

Chapter 4

Changing Risks Confronting Pension Participants

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The only section of the Internal Revenue Code that most Americans can immediately recognize is ‘Section 401(k)’. Furthermore, in contrast to the typical reaction to tax law, the mention of a Section 401(k) plan is often greeted with approval and even excitement, as people think about how this wonderful nest egg will help carry them through retirement. Nevertheless, the average 401(k) account balance currently stands at only about \$77,000 (Holden and VanDerhei 2004), which, given improvements in longevity, means that these assets may fail to produce enough assets to support the average person in retirement.

It is well known that 401(k) account balances depend on annual contributions by the participant and/or the employer, investment returns on account balances (which, of course, is related to the performance of the financial markets and the allocation of assets within the participant’s account), and leakage, which involves withdrawals, borrowing, and loan repayments. Participant age and job tenure as well as the allocation to equity funds in the plan enhance the chances that any individual will be on the higher end of the account balance spectrum. This chapter explores some of the consequences of the US shift in employer-sponsored pension plans over the last decade. We shall argue that the shift from traditional employer-sponsored defined benefit (DB) plans to individual defined contribution (DC) plans has profound implications for retirement security. Specifically the new model no longer rests on group saving arrangements; rather, the norm emphasizes individual responsibility. This represents a fundamentally different way to think about and plan for retirement. We begin by examining the challenges to participants’ retirement income security and then identify policy options that might enable participants to handle shifting pension risk.

The Stampede to Self-Directed 401(k) Plans

In 1992, some 40 percent of all American families had a participant enrolled in a traditional DB pension plan only, while 38 percent had someone enrolled in only a DC plan.¹ A decade later, the number of families with

individuals in only a DB plan had fallen by half, to 20 percent, while those enrolled in only a DC plan ballooned to 58 percent. The number of families with individuals enrolled in both DB and DC plans during this period remained relatively constant at approximately 22 percent. Further, the total value of assets in individual retirement accounts (IRAs) at \$3 trillion were much greater than assets in DB plans (\$1.1 trillion) and DC plans (\$1 trillion).

This process substantially altered risks borne by pension plan participants. In the DB framework, participants are generally offered an annuity payment at retirement in the form of periodic payments for life. These benefits are paid for primarily through employer contributions (employee contributions to private sector DB plans are rare) and investment income generated by these assets. The federal Employee Retirement Income Security Act of 1974 (ERISA) requires that DB plan assets be held in trust. Some of the key design characteristics of a DB plan may be summarized as follows (Zelinsky 2004): (a) deferred income is provided at retirement, not before;² (b) retirement income is provided in periodic annuity-type payments, rather than a lump sum; (c) employer contributions are pooled in a common trust fund from which all participants' benefits are paid; and (d) legal responsibility to fund the benefits promised rests on the employer so that if the funds are not adequate to fulfill those promises, the employer is responsible for making up the shortfall.

In contrast, DC plans usually distribute the plan assets to the employee when he terminates employment irrespective of his age, and typically pays benefits in the form of a lump sum. In addition, DC plans do not pool participants' assets but rather provide each participant with an individual account to which contributions (plus investment earnings or losses on those assets) are allocated.³ At retirement, DC participants are only entitled to receive the balance in their accounts; employers are not required to supplement the participant's account if it is inadequate to provide necessary retirement income.

Today, 401(k) plans make up the largest component of all DC plans, and generally take the form of a profit-sharing plan with a salary-reduction 401(k) feature. Three quarters of DC participants were enrolled in 401(k) plans in 1999 (Munnell and Sundén 2004). And as a rule, 401(k) plan assets are selected by individual participants, not the plan's fiduciary. For example, the US Department of Labor, Bureau of Labor Statistics (USBLS) notes that 81 percent of 401(k) participants may choose how their funds are invested (2005).

The trend toward participant self-direction of investments has been fueled by several factors.⁴ These include employer interest in minimizing liability for investment decisions, and the belief by some participants that by taking charge of investing their pension contributions they can better control their financial security in retirement. Further, the mutual fund industry has persuaded employers to take advantage of the opportunity to

shift fiduciary responsibility to participants, and fiduciaries also find relief under ERISA from shareholder lawsuits, if participants incur investment losses when they are permitted to exercise investment control over their accounts. In any event, the idea that participants can be empowered to decide how their retirement assets are invested represents a powerful statement of confidence by employers in the ability of their employees to manage their own future.

Those expressing concern that some employees might not be able to make wise choices, because they lack the interest or experience in financial management and investment, tend to be cast as paternalists and out of step with the times. Often those urging a more cautious approach have been accused of not being willing to trust employees' competence and good judgment. For instance, in 2005, President George W. Bush spoke in Iowa saying to the crowd, 'Why is Congress afraid to let you control your own money?'⁵ Overlooked in the rhetoric, however, is the fact that DC plans, by their very nature and design, require participants to bear substantially more risk than under traditional DB plans and that self-directed investments within a 401(k) plan do impose a burden on employees. The fact remains, therefore, that challenges facing employees are daunting and the potential for mistakes substantial. Further, depending when mistakes occur, there may be little chance to correct prior missteps.⁶

Risks and Rewards of Retirement Saving in Self-Directed 401(k) Plans

The reallocation of various risks and rewards from the plan sponsor to the employee poses serious challenges to many participants.

Risk of Inadequate Saving. Even the best-designed 401(k) plan in the most favorable of investment climates cannot produce adequate retirement income when the participant fails to contribute a significant amount to the plan on a regular basis. Lack of continuous access to a 401(k) plan, financial inability to make annual contributions because of low wages, competing economic priorities, life and family changes, and unexpected major expenses all contribute to this problem. Obviously, when an eligible participant makes no or low contributions to the 401(k) account, account assets at retirement will fall short of what is required in retirement.

Part of the problem is that participation in 401(k) plans is voluntary. Currently, only a meager 8 percent of eligible participants make the maximum contribution each year, and about one quarter of eligible workers choose not to participate (Smith et al. 2004). To remedy this situation, proposals have been advanced to create 'automatic 401(k)' plans, by establishing certain default options to facilitate employee participation such as making participation automatic unless the employee affirmatively opts out

of coverage, and providing for automatic contributions through payroll deduction.⁷ These proposals may reduce the number of nonparticipants and boost saving somewhat, but they are incomplete solutions because they primarily address nonenrollment that results from inertia of eligible participants. Some participants also make a deliberate choice to forgo 401(k) participation because of cost (they feel they cannot afford to contribute) or fear (they are intimidated by having to assume the responsibility for making investment choices that will determine their ultimate financial future). This is particularly a concern for low and moderate wage workers who lack the financial resources. Most studies show that contribution rates and amounts increase with age, earnings, and income, though even middle-class workers face the risk of failing to accumulate sufficient assets to meet retirement income needs (Smith et al. 2004).

Compounding the problem, employers generally do not contribute to a 401(k) plan unless the worker contributes. Employer matching contributions are generally predicated on prior employee elective deferrals because, as a plan design matter, participation in a 401(k) plan is initiated by an election by the employee to enroll and make a contribution. Mitchell et al. (this volume) review prior research supporting the view that employee savings rates are strongly influenced by employer matching contributions, although the extent of this effect depends on whether one is focusing on introducing a match or increasing an existing match. The underlying premise for this research is a typical 401(k) plan design where the employer contribution is used as an enticement for the individual to contribute; if the individual does not participate in the plan, no employer contribution is made. In this case, failure of the participant to contribute in a given year may have a far more significant impact on the retirement account balance than an employee may realize.

A related point is that workers may not be able to make 401(k) contributions in all working years if they are not continuously employed by companies which offer these plans. VanDerhi and Holden (this volume) conclude that replacement rates are much lower if individuals are not offered a 401(k) plan. Moreover, workers in the highest income quartile who decide to save in an IRA instead, would see their replacement rate decline since IRA limits are lower than those of 401(k) plans. For those in the lowest income quartile, however, replacement rates hold steady if IRA saving is substituted for 401(k) contributions. Naturally, moving from job to job creates risk for participants, even when 401(k) coverage is available on both jobs, because assets from a worker's initial plan may be made available at employment termination; unless the funds are rolled over, 401(k) distributions may be spent on other things rather than saved for retirement.⁸ Moreover, interruptions in contribution patterns, particularly if frequent, may seriously undermine even the most diligent saver's ability to accumulate a sufficient amount of assets in a 401(k) plan.

Failure to Roll over Distributions. One long-standing criticism of 401(k) plans is that the balance in participants' accounts can be distributed at termination of employment, also known as 'leakage'. Although participants who receive pension distributions prior to attaining retirement age, death, or disability are taxed on those distributions unless they are rolled over, some see this as a relatively small price to pay for access to the money. To counteract this leakage, Congress in 2001 required plans to establish mandatory direct rollovers of eligible rollover distributions in excess of \$1,000 as a default option (in the Economic Growth and Tax Relief Reconciliation Act or EGTRRA). The distribution must be automatically rolled over to a designated IRA of the plan sponsor's choice unless the participant affirmatively elects to have the distribution transferred to a different IRA (or another qualified retirement plan), or elects to receive it directly. Since this new provision has only recently been implemented, its effect on retirement savings will not be measurable for several years.

The decision to roll over a lump sum is closely linked to the individual's age and the size of the distribution. Moore and Muller (2002) note that only 17 percent of individuals who received lump-sum distributions at ages 25–29 rolled them over. By contrast, 56 percent of individuals who were older than 60 when they received a distribution rolled it over.⁹ We note that this problem of leakage is not necessarily limited to DC plans but instead can apply to any plan that pays benefits in a lump sum such as a cash balance plan.¹⁰

Because the legality of cash balance plans has been challenged (particularly those that converted from traditional DB plans), few employers are establishing new cash balance plans or converting their current DB plans. Among other things, these plans have been challenged as age discriminatory because disagreement exists over whether they discriminate against older workers in the rate of benefit accrual (Purcell 2003). But at some point, the cloud over their legality will be lifted either by the courts or Congress, and the numbers of cash balance plan adoptions or conversions will rise again.

Leakage via Loans and Hardship Withdrawals. Workers are more likely to participate in 401(k) funds when they know they can have access to them in an emergency through plan loans¹¹ and provisions allowing for hardship withdrawals (Munnell et al. 2003).¹² Mitchell et al. (this volume) find that the incentive effect of these features is relatively small. Nonetheless, giving the participant access to retirement assets through plan loans or hardship withdrawals clearly creates a tension between retirement savings and savings for other worthy purposes. Even those who have a consistent saving plan may find the plans disrupted by unexpected consumption needs or unexpected declines in income. These disruptions occur most frequently around key lifestyle changes,

including medical crisis, marriage, the birth of a child, the purchase of a home, or educational expenses, leading to loans or hardship withdrawals from the 401(k) plan. And even if the participant repays a loan in accordance with plan terms (as opposed to failing to repay the loan and having the amount offset against the participant's account balance when he or she terminates employment), earnings are still lost during the loan period because the participant's account balance may be considerably smaller than it was prior to the loan.

Investment Risk. While many studies and reports have discussed this problem, a few key points bear repeating. In a DB benefit plan, employer and employee contributions are pooled in a trust and invested professionally. When investment results fall short of what is necessary to pay promised benefits, the plan sponsor must make up the shortfall (as long as the sponsor has not filed for bankruptcy). The plan sponsor also bears administrative and transaction costs associated with investments, including those incurred for commissions and investment advice, and these costs are spread over the commingled asset pool.

By contrast, in a DC plan, just as the investment risk is transferred to the plan participant, so too are administrative and transaction costs. Although from the plan sponsor's point of view the administrative costs of a DC plan may be less than those of a DB plan,¹³ participants in 401(k) plans do bear these costs directly as they are often allocated on an account-by-account basis, reducing participant account balances. Further, the cost to the participant is inversely related to the size of the account balance (ICI 2004). In addition, large DC plans (and nonself-directed DC plans such as a money purchase pension plan that uses centralized asset management), and mutual funds, have the potential for higher returns as compared to an individual employee investing own 401(k) assets, because the relative size of the participant's account balance is significantly smaller.

Maximizing investment performance is key to assuring that a self-directed 401(k) plan yields adequate retirement income. But the ability to invest wisely is not an innate skill—it must be learned and/or delegated. Even if delegated, some understanding of basic investment, insurance, and risk management principles is necessary. If pension assets are concentrated in a single pooled trust, the plan fiduciary can hire professional advisors to provide this expertise. By contrast, DC plan participants may not have access to the same level of expertise at comparable cost.

Another important advantage that DB plan sponsors have, as compared to DC plan participants, is the longer and more stable time horizon that the former enjoys for asset investment. When retirement benefits are being paid from a single pool of assets and the call on those assets occurs over a long period, DB plan investors can better diversify their portfolios and select investments with a longer time horizon and/or greater risk (and

greater concomitant returns).¹⁴ This subcategory of investment risk has been called 'temporal risk' (Zelinsky 2004).

Studies have shown that many 401(k) participants tend to invest their assets more conservatively and in a less diversified manner than professional asset managers do, thus leading to lower overall returns (Gale et al. 2004). This may be a function of what funds are offered as well as participant age (Holden and VanDerhei 2004; Medill 2003). In addition, as Mitchell and Utkus (2003) observe, DC plans often allow participants to invest in employer stock because plan sponsors see this as an obvious way to encourage and enable their employees to become investors; they may also believe that employer stock investments improve productivity and enhance shareholder value. Yet this type of investment may not be beneficial to employees; a high level of concentration in this one investment type generally poses a substantially greater investment risk than a more diversified portfolio would. Participants in self-directed 401(k) plans who do not understand risk and return strategies are unlikely to be successful in maximizing return.

Currently about half the participants in 401(k) plans elect to invest in employer stock when given the option; of those offered, more than half held 20 percent or less stock, and about 13 percent had more than 80 percent of their account balances invested in employer stock (Holden and VanDerhei 2004). Over a fifth of participants in large companies have 401(k) assets invested in employer stock (Spence 2005). It is true that some employers, through their 401(k) vendors, offer online pension educational resources and advice, including interactive programs to assist in creating profiles of the participant's risk tolerance and needs. This is intended to assist them in determining asset allocation and perhaps even helping them select specific investment vehicles; furthermore, online pension calculators can help participants gauge what their financial needs will be in retirement and what concrete steps they must take to meet those needs. Yet these programs have their limitations.¹⁵ Not all participants have access to or are capable of using computers. Some participants prefer dealing with humans rather than machines or need old-fashioned printed documents instead of accessing or downloading those online, and for them the process is demanding, cumbersome, and confusing. Therefore, a system in which every worker bears the investment risk for all or most of the assets he or she will have in retirement may not be effective, efficient, and sensible, if the pension plans covering them are to promise adequate retirement income.

Risk of Retiring Earlier Than Planned. According to the 2005 Retirement Confidence Survey,¹⁶ many workers are planning to work beyond the age at which current retirees retired; this means they have longer to continue their earnings stream and save for retirement. But though retirement ages are rising, nearly 40 percent of retirees still leave the workforce earlier than planned, often citing health problems or disability (41 percent) or changes

at their company including downsizing (34 percent) as causes for early retirement (Helman et al. 2005). Of course, in the past, workers may have retired early because of generous early retirement packages and the promise of retiree medical benefits, both of which are being cut back. In the future, early retirees forced to stop work due to health, disability, or downsizing may therefore enter retirement with fewer monetary benefits and less coverage in the form of retiree medical benefits.

The literature suggests that those who retire earlier than planned are also more likely to express concern about having sufficient retirement resources. For instance, Helman et al. (2005) report that fewer than four of ten workers believe they are on track to save enough for retirement. Almost one quarter (23 percent) of workers describe themselves as 'a little behind schedule' and one-third (32 percent) say they are 'a lot behind schedule'. Only 7 percent of workers describe themselves as 'ahead of schedule' for retirement savings.

Longevity Risk. One component of investment risk that some participants may have difficulty in estimating is how long they are likely to live in retirement and therefore how long the assets they have accumulated for retirement will last. Hurd and McGarry (1997) found that HRS respondents age 46–65 had a realistic expectation of how long they would live; follow-up interviews showed that they also modified those expectations based on new information such as the onset of a disease. Interestingly, they also found that men tended to overestimate their survival probability, while women tend to underestimate it. Helman et al. (2005) came to a similar conclusion using data from the 2005 Retirement Confidence Survey.¹⁷

Traditional DB plans typically paid benefits in the form of an annual benefit for life. Distributions were made directly from a single pooled trust or through an annuity purchased by trust assets for the participant and his or her spouse, if any. Participants would therefore not face the risk of outliving retirement assets (although the benefit would often diminish over time with inflation). By contrast, most DC plans, including self-directed 401(k)s, make distributions in a single sum. Accordingly, the challenge for the participant is to determine what to do with the lump-sum distribution so that it will last through retirement. Initially many participants roll their distributions into an IRA, so as to avoid immediate taxation of the distributed amounts. While participants can then purchase an annuity, most appear to be unaware of or skeptical of this option. Partly as a consequence, the current level of annuitization is low (Ameriks and Yakoboski 2003) and many participants receiving lump-sum distributions decide to self-annuitize.

Even if the retiree has a realistic expectation of his life expectancy, people tend to underestimate how much money they will need on an annual basis to live comfortably in retirement (Helman et al. 2005). This problem is compounded by the fact that most workers have not even tried

to calculate how much they need to save for retirement. Only 42 percent report that they (or their spouse) have done so, and of those who made the calculation, only 44 percent state that their saving patterns changed as a result of that information.¹⁸

Recent research suggests that many people do anticipate that their consumption needs will fall in retirement, in part because they no longer have work-related expenses (Hurd and Rohwedder 2005). Indeed, these expectations are often realized, which suggests that these people may have a reasonably realistic view of retirement needs. Yet the fact remains that many do not fully appreciate the effect of inflation on their projected income and expenses, and many fail to realize that half will live beyond their life expectancy. And not surprisingly, the lower is preretirement income and the worse is one's health status, the more likely one is to expect to struggle during retirement.

Risk of Irrational Behavior. Much of America's retirement policy rests on the fundamental economic assumption that individuals will behave rationally and make choices that are in their economic best interests. This assumption is sometimes incorrect. For example, despite the problems illustrated by the Enron debacle where individuals lost their jobs and a substantial amount of their pension investments in employer stock due to corporate malfeasance, participants continue to allocate a disproportionate share of their investments in employer stock.

Enhancing Retirement Income Security. This discussion suggests some premises from which pension policy experts might work to improve retirement income security. For one thing, no one plan type will be superior to all others for all employees over their working lives. Because of different work, family, saving, and spending patterns, as well as the variety of decisions that must be made both during the working career and after retirement, it appears that many people may not accumulate adequate retirement assets that will cover them throughout retirement, in a DC type retirement system. Such workers would likely be better off having both DB and DC plans, as each helps assure asset accumulation at different stages of the worklife. Nevertheless, fewer than one quarter of all employers offering pension plans today provide both a DB and a DC plan, and it seems unlikely that this number will rise much in the near future (Copeland 2005). Alternatively, proposals to permit default options in 401(k) plans could make contributing and investing less burdensome and risky for participants. If consensus emerges around the adoption of particular default mechanisms, it would be important to minimize any legal impediments to implementing the idea.

Policymakers concerned that not all employees want or are able to handle critical investment decisions would do well to reassess the current structure of

self-directed 401(k) programs. For instance, participants might be allowed to choose between self-direction of their assets in a 401(k) plan and entrusting those decisions to professional asset managers. Amounts in the individual accounts of participants who choose the latter approach could be placed in a common investment trust and earnings and losses in the common fund could be ratably allocated among all participants in the trust.

Many participants would probably also benefit from assistance when making investment decisions with their retirement assets, yet employers are concerned about liability if they were to offer investment advice. Congress could encourage employers with 401(k) plans to offer investment advice by implementing a statutory safe harbor protecting fiduciaries who facilitate this process. Conditions could be attached to that fiduciary protection, such as requiring that the advice be given only by an independent financial organization willing to assume fiduciary responsibility for the advice provided. At the same time, and consistent with ERISA requirements, a plan fiduciary would still have to prudently select and monitor the independent organization offering the investment advice. If policy-makers were concerned about avoiding potential conflicts of interest, investment advice provided by the plan's current 401(k) vendors could be excluded from safe-harbor treatment.

Finally, to better protect against the risk of outliving retirement assets, plan participants could be offered advice about the relative merits of annuities versus lump sums, as well as an annuity option in addition to the lump-sum distribution. In addition, assistance estimating ongoing financial needs and monitoring expenditures could be provided to those who elected the lump sum. Furthermore, many retirees would benefit from continued access to the types of investment advice that active employees also need.

Conclusions and Future Research

Retirement security experts in the past referred to US retirement system as a 'three-legged stool', with the legs representing employer-sponsored pensions, social security, and private saving. The transformation of workplace pensions into much more individually oriented plans means that some workers now face a future where their pension has, in effect, been merged with individual saving, since in both cases workers rather than employers now bear investment risk. Accordingly, the challenge for policy experts is to identify and build on past successes with the employer-sponsored pension system and recognize and learn from past mistakes. As long as the US approach to retirement security relies on a variety of public and private programs, it is useful to ensure that these fairly allocate risks among individual retirees, their employers, and taxpayers.

Several areas require additional research. If providing investment advice to 401(k) plan participants is to be pursued as a legislative goal, additional

research will be required on consumer literacy. Recent analysis has helped to crystallize the discussion,¹⁹ but it will be necessary to do more with interactive focus groups and small group discussions to test participants' understanding and response to advice and information provided. More must be also learned about the effectiveness of online consumer tools such as pension calculators, summary plan descriptions, and other written communications on pension plan decision-making would also enhance understanding. Another question deserving of attention is why eligible participants so often fail to enroll and contribute to 401(k) plans. Some may think they cannot afford to contribute; others may lack motivation or suffer from inertia; and still others may not want to assume investment responsibility. If the latter were true, 401(k) participation could be enhanced by giving participants given the option to receive professional investment advice. There is much opportunity for policy response.

Endnotes

1. These data are from Copeland (2005).
2. Many DB plans do offer participants a lump-sum option; employers with cash balance or other hybrid arrangements also usually provide lump-sum benefits as the normal form of distribution, with periodic payments as an optional form of benefits (Munnell et al. 2004). For an extensive discussion of cash balance and other hybrid plans, see Clark and Schieber (2004), and Schieber (2003).
3. Although DC plan assets may be held in trust, increasingly they are not managed by professional asset managers but are invested by the participants themselves through a self-directed process that, under ERISA, may be structured to relieve the plan fiduciary (typically the employer or other plan sponsor) of the fiduciary duty to invest plan assets prudently and other fiduciary responsibilities.
4. For a general discussion of the development, structure and implications of self-direction under ERISA § 404(c), see Perun and Steurle (2005).
5. President Bush's views on people's ability to manage their own investments were expressed in many speeches on his plan to incorporate personal accounts into social security. Edited transcripts of these speeches appear at <http://www.whitehouse.gov/infocus/social-security/map.html>. For example, in Pensacola, Florida on March 18, 2005, the President said: '... everybody has got a chance—should have a chance to be an investor. Investing is not limited to a certain class of person. ... And yet, I think the attitude of some, you know, we can't let certain people maybe invest their own money...' Similarly, on April 15, 2005 in Kirtland, Ohio, the President said 'One of the key principles is government has got to trust people. The more government trust people, trust people with their own money, the more content, the more prosperous our society will be.'
6. We recognize that to focus on the 401(k) plan alone is incomplete, since many retirees also have social security, personal saving, and other real property assets. Nevertheless, it is valuable to explore retirement saving in 401(k) plans inasmuch as many employers offer these as the sole retirement plan.

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7. These proposals are designed to make contributing to a 401(k) plan and investing those assets less burdensome for participants by creating a series of default options that have the effect of increasing savings. For instance, Gale et al. (2005) propose a system of automatic enrollment where employees who fail to sign up are enrolled automatically at a designated contribution level deducted from their paychecks through payroll deduction, automatic escalation of contributions as a percentage of earnings, automatic investment in broadly index funds or professionally managed programs unless the employee chooses otherwise, and automatically rolled over when the employee terminates employment to an IRA, a 401(k) or other retirement plan offered by the new employer. Recognizing that default options have a significant impact on participant choices under a 401(k) plan, many others have advanced proposals with similar features, including Utkus and Young (2004), Thaler and Bernartzi (2004), and Mitchell and Utkus (2003).
8. For instance, Moore and Muller (2002) report that nearly two-thirds of individuals who received lump-sum distributions were under 40 years of age, and the amount of their distribution was slightly over \$14,000. More than half of the individuals who received a lump-sum distribution reported saving those funds in a tax-deferred vehicle (35 percent) or another savings vehicle (17 percent). Of those who spent their distribution, most used the funds to pay bills, buy other items, or finance everyday expenses; only 1 percent reported using the money for education or medical expenses. Relatively little is known about whether distributions not rolled over to another qualified retirement plan or an IRA ultimately erode retirement wealth. Englehardt (2002) uses Health and Retirement Study data (HRS) to examine this question and concludes that there is not much evidence that consumption of distributions has resulted in significant pension leakage. However, one quarter of the households that spent distributions could have increased their pension and social security wealth by 25 percent had the distributions been rolled over.
9. The amount of the distribution is one of the strongest predictors of whether it will be rolled over or otherwise saved. Moore and Muller (2002) found that the mean distribution in 2000 dollars was \$13,999 and the median distribution was \$4,860. However, with respect to distributions that were rolled over, the mean cash-out in 2000 dollars that was rolled over was \$22,839 and the median was \$10,611.
10. As employers shifted from DB to DC plans, there has also been a shift within the DB universe toward cash balance plans; in fact, Munnell and Sundén (2004) report that nearly 15 percent of all participants in DB plans are in cash balance plans. Legally, cash balance pensions are treated like DB plans (e.g. the employer bears the risk for paying promised benefits), but they are structured to resemble DC plans. A hypothetical account is established for each employee with an opening balance. Each month, pay credits (a percentage of salary) and interest credits are credited to each participant's hypothetical account. Upon termination of employment or retirement, the participant can withdraw the hypothetical account balance as a lump sum or convert the hypothetical account balance into an annuity payable at normal retirement age. Clark and Schieber (2003) further describe the history and key design, operation, and policy issues surrounding cash balance and other hybrid plans.

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11. Loans are permitted from tax-qualified pension plans under certain legal conditions; if these requirements are not satisfied, the loan will be treated as a taxable distribution. Generally, this means that the loan cannot exceed the lesser of: (a) \$50,000 (less other outstanding loan balances), or (b) the greater of one-half of the present value of the amount in the participant's account or \$10,000. The loan must be repaid within five years; the payments must be substantially level, not less than quarterly. The five-year repayment rule does not apply to loans used to acquire the participant's principal residence.
12. A 401(k) plan may allow hardship withdrawals from the plan even while the employee is still working as long as the appropriate conditions and accompanying Treasury regulations are satisfied.
13. Husted (2000) concluded that the cost of a DC plan was less than the cost to the plan sponsor of a DB plan on a per participant basis, while Freeman and Brown (2001) concluded that mutual funds costs are higher than investment management costs in public sector DB plans. Recent work by the ICI (2003, 2004, and Collins 2003) disputes that conclusion, finding that total costs for mutual funds are actually lower than DB costs.
14. One way to deal with temporal risk is through the purchase of a variable annuity. Ameriks and Yakoboski (2003) describe the role of annuities in protecting against longevity and temporal risk.
15. Bodie (2003) examined the major websites offered by a number of prominent financial institutions and concluded that the educational materials and investment advice offered were 'often dangerously misleading' for those individuals who lack the knowledge and training to handle investment risk.
16. The RCS is described at <http://www.ebri.org/surveys/rcs/>
17. Helman et al. (2005) note that the average worker expects to retire at age 65 and spend 20 years in retirement. More than one quarter (27 percent) plan to spend between 20 and 24 years retired; 9 percent believe they will spend between 25 and 29 years; and 17 percent believe that they will spend more than 30 years in retirement.
18. Eighteen percent of workers think that they will need less than 50 percent of their preretirement income to live comfortably in retirement, while 23 percent believe they will need 70–85 percent of preretirement income, and 3 percent expect that 85–95 percent of preretirement income will be necessary. Only 4 percent believe they will need the same preretirement income and 6 percent think they will need greater income in retirement than their working years for a comfortable retirement. Most financial planners recommend that workers plan to save enough to assure a stream of retirement income that is at least 70 percent of preretirement income.
19. See for instance by Nyce (2005), Arnone (2004), Bodie (2003), Clark and Schieber (1998), and Moore and Mitchell (2000).

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