- or 30-year retirement. What looks like an adequate retirement income at age 55, 62 or even 65 may not be enough to live on at age 80 when work is not a likely option and savings have been depleted. In short, many older Americans overestimate their financial ability to meet their future retirement income needs and, consequently, choose to retire too early.

**Notes:**
A. ‘Youth’: Period when consumption exceeds income (up to age 20–25).
C. ‘Retirement’: Period where consumption exceeds income (60–65 and beyond).

**Source:** Following Clark et al. (2004), p. 100 (figure 4.2).
At bottom, the life cycle model assumes that workers are always rational actors who will make reasoned choices about how much to save. The reality, however, is that attitudes and many other psychological factors lead people to save less than the optimal amount: ‘By and large, individuals are inert – with good intentions, poor follow-through, and bounded rationality. Loss aversion and decision-making biases often lead to unfortunate outcomes, including a poorly funded retirement’ (DiCenzo 2007, p. 15).

That’s where behavioral economics can help. Behavioral economics acknowledges the psychological aspects of decision-making in the real world. Behavioral principles can be used to help design pension plans to increase savings rates. For example, studies have shown that automatically enrolling people into 401(k) plans can achieve higher levels of participation, and automatically escalating the levels of their contributions can dramatically increase their level of savings (Thaler and Bernartzi 2007, 2004; Madrian and Shea 2001; VanDerhei 2007). Workers tend to anchor to the default contribution rates and to default investment choices set by the plan, so employers need to give these defaults careful consideration if they want to optimize workers’ retirement saving and investment outcomes (DiCenzo 2007; Mitchell and Utkus 2006). Of note, the Pension Protection Act of 2006 provides incentives to plan sponsors that implement automatic features like automatic enrollment in 401(k) plans and gradual contribution rate escalation.

C The economics of tax deferral

(i) Qualified plans The basic advantage of qualified plans and traditional IRAs is tax deferral. Basically, an employer’s contributions to a qualified plan on behalf of an employee are not taxable to the employee when made; the pension fund’s earnings on those contributions are tax-exempt, and the workers pay tax only when they receive distributions of their pension benefits. Meanwhile, the employer is allowed a current deduction for its contributions to the plan.

Table 19.2 shows the value of the tax advantages associated with saving in a qualified plan, as compared with saving in a regular savings account. A regular savings account is funded with deposits that come from after-tax income and accumulate only at an annual after-tax interest rate – that is, the interest or investment income earned in such an account is taxed annually. The table assumes that a person age 45 has $1000 in wages and wishes to save it for 15 years for purposes of retirement at age 60. The market interest rate during the full 15 years is assumed to be 8 per cent.

Consider Example 2 in Table 19.2. The example assumes that the
employee is in the 40 per cent income tax bracket when working and when retired. If the $1000 is paid directly to the employee, the employee would immediately pay $400 in tax and deposit $600 after tax into the savings account. That $600 savings account would earn 8 per cent interest, but the after-tax rate of return would be just 4.8 per cent. The $600 in the account compounded at 4.8 per cent interest over 15 years would yield $1212 which could be withdrawn tax-free.

If the employer had instead contributed that $1000 to a qualified plan, the full $1000 would have compounded at the 8 per cent pretax rate and yield $3172 at the end of 15 years. Upon withdrawal, that $3172 would all be taxed at the employee’s 40 per cent income tax rate, leaving the employee with $1903 after tax. That is a net gain of $691 (57 per cent) over the regular savings account.

The examples in Table 19.2 show the economic advantages of qualified plans (and traditional IRAs) over regular savings accounts. The tax advantages are greatest for those in the highest tax brackets in their working years. There are also even greater advantages to deferring income for longer periods.

Table 19.2  Tax advantages of a $1000 contribution to a qualified retirement plan

<table>
<thead>
<tr>
<th>Example 1: Tax rate of 15% in working years</th>
<th>Example 2: Tax rate of 40% in working years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regular account</td>
<td>Qualified plan</td>
</tr>
<tr>
<td>Contribution</td>
<td>$1000</td>
</tr>
<tr>
<td>Tax on contribution</td>
<td>150</td>
</tr>
<tr>
<td>Deposit</td>
<td>850</td>
</tr>
<tr>
<td>Value at withdrawal</td>
<td>2280</td>
</tr>
<tr>
<td>Retirement tax rate (%)</td>
<td>–</td>
</tr>
<tr>
<td>Tax on withdrawal</td>
<td>0</td>
</tr>
<tr>
<td>Net withdrawal</td>
<td>2280</td>
</tr>
<tr>
<td>Gain over regular account</td>
<td>–</td>
</tr>
<tr>
<td>Percent gain</td>
<td>–</td>
</tr>
<tr>
<td>Alternative retirement tax rate (%)</td>
<td>–</td>
</tr>
<tr>
<td>Tax on withdrawal</td>
<td>0</td>
</tr>
<tr>
<td>Net withdrawal</td>
<td>2280</td>
</tr>
<tr>
<td>Gain over regular account</td>
<td>–</td>
</tr>
<tr>
<td>Percent gain</td>
<td>–</td>
</tr>
</tbody>
</table>

The favorable tax treatment of qualified plans increases the demand for pensions by workers, especially workers in higher tax brackets. As a result, workers in higher tax brackets are more inclined to seek employers that provide tax-favored pension benefits than workers in lower brackets (Fronstin 2000). Similarly, workers in higher brackets are likely to voluntarily contribute a greater proportion of their income to 401(k) plans and Individual Retirement Accounts than workers in lower tax brackets.

(ii) The saver’s tax credit Also of note, since 2002, certain low- and moderate-income individuals have been able to claim a tax credit of up to $1000 for certain qualified retirement savings contributions. The credit equals a percentage (50 per cent, 20 per cent or 10 per cent) of up to $2000 of contributions. In effect, the credit acts like an employer match: the government matches a portion of the employee’s contributions. Employer matches encourage workers to contribute, at least up to the match level, and the saver’s tax credit seems to have similar pro-savings effects (Gale and Orszag 2003; Southworth and Gist 2008).

(iii) Roth arrangements Contributions to Roth IRAs and Roth 401(k) plans are made after-tax; however, withdrawals are tax-free. Accordingly, these arrangements offer essentially the same tax economic benefits as qualified plans and traditional IRAs. For example, following Example 2 in Table 19.2, assume that an employee in the 40 per cent tax bracket paid $400 tax on $1000 of earnings and contributed the remaining $600 to a Roth IRA with an 8 per cent tax-free interest rate. After 15 years, that investment would be worth $1903, exactly what the employee would have had with the traditional qualified plan.

(iv) Nonqualified deferred compensations arrangements In nonqualified deferred compensation arrangements, the employee postpones income, but the employer must delay taking a deduction. If the employee and employer have the same tax rate, there is really no advantage to a nonqualified arrangement: the income from investing the deferred amount will be taxed the same either way. On the other hand, if the employer is in a lower tax bracket than the employee, then the employee is better off deferring (Langbein et al. 2006, pp. 358–9). The advantage of deferral is largest when the employee is in the maximum federal and state income tax brackets and the employer is a tax-exempt organization.
The economics of pension funding

Defined benefit plans make benefit promises that can extend many years into the future. Historically, some plans simply paid those liabilities on a pay-as-you-go basis. The triumph of ERISA was that it required plans to meet certain minimum funding standards. Generally Accepted Accounting Principles now also requires private companies and government entities to report how well they are funding their pension obligations.50

The minimum funding rules are fairly simple for defined contribution plans. The plan sponsor meets those requirements by contributing what the plan has promised. For example, a plan that promises to contribute 10 per cent of compensation meets its funding obligation when it deposits 10 per cent of compensation in the individual worker accounts.

The minimum funding rules for defined benefit plans are more complicated. In order to have sufficient assets to meet defined benefit obligations that can extend for decades into the future, pension plan sponsors need to make current contributions and invest those contributions wisely. Plans usually employ an actuary to determine how well the plan is funded and how much the plan sponsor must contribute each year. Actuaries base those determinations on the plan’s assumptions and the plan’s experience about such important variables as employee turnover, mortality and future salary; inflation and investment returns.

In order to determine if a pension plan is adequately funded, the plan actuary converts the future stream of pension payments into a ‘present value’ amount that would be needed to pay off those liabilities all at once. The actuary then compares that present value of the plan’s liabilities to the current value of the plan’s assets. A plan is said to be underfunded if the present value of the plan’s liabilities exceeds the current value of its assets.

The Pension Protection Act of 2006 toughened the minimum funding requirements for private pensions.51 In general, underfunded pension plans now have to amortize their unfunded liabilities over seven years.

Federal law does not, however, require state and local government pensions to be fully funded, and many are not (GAO 2008; Pew Center on the States 2007). Worse still, many state and local governments have committed themselves to provide retiree health benefits, for which pay-as-you-go financing has been the norm. In the long run, underfunding of state and local government pensions is likely to be an even bigger problem than underfunding of defined contribution plans.

50 The Financial Accounting Standards Board and Government Accounting Standards Board provide detailed guidance about how to determine annual pension expenses and about how to report plan assets and liabilities.
51 IRC §§ 412, 430.
local government pension and retiree health plans will present significant fiscal and economic challenges.

E  The economics of pension investing

At the end of 2007, there was $17.6 trillion in retirement assets, including $4.5 trillion in private defined contribution plans and $8.4 trillion in annuities, defined benefit plans and federal, state and local pension plans. The remaining $4.7 trillion was held in Individual Retirement Accounts. Pension plans try to use sound investment practices to invest their assets in accordance with the actuarial needs of the plan. The typical pension plan in the United States uses modern portfolio theory to choose a mix of stocks, bonds and other investments that balances risks and investment returns, somewhere on the so-called ‘efficient frontier’. Plans that need higher rates of return tend to invest more heavily in stocks, but they face greater volatility. On the other hand, plans that want less volatility invest more heavily in bonds and they consequently tolerate the generally lower rates of return that comes with those conservative investments.

The Pension Protection Act and the newest financial accounting standards are pushing pension plans to focus more on managing the funding status of their plans. In particular, as corporations are now required to report funding shortfalls on their balance sheets, they will want to reduce the volatility in their pension investments. Many believe that this will push companies toward liability-driven investment strategies (LDI) that favor long-duration bonds over higher-yielding but volatile stocks (Morse 2007). Curiously, the Pension Benefit Guaranty Corporation recently announced that it was going in the opposite direction: the PBGC will dramatically reduce its bond holdings to just 45 per cent of assets, increase

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53 Pension liabilities look like bond obligations: a pension plan pays out fixed amounts of benefits to retirees over many years. On the other hand, many plans seek to maximize their investment returns by investing in stocks: these higher risk assets are rewarded with higher returns – the so-called ‘equity premium’. See, for example, Siegel (2002). Of course, stock and bond prices tend to move in opposite directions. For example, when interest rates go down, stock prices tend to go up, but bond prices go down, and the mismatch between a pension plan’s stock investments and bond-like liabilities will periodically result in shortfalls which will now have an immediate and negative impact on the corporation’s balance sheets. Liability-driven investment strategies lead plans to shift from stocks to long-duration bonds and so reduce the mismatch between the duration and interest rate sensitivity of a plan’s liabilities relative to its assets.
its stock holdings to 45 per cent, and commit 10 per cent of its assets to alternative investment classes (Wyand 2008; Millard 2008).

Another set of investment issues has to do with how participants in defined contribution plans invest the money held in their individual accounts. On average, individual employees tend to be pretty poor investors. They tend to invest too heavily in bonds and guaranteed investment contracts. Also, when they do invest in stocks, individual employees tend to invest too heavily in the stock of their employers, as the recent Enron scandal showed (Stabile 2007; Langbein et al. 2006, pp. 638–48; Bernartzi et al. 2007). Individuals also tend to invest too heavily in US stocks (as opposed to foreign stocks). Also, when employees fail to make an affirmative election about how to invest their 401(k) funds, many plans use a low-yield, stable-value bond fund as the default investment. All in all, one recent study found that traditional pension plans managed by investment professionals tend to get annual returns 1.9 percentage points higher than defined contribution plans where individuals tend to choose the investments (Goodman 2004). While much of that shortfall is attributable to higher fees, part is likely attributable to the poorer investment choices made by individual investors (Forman 2007).

In recognition of the historically poor investment choices made by individual employees, the Pension Protection Act of 2006 amended ERISA § 404(c) to improve the default investments, and the new law encourages employers to replace their low-yield, stable-value bond funds with balanced funds (funds with an unchanging mix of stocks and bonds) and life cycle funds (funds which gradually shift their investments from stocks towards bonds as workers age) (Mitchell et al. 2007a).

F The economics of Pension Benefit Guaranty Corporation (PBGC) insurance

Federal pension law requires private sector defined benefit plans to buy insurance from the Pension Benefit Guaranty Corporation (PBGC). If the

54 Moreover, individuals tend to reduce their equity holdings as they get older, while large pension funds can continue to collect the equity premium in perpetuity.

55 Fees reduce the rate of return on 401(k) investments, and over the course of a lifetime, fees can reduce retirement savings significantly. For example, imagine a 45-year-old employee who plans to leave $20 000 in a 401(k) account until retirement at age 65. If those assets earn a 6.5 per cent net annual return – a 7 per cent investment return minus a 0.5 per cent charge for fees, that $20 000 will grow to $70 500 at retirement. On the other hand, if fees are instead 1.5 per cent annually, that $20 000 investment will grow to just $58 400. That additional 1 per cent annual fee will reduce the account balance at retirement by around 17 per cent. GAO (2006, p. 7).
company goes bankrupt and the plan does not have enough assets to pay the promised pension benefits, the PBGC takes over paying those benefits to retirees up to the limits set by law. The insurance premiums charged by the PBGC are set by Congress rather than by market forces and are probably set too low (Brown 2007). For example, a 2002 study estimated that PBGC premiums at that time were about half the market price for the insurance (Boyce and Ippolito 2002). Such underpricing of the insurance implies a taxpayer subsidy of questionable worth and may raise moral hazard problems with respect to company behavior. It remains to be seen whether the premium increases and other changes made by the Pension Protection Act of 2006 have reduced the subsidy.

5 The financial incentives created by pension plans

Pension plan designs can create powerful financial incentives that influence individual decisions about work and retirement (Forman 2006, 2004, 1999; Gustman and Steinmeier 1995; Ippolito 1986; Munnell et al. 2004; Leonesio 1996; Quinn et al. 1990). At the outset, the tax preferences for pension savings reduce the work disincentives inherent in the taxation of earned income.

In addition, private pension plans can significantly affect the timing of retirement. First, along with Social Security and other public benefits, private pensions help provide additional income and wealth that is needed for retirement. Second, traditional defined benefit plans are typically designed to have financial incentives that induce most workers to retire during ‘windows’ of opportunity that range from the plan’s early retirement age through the normal retirement age. These plans provide large financial incentives for workers to stay with a firm at least until they are eligible for early retirement, but they impose large financial penalties on workers who stay past the plan’s normal retirement age. Moreover, many traditional defined benefit plans provide early retirement incentives that push older workers out of the workforce at even earlier ages. Defined contribution plans can also influence the timing of the decision to retire, but their effects are typically less dramatic (Ippolito 1997, pp. 10–17).

Pertinent here, an important demographic trend is that Americans are living longer but retiring earlier. As Table 19.3 shows, the life expectancy for a male born in 2006 is 75.0 years, up from 61.4 years in 1940.

Meanwhile, the average age at which workers begin receiving their Social Security retirement benefits fell from 66.2 years old in 1960 to 63.6 years old in 2002 (US House of Representatives, Committee on Ways and Means 2004, pp. 1–48 (table 1-14)). All in all, older men leaving the workforce today can anticipate 18 years in retirement, up from less than 12 years in retirement in 1950 (GAO 2005, p. 6).

A  Tax preferences for pension savings reduce the work disincentives inherent in the taxation of earned income

The favorable tax treatment for retirement savings generally reduces the work disincentives that can come from taxing earned income. Under current law, earned income is typically subject to federal income tax rates of up to 35 per cent and payroll tax rates of up to 15.3 per cent. But contributions to retirement plans are typically exempt from taxation, and benefits are typically not taxed until after retirement.\(^{57}\) The net effect of this

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\(^{57}\) More specifically, employer contributions to pension plans are exempt from current income and payroll taxation. Elective contributions by employees to 401(k)-type plans are also exempt from income taxation, but these contributions are subject to payroll taxation. Similarly, IRA contributions tend to be deductible for income tax purposes but not for payroll tax purposes. Distributions from
tax regime is to reduce the effective marginal tax rates imposed on earned income and so reduce the work disincentives that result from the taxation of earned income.

Also, the favorable tax treatment of pensions reduces the price of pension benefits for employers and employees and can be expected to increase the demand for pensions by workers, especially workers in higher tax brackets.\(^{58}\) As a result, workers in higher tax brackets are more inclined to seek employers that provide tax-favored pension benefits than workers in lower brackets (Fronstin 2000; Pesando and Turner 2000; Reagan and Turner 2000). Similarly, workers in higher brackets are likely to voluntarily contribute a greater proportion of their income to 401(k) plans and IRAs than workers in lower tax brackets.\(^{59}\)

In short, exempting pension contributions and earnings from taxation tends to encourage people to work.\(^{60}\)

**B The accumulation of pension wealth encourages early retirement**

On the other hand, the accumulation of pension wealth enables pension plan participants to retire earlier than they would in a no-pension world. Along with Social Security and Medicare, pensions provide a big chunk of the income and wealth that enable elderly Americans to choose retirement over work. Dora Costa argues that the decline in the average age of retirement is largely attributable to the increasing income and wealth of American families (Costa 1999; Sass 2003, p. 3). From 1962 to 1995, the average net worth of American families increased from $114,000 to $206,000 (Committee for Economic Development 1999, p. 6). A large part of that increase is attributable to the rapid expansion of the private pension system after World War II. One study estimated that the growth of pensions could account for as much as one-quarter of the decline in labor force}

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\(^{58}\) One study finds that ‘the income elasticity of worker contributions to a pension plan is approximately 1.5, indicating that if worker income increased by 10 per cent, contributions to a pension plan would increase by 15 per cent’ (Fronstin 2000, p. 123).

\(^{59}\) Participating in a 401(k) plan may actually increase the lifetime tax burden on low-income workers. See, for example, Gokhale et al. (2001).

\(^{60}\) Because the income and substitution effects often work in opposite directions, the net effect on work effort is ambiguous and will depend heavily on individual preferences. Still, a fair amount of empirical evidence suggests that imposing high taxes on earned income tends to discourage work effort and reduce labor supply. See, for example, Richards (1999); Triest (1996); Eissa (1996); and Hausman (1981).
participation in the early postwar period (Samwick 1998), and numerous studies have found that workers with access to pension income are more likely to retire than workers without such coverage (Munnell et al. 2004; Uccello 1998; Samwick 1998).

Moreover, these income and wealth effects have an impact on people at all income levels (Committee for Economic Development 1999, p. 6). In particular, generous Social Security benefits and the health security provided by Medicare and Medicaid have made early retirement possible for virtually all Americans. Most analysts believe that the availability of full Social Security benefits at age 65 and the availability of reduced benefits at age 62 have greatly contributed to the trend toward earlier retirement (Advisory Council on Social Security 1997, volume 2, p. 21; Leonesio 1993).

Of course, the income and wealth effects of pension plans probably have their greatest impact on the older workers in the upper half of the income distribution. While 64.7 per cent of workers with annual earnings of $50,000 participated in a pension plan in 2006, only 16.2 per cent of workers earning between $10,000 and $14,999 participated that year (see Table 19.5 below). Similarly, while pensions accounted for 21.2 per cent of the aggregate income of elderly Americans in the highest income quintile in 2004, pensions accounted for just 3.5 per cent of the income of elderly Americans in the lowest quintile (Social Security Administration 2006, p. 22).

C Benefit accrual patterns influence decisions about work and retirement

Pension benefits typically accrue differently under defined benefit plans and defined contribution plans. In particular, under a traditional defined benefit plan (that is, final-average-pay plans), benefit accruals increase significantly the closer a worker gets to retirement.

Indeed, one of the most obvious features of traditional plans is that they are ‘backloaded’. That is, traditional plans tend to disproportionately favor older workers who have stayed with an employer for 25 or 30 years. The primary reason for this backloading is that the value of benefit accruals typically increases as a percentage of pay as workers approach retirement age. In fact, well over half the value of a worker’s pension can accrue in the last five or ten years of service (Ippolito 1997). In short, traditional plans provide relatively larger benefit accruals to older workers and relatively smaller benefit accruals for younger workers.

On the other hand, defined contribution plans (and cash balance plans) typically provide more uniform accruals over a worker’s career. Of course, that means that defined contribution plans provide larger benefit accruals
Labor and employment law and economics

than final-average-pay plans for younger workers and smaller benefit accruals for older employees.

Figure 19.2 provides a graphic comparison between a typical defined contribution plan and a traditional defined benefit plan. The figure compares the contributions made on behalf of an individual for the following two hypothetical pension plans. The first is a simple defined contribution plan with a flat contribution rate of 6 per cent of salary and interest accruing at 5 per cent per year. The second is a traditional defined benefit plan that pays a pension benefit at age 65 of 1 per cent times years of service times final average compensation \( B = 1 \text{ per cent} \times yos \times fac \) – that is, a final-average-pay plan.

As shown in Figure 19.2, the defined contribution plan has a level contribution rate at all ages. It provides relatively larger benefit accruals than a final-average-pay plan for younger employees and relatively smaller benefit accruals for older employees. The traditional final-average-pay plan, on the other hand, is backloaded. It has severe financial penalties for leaving too early and for working past the normal retirement age.

The differing rates of benefit accrual under traditional final-average-pay plans versus typical defined contribution plans result in different incentives that can affect employee decisions about work and retirement. In particular, traditional final-average-pay plans penalize workers who change jobs frequently. Traditional final-average-pay plans also create large financial incentives for workers to stay on the job at least until they are eligible for

Source: Based on Gebhardt (1999).

Figure 19.2 Annual contribution rates
early retirement. Traditional plans also impose large financial penalties on older workers that tend to push them out of the workforce once they have reached the plan’s early or normal retirement age.\(^{61}\)

(i) Traditional pensions penalize mobile workers Traditional final-average-pay plans also penalize workers who change jobs frequently (Olsen and VanDerhei 1997; Wiatrowski 2005). Table 19.4 shows the magnitude of these financial penalties by comparing the retirement benefits of four workers. These workers all have identical 30-year pay histories (6 per cent annual pay increases starting at $20,000 and ending at $108,370), and all their employers have identical final-average-pay plans (1.5 per cent times years of service times final pay). The only difference among these workers is that the first worker spent her entire career with one employer, while the other workers divided their careers over two or more employers. The long-tenure worker would receive a pension of $49,000 a year at retirement, but the worker who held five jobs would receive pensions totaling just $27,000 a year.

Mobile workers covered by a traditional final-average-pay plan can

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61 In short, ‘relative to defined contribution plans, defined benefit plans penalize early or late retirements’ (Even and Macpherson 2003, p. 46).

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### Table 19.4 Non-portability of final-average-pay plans

<table>
<thead>
<tr>
<th>Worker no.</th>
<th>Employer no.</th>
<th>Yearly accrual rate (per cent)</th>
<th>Years of service</th>
<th>Final pay</th>
<th>Total pension</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>1.5</td>
<td>30</td>
<td>$108,370</td>
<td>$49,000</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>1.5</td>
<td>15</td>
<td>45,219</td>
<td>10,174</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>1.5</td>
<td>15</td>
<td>108,370</td>
<td>24,383</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>35,000</td>
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<td></td>
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<td>1.5</td>
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<td>3</td>
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<td>108,370</td>
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<td>1.5</td>
<td>6</td>
<td>26,765</td>
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<tr>
<td></td>
<td>2</td>
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<td>6</td>
<td>37,967</td>
<td>3,417</td>
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<td></td>
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<td>53,856</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>27,000</td>
</tr>
</tbody>
</table>

Source: Falivena (1990), p. 15.
suffer large benefit losses every time they change jobs, and even greater financial penalties can occur when workers change jobs without vesting (it usually takes five years to vest). All in all, traditional final-average-pay plans penalize workers who change jobs frequently.

At the same time, however, traditional final-average-pay plans create large financial incentives for workers to stay with a single employer at least until they are eligible for early retirement (Gustman and Steinmeier 1995, pp. 13–14; Friedberg and Owyang 2004). This is an example of the ‘golden handcuffs’ phenomenon.

(ii) Traditional pensions push workers into retirement

Traditional final-average-pay plans also typically push older workers out of the workforce once they reach normal retirement age (often between ages 60 and 65). Once a worker reaches normal retirement age and is eligible to receive full retirement benefits, delaying retirement can be quite costly (Ippolito 1997, pp. 133–50). Those who delay retirement lose current benefits, but the increase in benefits that can result from an additional year of work rarely compensates for the benefits lost. On the other hand, those who work until they drop may leave nothing behind for their survivors.

Numerous studies of real world pension plans have found that particular plan designs can result in a significant loss in pension wealth for employees who work past age 65 (Kotlikoff and Wise 1985, 1987, 1989). Moreover, employers can significantly influence the timing of retirement by offering subsidized benefits for workers who elect to retire early (Fronstin 1997; Lumsdaine et al. 1997). Indeed, the structure of private pensions may have a greater influence than Social Security on decisions about the timing of retirement (Dulitzky 1999; Lumsdaine et al. 1997).

Explicit early retirement incentives are common among firms with traditional defined benefit plans. At least 80 per cent of Fortune 500 companies have used early retirement incentive plans (Committee for Economic

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62 According to the implicit contract theory, employers underpay their younger workers in exchange for overpayment later in their careers. The backloading of pension accruals encourages younger workers to stay with the company at least until early retirement age. At the same time, however, it gives employers a reason to discourage ‘late’ retirement (Casey 1997; Wise 1991).

63 According to Dulitzky, the following features of defined benefit plans can be used to encourage workers to retire at a particular age: accrual rates that vary with age, earnings or years of service; wage indexing rules to calculate pensions that vary with age of retirement or years of service; reduction in the normal retirement benefit for retiring early but by less than what would be actuarially fair; limits on the increase in pension accrual after a certain number of years in the firm; and explicit buyouts, offered from time to time, to some of the workers in the firm (1999, p. 4).
It is also common for employers to design their plans in such a way that benefit accrual rates turn negative at a relatively early age. It is also common for employers to design their plans in such a way that benefit accrual rates turn negative at a relatively early age.

For example, because early retirees will receive benefits for a longer period, an actuarial reduction in monthly benefits should be required, and it is often suggested that an actuarial reduction of at least 6 per cent a year is required for actuarial neutrality (Mitchell with Dykes 2003, p. 122). However, traditional final-average-pay plans often encourage workers to take their benefits prior to normal retirement by providing enhanced early retirement benefits (Freeman 2006). Current law permits employers to offer generous early retirement incentives and Social Security supplements. Current law also permits employers to design their plans in ways that impose financial penalties on those who work past the plan’s normal retirement age – for example, by not requiring that additional years of service (for instance, beyond 30 years) count toward the accrual of benefits.

In short, ‘early retirement has been institutionalized’ (Casey 1997, p. 20). Traditional defined benefit plans provide incentives for workers to retire during ‘windows’ of retirement opportunity that typically range from the

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64 At the same time, however, there is not much evidence about why some firms have early retirement incentives and others do not (Dorsey et al. 1998, pp. 114–15).

65 One study of benefit accrual rates of defined benefit plans in 1983 and 1989 found that by the time the workers in their study reached age 60, the median annual benefit accrual was already close to zero (Gustman and Steinmeier 1998). By age 62, many of the plans offered normal retirement benefits, and the average benefit accrual rate turned negative. At age 65, almost all the plans offered normal retirement benefits, and average benefit accruals were even more negative. This study also found that the average age for early retirement eligibility in these plans fell by about a year, from 54.2 in 1983 to 53.1 in 1989. Similarly, a recent study found that, in 1997, 21 per cent of participants in the defined benefit plans of medium and large firms were able to retire at age 62 with full (unreduced) benefits, up from 17 per cent in 1981 (Mitchell with Dykes 2003). That study also found that early retirement was permitted by some 95 per cent of defined benefits plans of those medium and large firms in 1997. More than 60 per cent of participants were able to leave by age 55 (in some cases, depending upon having enough years of service). In addition, many of these plans provided significant subsidies for early retirement, such as providing less than actuarially neutral reductions in benefits.

66 When workers retire prior to normal retirement age, their benefits should be actuarially reduced to reflect that payments begin earlier and extend over a longer period. For example, the benefit payable at age 64 is about 90 per cent of that payable at 65, and the benefit payable at 55 should be about 37 per cent of that payable at 65 (McGill et al. 2005, p. 250, table 10-6). However, plans often use more generous factors to compute early retirement benefits. For example, a plan might subsidize early retirement by allowing workers to retire at age 55 with 50 per cent of their normal retirement benefits, as opposed to the actuarially fair 37 per cent.
early retirement age through the normal retirement age. The trend in recent decades has been toward a decline in the normal retirement age and toward incentives for early retirement.

Ultimately, the problem may boil down to the fact that employers often have economic incentives to rid themselves of older workers. Workers generally cost more to employ as they get older (Committee for Economic Development 1999; Munnell 2006; Minda 1994). As a result, the compensation of workers nearing the end of their careers can exceed their productivity (Minda 1994; Kotlikoff and Gokhale 1992). When that happens, employers will have an economic incentive to avoid hiring or retaining older workers (Leibfritz 2002; Scott et al. 1995). An employer might also find it advantageous to tap its traditional defined benefit plan or otherwise create financial incentives for early retirement (Freeman 2006).

(iii) Defined contribution plans and cash balance plans tend to be neutral about the age of retirement Defined contribution plans (and their cash balance cousins) can also be designed to influence the timing of a worker’s decision about when to retire, but usually these plans have significantly less impact on those decisions. For example, a recent study by Friedberg and Webb (2004) found that the absence of age-related incentives in defined contribution plans led workers to retire an average of almost two years later than workers with traditional defined benefit plans.

To be sure, defined contribution plans have large income and wealth effects. Access to pension income, whether from a defined benefit plan or a defined contribution plan, makes retirement in general more attractive, but defined contribution plans typically do not incorporate plan design provisions that are intended to encourage early retirement. Because these plans

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67 As already explained, the accrual rate for traditional final-average-pay plans increases rapidly as workers age. It also costs employers more to provide health insurance coverage for older workers than for younger workers. In fact, the cost of health insurance coverage is twice as high for working men over age 50 than for those under 50 (Committee for Economic Development 1999). The costs of life insurance coverage also naturally increase as workers age, as do the costs associated with work injury and disability. Moreover, many companies tie salaries and paid time off or vacation to age and tenure.

68 Of course, defined contribution plans and cash balance plans can be designed to influence the timing of retirement. Daniel Dulitzky summarizes the factors related to defined contribution plans that can influence the timing of retirement as follows: employer contribution rates that may change according to age or years of service, early retirement provisions (explicit buyouts), specific tax rules that may affect the timing of retirement (such as penalties for early withdrawal), and potential availability of a lump sum on the condition of leaving the firm (Dulitzky 1999, p. 5).
are not typically backloaded, vested workers do not suffer benefit losses from changing jobs or retiring too early.\(^69\) Nor do workers face financial penalties for working past the plans’ normal or earlier retirement ages. All in all, defined contribution plans (and cash balance plans) tend to be neutral about the age of retirement (Johnson and Steuerle 2003; Diamond 2005).

**D Retiree health benefits also influence the timing of retirement**

Also of note, the availability – or unavailability – of health insurance after retirement has ‘a powerful effect’ on the timing of employee retirement (Aaron 1999, p. 53). Workers who have retiree health coverage are likely to retire much earlier than those who do not. One study estimated that the availability of retiree health insurance increased retirement rates by 26 per cent for men and 31 per cent for women (Johnson et al. 2003).

6 **Other retirement policy issues**

A **Only about half of Americans have pensions**

According to Harvard University Law Professor Daniel Halperin, ‘ideally, every employer would have a plan covering all their employees’ (2003, p. 42). Measured against this standard, the current pension system must be viewed as a failure. The overall coverage rate for retirement plans has held relatively steady in recent years, with only about half of private-sector employees participating in an employer-sponsored retirement plan. For example, of the 157 million Americans workers in 2006, just 78.6 million (50.0 per cent) worked for an employer (or union) that sponsored a retirement plan, and just 62.3 million (39.7 per cent) participated in that plan (Copeland 2007a, pp. 23–4 (figure 17)).

Table 19.5 provides details about employer sponsorship of retirement plans in 2006 and worker participation in those plans. For example, the probability of pension coverage is greater for older workers, whites, highly educated workers, higher-income workers, full-time workers and workers at larger firms. Participation rates increased through age 55 and then declined. But even among older workers aged 55 to 64, only 49.0 per cent participated in a pension plan in 2006.

\(^{69}\) Instead, mobile employees can typically roll over their individual account accruals and accumulate large account balances to be used for retirement. Indeed, this portability is one of the most important advantages of defined contribution plans, especially for women, who typically have shorter job tenures because of greater child and dependent care responsibilities. National Economic Council Interagency Working Group on Social Security (1998); Heinz et al. (2006).
Table 19.5  Share of workers with an employer that sponsored a retirement plan and share participating in the plan, by various characteristics, 2006 (per cent)

<table>
<thead>
<tr>
<th>Worker characteristic</th>
<th>Sponsorship rate</th>
<th>Percentage participating</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20 or younger</td>
<td>24.6</td>
<td>5.3</td>
</tr>
<tr>
<td>21–24</td>
<td>37.6</td>
<td>19.5</td>
</tr>
<tr>
<td>25–34</td>
<td>49.3</td>
<td>37.3</td>
</tr>
<tr>
<td>35–44</td>
<td>53.6</td>
<td>45.6</td>
</tr>
<tr>
<td>45–54</td>
<td>57.3</td>
<td>50.2</td>
</tr>
<tr>
<td>55–64</td>
<td>56.2</td>
<td>49.0</td>
</tr>
<tr>
<td>65 and older</td>
<td>38.1</td>
<td>26.0</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>49.0</td>
<td>39.9</td>
</tr>
<tr>
<td>Female</td>
<td>51.0</td>
<td>39.4</td>
</tr>
<tr>
<td><strong>Race/Ethnicity</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>53.8</td>
<td>43.3</td>
</tr>
<tr>
<td>Black</td>
<td>49.2</td>
<td>37.6</td>
</tr>
<tr>
<td>Hispanic</td>
<td>31.9</td>
<td>23.6</td>
</tr>
<tr>
<td>Other</td>
<td>48.2</td>
<td>37.7</td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No high school diploma</td>
<td>24.0</td>
<td>13.3</td>
</tr>
<tr>
<td>High school diploma</td>
<td>44.8</td>
<td>34.5</td>
</tr>
<tr>
<td>Some college</td>
<td>51.3</td>
<td>39.2</td>
</tr>
<tr>
<td>Bachelor’s degree</td>
<td>62.3</td>
<td>53.6</td>
</tr>
<tr>
<td>Graduate/professional degree</td>
<td>69.1</td>
<td>61.8</td>
</tr>
<tr>
<td><strong>Annual earnings</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;$5000</td>
<td>24.1</td>
<td>6.0</td>
</tr>
<tr>
<td>$5000–$9999</td>
<td>28.6</td>
<td>10.8</td>
</tr>
<tr>
<td>$10 000–$14 999</td>
<td>31.2</td>
<td>16.2</td>
</tr>
<tr>
<td>$15 000–$19 999</td>
<td>35.7</td>
<td>23.0</td>
</tr>
<tr>
<td>$20 000–$29 999</td>
<td>47.7</td>
<td>36.3</td>
</tr>
<tr>
<td>$30 000–$39 999</td>
<td>58.0</td>
<td>49.5</td>
</tr>
<tr>
<td>$40 000–$49 999</td>
<td>64.4</td>
<td>57.4</td>
</tr>
<tr>
<td>$50 000 or more</td>
<td>68.9</td>
<td>64.7</td>
</tr>
<tr>
<td><strong>Work status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full-time, full-year</td>
<td>56.7</td>
<td>49.1</td>
</tr>
<tr>
<td>Part-time, full-year</td>
<td>33.6</td>
<td>19.0</td>
</tr>
<tr>
<td><strong>Employer size</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10–24 employees</td>
<td>27.4</td>
<td>20.9</td>
</tr>
<tr>
<td>25–99 employees</td>
<td>42.7</td>
<td>32.1</td>
</tr>
<tr>
<td>100–499 employees</td>
<td>55.3</td>
<td>43.0</td>
</tr>
</tbody>
</table>
Table 19.5 shows that the probability of participating in a pension plan increases significantly with income level. While 64.7 per cent of workers with annual earnings of $50 000 or more participated in a plan in 2006, only 16.2 per cent of workers earning between $10 000 and $14 999 participated that year. Similarly, while 49.1 per cent of full-time, full-year workers participated in a pension plan, just 19.0 per cent of part-time, full-year workers participated. Table 19.5 also shows that the probability of a worker participating in an employment-based retirement plan increases significantly with the size of her employer. Workers in small businesses are particularly hard hit: while 52.1 per cent of employees at firms with 1000 or more workers participated in a pension plan in 2006, only 20.9 per cent of workers at firms with ten to 24 workers participated in a plan that year.

Participation in Individual Retirement Accounts is even lower than participation in employment-based plans. For example, only 3.3 million tax returns for 2006 showed deductible IRA contributions that year, and their deductible contributions totaled just over $12 billion (Copeland 2007b). As with employment-based plans, participation in IRAs tends to be highest among those who are older, those who have attained a higher educational level, and those who have a higher income level.

On the bright side, since 2004 we have made it easier for employers to automatically enroll employees in IRC § 401(k) plans, and we have made the retirement savings tax credit permanent. But these small steps will not avert a retirement income crisis for the baby boomers and beyond.

At the very least, we need to make sure that every worker has an easy way to save for retirement. For example, we could require all employers to offer pension plans, 401(k) plans or, at least, payroll-deduction IRAs. Even with universal access, however, many workers simply will not save for retirement (Turner and Verma 2007). Making the saver’s tax credit refundable could also help encourage workers to save for retirement (Befort 2007, pp. 982–6; Gale et al. 2005).
In the end, however, we will probably need to establish a mandatory universal pension system (President’s Commission on Pension Policy 1981). We could start by requiring workers to contribute 3 per cent of earnings to individual retirement savings accounts (Carasso and Forman 2007). Then, over a decade or so, we could gradually increase the required contribution level up to 10 per cent of earnings, and, at the same time, we might phase out the current voluntary pension system.

**B The current system may not provide adequate retirement incomes**

The combination of earlier retirements and longer life expectancies has led a number of analysts to express concern about the financial prospects of elderly retirees in the 21st century (Congressional Budget Office 2003). The United States already has 36 million residents who are aged 65 and over and 4.7 million who are aged 85 and over (He et al. 2005, p. 6). By 2030, however, the United States will have 72 million residents aged 65 and over, and it will have 9.6 million residents aged 85 and over. The economic problems of these elderly citizens will be of paramount importance to the nation in the 21st century (Thompson 1998).

Despite the voluntary nature of the current pension system, it does appear that most Americans are saving enough to meet their retirement income needs (Korczyk 2008; Butricia et al. 2007). Still, a substantial minority of households are not saving enough. Engen et al. (2005) estimate that at least a quarter risk being unprepared, and even the more optimistic estimates by Scholz et al. (2006) show that 19 per cent of households are undersaving for retirement.

**C There are fewer traditional defined benefit plans**

In recent years, there has been a marked shift away from traditional defined benefit plans and toward defined contribution plans and their cash balance cousins. Many medium and large private establishments have switched from defined benefit plans to defined contribution plans. See Table 19.6.

Among the reasons for the shift toward defined contribution plans are the higher administrative costs associated with defined benefit plans, employment shifts from large to small firms, the decline in unionism, the rise of 401(k) plans, workers’ interests in having more portable pensions, and firms’ interests in attracting younger workers and in having pensions that encourage later retirement (Even and Macpherson 2003). Lately even economically healthy employers have been freezing or abandoning their traditional defined benefit plans (VanDerhei 2007; Munnell et al. 2006). All in all, the era of the traditional defined benefit plan is largely behind us (Zelinsky 2007).
As America ages, the workforce has also begun to change. Since the Age Discrimination in Employment Act’s elimination of age-65 mandatory retirement, phased or gradual retirement has started to replace the traditional ‘cliff’ retirement pattern in which older workers would leave the workforce and never return. Many older Americans stay in or re-enter the workforce, especially in part-time and contingent work situations (Herz 1995; Quinn 1999; Penner et al. 2002; Chen and Scott 2006). According to one estimate, roughly one-third of older workers leave their long-held career jobs in favor of new jobs that serve as a bridge to full retirement (Committee for Economic Development 1999, p. 9).

Another significant retirement plan trend is the general decline of annuitization among American workers. The shift to defined contribution plans is part of the story, but defined benefit plans are also changing. For example, 52 per cent of participants in medium and large defined benefit plans were permitted to take a lump-sum distribution in 2005, up from 14 per cent in 1991 (BLS 2007b, table 51; Copeland 2005). Moreover, among defined contribution plans, lump-sum payouts are increasingly prevalent.

### Table 19.6  
Full-time employees in medium and large private establishments participating in defined benefit and defined contribution retirement plans, selected years (per cent)

<table>
<thead>
<tr>
<th>Year</th>
<th>Defined benefit plans</th>
<th>Defined contribution plans</th>
<th>All retirement plans</th>
</tr>
</thead>
<tbody>
<tr>
<td>1985</td>
<td>80</td>
<td>41</td>
<td>91</td>
</tr>
<tr>
<td>1986</td>
<td>76</td>
<td>47</td>
<td>89</td>
</tr>
<tr>
<td>1988</td>
<td>63</td>
<td>45</td>
<td>80</td>
</tr>
<tr>
<td>1989</td>
<td>63</td>
<td>48</td>
<td>81</td>
</tr>
<tr>
<td>1991</td>
<td>59</td>
<td>48</td>
<td>78</td>
</tr>
<tr>
<td>1993</td>
<td>56</td>
<td>49</td>
<td>78</td>
</tr>
<tr>
<td>1995</td>
<td>52</td>
<td>55</td>
<td>80</td>
</tr>
<tr>
<td>1997</td>
<td>50</td>
<td>57</td>
<td>79</td>
</tr>
<tr>
<td>1999</td>
<td>42</td>
<td>52</td>
<td>72</td>
</tr>
<tr>
<td>2000</td>
<td>36</td>
<td>50</td>
<td>70</td>
</tr>
</tbody>
</table>

*Source: Dickerson (2004), figure 2.*
and a declining fraction of participants even have access to a life annuity as a payout option. One study of the plans of medium and large firms found that just 27 per cent of those with 401(k) plans could take their funds as a life annuity (Mitchell with Dykes 2003).

Annuities help ensure that workers and their families will not outlive their retirement savings, and inflation-adjusted annuities keep benefits from eroding because of inflation (GAO 1997, p. 49). Yet while workers approaching retirement age are concerned about maintaining a reasonable standard of living throughout their retirement years, they do not seem to like annuities (Yakoboski 2005; Gentry and Rothschild 2006). Retirees often prefer lump-sum distributions to annuities in pension plans and they rarely choose to buy annuities in the marketplace. Part of the problem is that the premiums associated with annuities in the individual annuity market tend to be fairly high (Mitchell et al. 2007b). Another problem is that older Americans tend to be myopic in their decisions about annuities. They underestimate their life expectancies, overestimate their financial ability to meet their future retirement income needs and fail to understand the deleterious effects of inflation.

The government could combat this myopic decision-making by encouraging or even requiring retirement pension plans to pay benefits in the form of annuities, perhaps even indexed-for-inflation annuities. Such annuities would keep the purchasing power of benefits relatively constant over time by lowering initial benefits enough to pay for higher benefits later on (Steuerle et al. 1999). Alternatively, Congress could require that all plans at least offer participants the option of taking benefits in the form of an inflation-adjusted annuity. Another approach would be to encourage the purchase of deferred annuities. For example, a 65-year-old retiree could use some of her assets to buy an age 85 longevity annuity where payouts only commence when and if the purchaser reaches age 85. Longevity annuities can be an extremely efficient form of longevity insurance (Scott 2008; Hu and Scott 2007; Webb et al. 2007).

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Pensions and retirement


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