New Trends in U.S. Pensions

Olivia S. Mitchell
with the assistance of Erica L. Dykes

PRC WP 2000-1
Revised 7/17/01

A Report to the Pension and Welfare Benefits Administration
Of the U.S. Department of Labor

Pension Research Council
3641 Locust Walk, 304 CPC
Wharton School, University of Pennsylvania
Philadelphia, PA 19104-6218
Tel: 215/898-0424 • Fax: 215/898-0310
http://prc.wharton.upenn.edu/prc/prc.html

*Mitchell is the International Foundation of Employee Benefit Plans Professor of Insurance and Risk Management, the Executive Director of the Pension Research Council of the Wharton School at the University of Pennsylvania, and Research Associate at the National Bureau of Economic Research. Support for this research was provided by the Pension and Welfare Benefits Administration of the U.S. Department of Labor; able research assistance was provided by Erica Dykes. Useful comments were provided by Daniel Beller, Phyllis Fernandez, David McCarthy, and Jack Vanderhei, though opinions and conclusions are solely those of the author.

version of 71701

New Trends in U.S. Pensions[1]

Olivia S. Mitchell with the assistance of Erica L. Dykes

The last twenty years witnessed a rather striking transformation in the world's pension environment. Population aging and workforce changes in virtually all developed countries have sparked new forms of retirement provision. This pressure, combined with global financial market integration, has altered how people think about, and save for, retirement. As a case in point, many countries in the Western Hemisphere have moved away from a defined benefit (DB) pension model toward defined contribution (DC) plans, where participants' assets are accumulated and invested in capital markets. This has been a strong trend in Latin America, and similar changes have emerged in the UK, Germany, and most recently, Japan. The US pension environment has changed as well, with workers increasingly interested in retirement accumulation accounts and moving into defined contribution pensions in response to the robust stock market performance at the end of the twentieth century. In the US, as elsewhere, rising life expectancies and longer periods of labor market attachment have also enhanced the appeal of pensions for groups that previously lacked coverage years ago, such as among women.[2] Employers here, as elsewhere, are increasingly willing and even eager to provide new forms of pensions, responding to changes in the industrial and occupational mix of employment, and to an interest in using pensions to induce particular worker behaviors.[3] The pension arena has also been shaped by US regulatory developments including legislation liberalizing tax treatment of pension funding levels, contribution amounts, and benefit payouts (McGill et al., 1996). In sum, the last two decades have been favorable to a dynamic pension environment in the United States, just as in the rest of the world.

Nevertheless, the historical legacy in the US pension arena has been the defined benefit model, and as such, this plan type remains important to millions of workers and their employers. Nevertheless, companies that provided DB plans did not stand still: these sponsors too altered many aspects of plan design over time, changing eligibility rules, benefit offerings, and payout requirements over time. In this chapter we highlight some of the key developments in the US pension environment over the last two decades. We trace plan evolution by evaluating Employee Benefits Survey (EBS) information on pensions offered to full-time workers employed in medium and large establishments. These surveys, fielded by the U.S. Bureau of Labor Statistics (BLS), are summarized in individual-year tabulations that we have compiled into time series tables on private sector pension plan characteristics in the US.[4] After describing key retirement plan features, we report on time trends in retirement provisions and benefit formulas in US defined benefit and defined contribution plans. We conclude with a discussion of implications for the American workplace going forward.

Overview of Pension Design and Pension Features [5]

In the US, employer-sponsored pensions are traditionally classified into defined contribution and defined benefit plans.[6] The worker covered by a DB pension receives a promise of an eventual retirement benefit that depends on a specified formula. Here the retiree payment is typically a function of the covered worker's age, pay, and/or service levels. In most cases the benefit is paid as a life annuity. By contrast, the employee with a defined contribution pension tends to have choice as to whether to participate in the plan, and if so, how much to contribute to his retirement saving account. In addition, the plan sponsor often adds to the participating employee's account by means of a match over employee contributions. Pension contributions

are then invested in the capital market, and generally the DC participant has choice over investment options into which his own (and sometimes his employer's) funds are deposited. Usually, the contributions and earnings on the investments must be preserved for retirement, but sometimes an active worker may access his funds for hardship or some other purpose, often via a loan. On leaving the firm, the departing worker may receive his accrual in the form of a lump sum (though receipt of the lump sum may trigger a tax penalty unless he is at least age 59 and a half). Alternatively the departing worker may take his pension benefits in the form of a periodic amount or buy a life annuity. The value of the plan accrual at any given date depends on the amounts contributed and investment returns over the entire worklife.

Sponsors of both types of pension plans have ample choice regarding a range of eligibility, contribution, vesting, benefit, withdrawal, and retirement provisions and formulas. In addition, plans may embody different provisions regarding post-retirement benefit increases and special payouts (e.g. disability or lump sum cashouts), along with other features. In this investigation we determine how pension plans of medium and large establishments in the private sector have changed over the last two decades, to determine which trends might point the way for pensions of the future.

Understanding how pension provisions and benefit entitlements have changed over the last two decades is important since these provisions powerfully affect the nature of the pension promise, and in turn they influence worker and firm behavior (c.f., Even and McPherson, this volume; Gustman and Mitchell 1992; Gustman et al., 1995). For instance, a pension-covered employee allowed to take a loan or a lump-sum cashout from his plan after a short vesting period gains access to his pension saving early the worklife, a practice that some worry contributes to inadequate old-age protection. An employee prohibited from taking a loan or cashing out his

pension when young lacks early access to his accrued pension, so he may end up with a better-funded retirement period than his counterpart. On the other hand, some plan sponsors argue that inability to access the funds early in life might discourage participation. These and other structural features of pensions also influence worker turnover patterns. That is, vesting and benefit formulas can deter mobility for younger employees, and they can also induce workers to remain on the job longer if the plan offers substantial rewards for continued work (c.f., Fields and Mitchell 1984). Other times, as in the case of defined contribution pensions, retirement benefits may depend on amounts contributed and how the worker chose to invest his pension assets. It has been shown that investment decisions depend to a large degree on how successful employers are in communicating benefit plan attributes to employees (Mitchell and Schieber, 1998).

Before turning to a more detailed discussion of pension trends evident in the EBS over time, it is useful to briefly review key pension terminology and how pension provisions work. Plan Participation and Vesting. Workers covered by a private pension are often not permitted to join their pension plan immediately; rather, many plans limit participation to workers who remain at the firm more than one year, and sometimes also limit coverage to those over the age of 21. The Employee Retirement Income Security Act [ERISA] of 1974, as amended, mandated that pension plan participation requirements cannot be more stringent that this (plans may be more generous). What is meant by '*plan participation*' matters, of course, since some pensions begin to count years of service for benefit purposes from the date that the worker becomes a plan participant. '*Vesting*' in a pension plan is important since it refers to the juncture at which the worker gains a legal claim to an eventual benefit from a pension plan in which he is a participant. Many establishments do not offer new workers an immediate claim on a retirement benefit;

rather, workers will earn claim only when they meet employment criteria specified in the plan's vesting formula. One criterion often used is a minimum number of years of service; in 1974, ERISA spelled out several permitted vesting schedules including the most common "10-year cliff vesting rule", requiring workers to vest at 10 years of service. Subsequently vesting standards were eased under the Tax-Reform Act of 1986, with most plans now using a "5-year rule" for cliff vesting.

Retirement Eligibility Requirements. Most US pension plans require that a covered employee must complete a requisite number of years of service and/or attain a specified age, in order to be entitled to receive a pension plan payout. Thus, for example, a worker may be eligible for early retirement at age 55 with 10 years of service, while normal retirement might be defined as leaving at age 65 with at least 10 years of service. Such plan-based age and service requirements are most prevalent in DB plans, but they can also be found in DC pensions. When they exist, the rules establish conditions under which the worker can claim plan benefits. Eligibility requirements play a particularly crucial role in DB plans, since here age and service influence not only access to benefits, but also the level of benefits payable. For instance, an early retiree might receive a lower annual benefit amount than the one payable at the plan's normal retirement age. A higher benefit at the plan's normal retirement age recognizes the fact that at a later age, a worker has more years of service, possibly a higher pay level, and fewer years of life remaining over which to draw a benefit. In addition, DB plans frequently structure their benefit formulas so as to subsidize early retirement (c.f., Fields and Mitchell, 1984). Hence retirement requirements are important insofar as they establish when a worker may begin to receive subsidized early payouts.

For many years, US plan sponsors were permitted to use their pension formulas to induce older workers to leave their jobs, mainly by limiting pension accruals after a specific age (Luzadis and Mitchell, 1998). In 1986 however, in an effort to reduce the extent of age discrimination, the Omnibus Reconciliation Act required private pensions to continue accruing benefits after the normal retirement age; this ruling took effect for plans in 1988. (Collectively bargained plans were permitted to come into compliance somewhat later.) As a consequence, retirement eligibility rules for private sector pension plans have become more liberal over time, somewhat increasing benefit incentives to remain employed at older ages.

Retirement Contribution and Benefit Provisions. DB and DC plans use a wide range of definitions to determine contribution and benefits. In the DB case, participants' payouts at retirement generally are formula-driven. Some benefit formulas provide for flat monthly dollar benefit entitlements per year of service, while others base benefits on employee pay, age, and/or service at retirement. When DB formulas depend on earnings, the employer generally specifies what percentage of earnings will be paid per year of service. A related issue is that earnings-based plans differ in terms of which definition of earnings they consider relevant. For instance, straight-time pay alone may be considered, or a plan may add overtime, shift pay, and/or commissions into the formula. In addition, pay-based plans differ in terms of the period of time over which earnings are computed. In a career earnings plan, pay during the entire period of employment is considered; conversely, a terminal earnings plan focuses on compensation just prior to retirement. Even terminal earnings benefit formulas generally include more than the final year's pay in the formula; it is not uncommon to use the worker's highest or last 5 years as the basis for a final average pay figure.

In other cases, corporate DB formulas may be *integrated* with social security rules, using two general patterns.[7] "Offset" formulas typically reduce a pension benefit payment by some fraction of the worker's primary social security amount, while an "excess" plan will apply lower pension benefit accruals to earnings below the social security taxable wage base (or some similar threshold) and higher benefit accumulations to earnings above this amount. Terminal earnings plans tend to use the offset approach when they are integrated, while career earnings plans tend to use the excess method. Integration is less common in plans using flat dollar amounts.

Defined benefit pension plans have various other benefit rules applying to retirement benefits under special conditions. For instance benefit "reduction factors" are important in determining the rate at which payouts may be reduced for workers retiring prior to the normal retirement age. If such reduction factors are not "big enough", they can actually encourage rather than discourage early retirement. In other cases, workers can gain access to pension accruals for special reasons, including for early receipt of vested benefits and for disability. Such access has raised policy concerns since permitting employees to cash out their vested accrued benefits may reduce eventual retirement accumulations (Fernandez, 1992). Disability pensions are another way in which workers can receive benefits prior to becoming qualified for a regular pension, and hence these too play a role in workers' economic security benefits.

The institutional structure of defined contribution plans is just as varied as among their DB counterparts, but along somewhat different dimensions. Many different types of DC plans exist, categorized by the BLS into plans it called "retirement" plans, versus those deemed "capital accumulation" plans. The former were distinguished by prohibiting withdrawal of accruals prior to retirement, whereas the latter afforded easier access to accumulated assets. Over time, however, this distinction has become clear, so that the BLS notes that today "most

defined contribution plans can be used to provide retirement income or to accumulate financial assets" (BLS, 1989: 107). In addition, many of these plans allow lump-sum cash-outs rather than a benefit annuity. Several new types of DC plans have also arrived on the scene, sometimes distinguished according to the source of their finances, or by how their assets are held. Examples include savings and thrift plans, profit-sharing programs, money purchase pension plans, employee stock ownership/stock bonus plans, and 401(k) plans. *Savings and thrift* plans are those where workers contribute a percentage of their pay and employers generally offer some amount of matching contribution (perhaps up to a maximum). The tax treatment of employee contributions depends on both individual plan structure and overall tax code limitations on the amount of compensation that can be tax deferred. Savings and thrift plans often permit workers to borrow from or make taxable withdrawals from their plans in special circumstances (e.g., educational or medical expenses). *Profit sharing* plans offering deferred income tend to link employer contribution levels to company profits, and then allocate the employer contribution levels to company profits, and then allocate to employer contribution based on workers' pay or other formulas. Early withdrawals or loans are rather less common here than in other plans. In *money purchase* plans, employer contributions are fixed as a fraction of earnings, whereas in *stock ownership and stock bonus* plans the employer contributions are usually in the form of company stock. And from the late 1980's on, *401(k)* pensions have grown quite rapidly.

Changes in Pension Plans over Time

The US Department of Labor's Bureau of Labor Statistics fielded an Employee Benefits Survey (EBS) and has published tabulated data from these surveys in various years between

1980 and 1997.[8] We follow the Labor Department's approach in what follows, first discussing DB plan features, and then turning to DC plans.[9]

Defined Benefit Plans.

Three important characteristics of defined benefit pension plans worth emphasizing are participation, eligibility and vesting rules; withdrawal and benefit formulas; and other special provisions. We take up each in turn.

Participation, Eligibility and Vesting. DB pensions in the US provide specific criteria that covered employees must meet, before becoming full-fledged pension participants. Such requirements are justified by the employer's need to reduce administrative costs that would otherwise be incurred for young workers who are most likely to change jobs. Participation requirements are also thought to curtail turnover by offering workers an incentive to remain with the company (Gustman and Mitchell, 1992). Under ERISA, full-time employees age 25 or older must be granted participant status after completing one year of service. Participation rules were subsequently amended by the 1984 Retirement Equity Act (REA), which for most plans lowered the participation requirement to age 21 as of mid-1986.

Trend data on plan participation requirements appear in Figure 1 and Table 1, which show that DB plans have continued to reward minimum service. Thus in 1981, 59% of DB participants had minimum age and/or service requirements and the fraction grew to 68% in 1997. About half of the DB participants had only a single year of service for participation, with the other half covered by the "age 21/service 1" rule; virtually no DB plan had an "age only" criterion. Both are consistent with the REA. Prior to 1988, firms could hire older workers without incurring large pension obligations, and as of 1981, some 60% of covered workers were in plans of this type. The 1986 Omnibus Reconciliation Act (OBRA) outlawed this practice, and

it likely had a large effect on DB plans that had previously imposed a maximum age for participation (a cap on service years is still permitted).

Table 1 and Figure 1 here

When a worker becomes a DB plan participant, he must typically satisfy a plan service requirement before gaining a legal vested right to his accrued benefit. Economists have argued that these requirements deter worker turnover, imposing a pension loss if a worker changes employers (c.f., Evans and McPherson, this volume: Ippolito, 1986). Pension law curtailed the extent of this loss, first in 1974 when ERISA legislated permissible vesting formulas including a "10-year cliff" rule requiring an employee to be 100% vested after 10 years of service. Subsequently, the 1986 Tax Reform Act (TRA) further lowered vesting rules, requiring a single-employer plan to convert to a 5-year schedule if using cliff vesting (or 7 years if graded vesting was in place); the 5-year approach was adopted by most plans by 1989. The potent impact of these rule changes is revealed in Figure 2, which indicates that the fraction of DB plan participants with cliff vesting hovered around 89% during the 1980s, began to rise in the 1990s, and ended at 96%. At the same time, the modal number of years until vesting fell between 1988 and 1989, consistent with the declining legal threshold. Overall, vesting requirements in DB plans have definitely eased, as compared to the early 1980s.

Figure 2 here

Contributions. Most private sector DB plan participants are not required to contribute to their pension plans out of their own salary or earnings: only 3-5% of DB participants are required to make employee contributions. This differs markedly from public pension plan participants, where most employees contribute directly (Mitchell and Hustead, 2000).

Withdrawal and Benefit Formulas. Next we focus on changes in conditions under which plan participants may access their pension accruals, and here too there has been much change. DB plans in the US typically have required benefits to be paid as annuities, and plans usually set a minimum age and/or service years threshold that must be satisfied for the worker to retire and receive payments. Important trends in this area appear in Table 2, where we see that early retirement was and has remained the norm in the DB environment, with over 95% of covered employees having access to it since 1980. But there have also been important changes in the early retirement scene. For instance, a criterion based on age or service alone has declined, whereas having the "right" mix of age plus service is growing. Nevertheless, these trends are not uniform: in the late 1980s there was a peak in the fraction of workers permitted to leave at age 55 with 10 years of service, but this practice appeared to fall in favor during the 1990s. Conversely, it has became easier to retire with only 5 years of service at age 55, and the fraction of DB plan participants in this group rose from 3% to 20% between 1980 and 1997. It is interesting that relatively few participants are in plans where they must satisfy an additive age plus service requirement (5% in 1980, and 8% in 1997).

Table 2 here

Turning to "normal" retirement requirements, most DB plans require workers to meet certain age requirements and/or age plus service requirements to receive full, unreduced, benefits, as is shown in Table 3. Just under half of all participants were subject to normal retirement eligibility rules that depended on age alone in 1980, with that fraction remaining fairly stable over the entire period. Where age does serves as the criterion for normal retirement, the most common threshold has been age 65 (which is consistent with the traditional "normal" Social Security retirement age in the past). Very few DB participants may retire on service

alone: only 11% could receive normal retirement benefits by virtue of service alone in 1980 (with 30 years of service as the typical cutoff) and by 1997, the figure was down to 5% of participants. Requirements involving both age plus service are more common, and the data indicate a growing propensity of DB plans to provide normal retirement at age 62 with some minimum years of service. In 1981, 17% of the participants were able to retire at 62 with full benefits and by 1997 this fraction had risen to 21%. In other words there is some trend toward permitting workers to retire before age 65 and receive full (unreduced) benefits. These patterns are in line with findings from other studies indicating that some DB plans have encouraged earlier retirement over time (Luzadis and Mitchell, 1991; Mitchell and Luzadis, 1988). Whether this pattern will persist into the tight labor markets projected for the next 20 years (Lofgren et al., this volume) remains to be seen.

Table 3 here

Benefit formulas in the DB plan environment appear in Table 4, where it is notable that the simple "flat dollar" formula per year of service approach is falling steadily (from 30% of participants in 1980 to 23% in 1997). The decline in flat dollar plans may be the result of falling unionization rates in the U.S. workforce, since these plans were traditionally associated with collective bargaining agreements. Today, most DB plans base benefits on workers' earnings, with 2/3 of all participants having this link to benefits. Also interesting is the fact that terminal rather than career earnings are so prominent for DB benefit formulas, with only 11-15% of DB participants having benefits computed using career earnings. Most plans used five years' pay, with five consecutive years being the most common approach. Using terminal earnings links retirement benefits to individual performance at the end of the worklife and is probably better protected from inflation, as compared to career average plans. It is also of interest to recognize

DB plans have increasingly tied benefits to workers' straight-time or base pay, rising from 44% in 1988 to 62% by 1995 (Figure 3). DB plans have also cut reliance on extra compensation, being increasingly unlikely to credit benefits based on shift differentials, bonuses, and commissions. This may signal a reduction in the incentive-based portion of pensions, or may indicate a cut in benefit value for older workers.

Figure 3 and Table 4 here

Another change in the DB environment is the changes in the extent to which benefits paid are integrated with Social Security. Table 5 indicates that 45% of DB plan participants had their benefits integrated with Social Security in 1980; the integration fraction crept up for a time, but then fell back to 49% by 1997. At the same time, there have been major changes in the way Social Security integration is handled. Specifically, between 1980 and 1997, the fraction of workers with benefits offset by Social Security payments fell from 30% to 13%; what grew instead was the prevalence of plans with *excess formulas*. In such a case the DB formula might provide 1% of pay up to the Social Security earnings threshold per year of service, for example, with some higher fraction (such as 1.5%) for pay above this level. So while there is no overall change in the extent of Social Security integration reported, the *type* of integration used has changed substantially.[10] It is of interest to recognize that these changes in pension integration practices coincide with large Social Security payroll tax increases; though a causal relationship cannot be proven here, the correlation is striking.

Table 5 here

For those who retire early, DB payments are often reduced to recognize that early retirees will receive these payouts over a longer period of time. Table 6 summarizes trends in DB plan early retirement reduction factors, and the evidence indicates that that early retirement subsidies

have been the norm over the entire period. This may be concluded because the typical early retirement reduction factor is less than 6 percent per year, and a 6 percent factor is generally deemed as that which represents actuarial neutrality (McGill et al., 1996).[11] Reduction factors also apply to vested workers who leave their employers, and the data (not shown) indicate that vested terminated workers also tend to face benefit reductions of 6% or less. Finally, 90% of DB plans permit vested terminated workers to take their benefits prior to normal retirement, but only about half face the same reduction as applied to early retirees.

Table 6 here

Because DB benefit formulas are difficult to interpret, the BLS for a time presented a very useful set of tabulations for "hypothetical" workers' benefits on reaching normal retirement age, using six standardized pay levels and three seniority profiles. Plan information was used to compute "replacement rates", defined as the ratio of the DB retirement plan benefits to the worker's final year of earnings; see Table 7. Unfortunately these computations were no longer published after 1993; for the available period, however, they suggest that DB plan replacement rates rose with service for a given pay level and generally rose for a given service/earnings combination until 1991. After that time, there was a substantial fall in computed replacement rates. Why this might be has not yet been explained in the literature.

Table 7 here

A final aspect of DB payout design is highlighted in Figure 4, which describes changes in employer willingness to permit retiring workers to take their benefits as a lump sum instead of a life annuity. Lump sums were extremely rare in traditional DB plans but the trend is sharply upward: in 1991, only 14% of participants could take any lump sum, but six years later, almost one-quarter (23%) of DB participants could do so. Of those with access to a lump sum, the

majority was generally permitted to take the entire amount in a lump sum. This trend underscores other evidence indicating a decline in retirement income annuitization in the U.S. (Brown et al., 2001).

Figure 4 here

Special Provisions in DB Plans. In the private sector, few pensions are protected against inflation by formal indexation; as a rule, private pension benefits are usually delivered as fixed nominal annuities. This is not a major concern for many older workers and retirees during low-inflation periods, but even a modest 3% inflation rate can cut the real value of the benefit in half in only 24 years. Despite this, the evidence reveals that DB pension benefits are only rarely tied to an explicit cost of living index (COLA). In 1995, for instance, only 7% of EBS participants had a COLA, and only 3% had an automatic escalator. Frequently benefits are not increased at all post-retirement, as can be seen by the fact that only 4% of the participants had plans with discretionary benefit increases in 1995. This is extraordinary given the generally strong equity market performance seen by many plans during the 1980s and 1990s, but it attests to the low inflation rates experienced over the period.

In addition to these other benefit provisions, private pensions often impose a ceiling on benefit amounts payable to retirees. The prevalence of this phenomenon has been declining: in 1984, for instance, 42% of the participants faced a benefit maximum; by 1997, only 33% were capped. In plans that did limit benefits, they tended to do so by capping the number of years of service that may be counted for benefit purposes. In 1997, for instance, 31% of the DB participants faced a maximum limit on service years. The modal choice for a maximum has generally been between 30 and 39 years of service since 1984.

In addition to early and normal retirement, most DB plan participants – three-quarters, on average – also had the promise of special disability payouts (Figure 5). The prevalence of disability pensions has declined over time, however, down to 75% by 1997, from a high of 90% during the late 1980's. It is not clear why this drop occurred, though it might be due to the rising cost of private disability insurance over the period. In addition, many DB plans tightened employee access to disability benefits by requiring that employees wait a longer time to qualify for long-term disability benefits: in 1997 only 46% of the workers were eligible for immediate disability benefits, down from a high of 70% in 1980. Other aspects of the disability insurance plans were also tightened, with disabled employees becoming less likely to received credit service until the establishment's retirement date, and less likely to receive unreduced normal benefits.

Figure 5 here

Defined Contribution Plans.

The growth spurt experienced in DC pension plans over time occurred in parallel with changes in coverage and vesting patterns, contributions and withdrawals, and special features of 401(k) plans.

*Plan Types, Coverage, and Vesting***.** There appears to have been a strong downward trend in coverage by retirement and capital accumulation plans during the 1980s, but this is partly a result of the fact that what this set of plans referred to has varied over time. While EBS tabulations include money purchase and profit sharing plans, saving and thrift plans, we focus here on cash and deferred salary reduction plans including 401(k)s.[12] *Coverage* here is defined as being employed in an establishment offering a pension plan; some workers may not be actual participants if they had not yet vested or had elected not to contribute to the plan and there was

no minimum employer contribution. In any event, the BLS data suggest that the percentage of full-time employees lacking pension coverage rose from 8% to 21% from 1985 to 1991 and coverage declines were largest in the DB, money purchase, and profit-sharing plan categories. By contrast, there was rapid growth in coverage by savings/thrift plans where worker coverage jumped from only 18% in 1985 to more than one-third in 1995. This trend reinforces conclusions from other data sources indicating that the U.S. workforce boosted DC plan participation, but DB plan coverage fell over time (Piacentini and Cerino, 1999; Turner and Beller, 1989).

Requirements for participation and vesting in DC plans tend to be relatively minimal, with as many as one-quarter of 401(k) plan participants allowed immediate participation. And even when a participation criterion is in place, it is generally no more than service of up to a year. Vesting patterns for 401(k) plans indicate that one-third of the participants can vest immediately on joining the plan, in sharp contrast to DB plans where virtually no employees have full and immediate vesting. For those lacking immediate DC plan vesting, participants were evenly split between cliff vesting (after 5 years) and graduated vesting (with two-thirds vesting at 5 years or later). The trend to shorter cliff vesting is in part a result of the 1986 Tax Reform Act requiring most plans using cliff vesting to convert to a 5-year schedule as of 1989.

Contribution and Pre-retirement Access Patterns. In DC plans it is more common to have both employee and employer contributions, as compared to DB plans where employer-only contributions are the norm in the private sector, as noted above. Data on employee contributions in 401(k) plans are provided in Table 8, and they indicate that most employee contributions are a function of workers' earnings – almost 90% in 1997. Employer contributions for DC plans reported by the EBS were generally of the matching variety, with the modal match being 6% of pay (Figure 6).

Table 8 and Figure 6 here

One area of interest has to do with whether employees may access their accounts prior to retirement. It has been argued that DC plans tend to permit loans from employee accounts, and outright withdrawal is often allowed in the event of hardship.[13] These conclusions hold for 401(k) plans, where over half of plan participants could obtain funds from their plans via a loan in 1997, up from 43% in 1993 (Figure 7). Furthermore, the modal participant in such plans could obtain a loan for any reason, not just for hardship, and those permitted freer access increased from 39% to 45%. Therefore employee access definitely became easier in 401(k) plans over time.

Figure 7 here

Investment Choices. One feature contributing to the widespread popularity of DC pension plans over the last two decades is the fact that they typically offer employees some degree of control over their pension investments. The EBS data indicate that different provisions typically apply to employee versus employer contributions. Thus some 87% of employees with 401(k) plans could elect among investment choices for their own contributions and 65% could elect investment options for employer contributions. It also appears that the modal number of investment choices available for both employee and employer contributions has risen over time (see Figure 8).

Figure 8 here

Pension Payout Trends. Distribution of pension assets at retirement may take various forms. In general, lump sum payouts are prevalent in the DC environment and almost all participants have such access. Of more concern to those focused on the adequacy of retirement income is the fact that a minority of participants with DC plans has access to an annuity, and this percentage has

fallen over time: In 1993, 34% of 401(k) plan participants could take their funds as a life annuity, and by 1997 this option was available to only 27%. As a result, workers retiring from a DC plan are less likely to have available to them the traditional annuity payout option that once was identified as a key element needed to protect retirees against longevity risk.[14]

Conclusions

Medium and large firms in the US have traditionally been the most reliable providers of employment-linked retirement benefits (Sass, 1997). Nevertheless, the evidence provided here shows that in these firms, the pension environment has been far from static. Most plan features and design elements examined have changed over time, sometimes in dramatic ways. Changes were seen in pension financing arrangements, eligibility and benefit formulas, and the extent to which plan participants can allocate and access their retirement plan accumulations both before and after retirement. Because the EBS surveys used here evaluated pensions only in medium and large establishments, and because some of the tabulations are not provided in a consistent fashion over time, the time series evidence is to some extent imperfect. Nevertheless, the information affords a uniquely valuable insight into US private sector pension plan changes over the last two decades: the clear message is that *change is the only constant* in the US pension environment.

Some lessons regarding the DB pension environment include the fact that few DB participants contribute to their own pensions directly from their salaries in the private sector, a phenomenon that differs markedly from public sector pensions. Another finding is that DB plan sponsors have increasingly provided workers with access to early retirement, along with readier access to normal retirement. Pension benefit formulas have also moved toward final rather than

career earnings, and benefit integration with social security has changed, particularly regarding the type of integration required. Pension replacement rates appear to have fallen over time, benefit ceilings are firmly in place, and disability benefit provisions have become more stringent. Other key findings for DB plans include the following:

- DB participation rules have become more stringent, while vesting rules have eased.
- DB benefit formulas increasingly link benefits to straight-time and terminal pay, rather than to incentive-based pay. After retirement, these private sector DB plans do not typically index benefits to inflation.
- Normal retirement ages have fallen in the DB environment, with participants gaining access to unreduced benefits earlier than age 65. Early retirement is also typically subsidized at actuarially favorable rates.
- It is increasingly possible for retirees to take their DB pension benefit as a lump sum, suggesting reduced protection against longevity risk.

While few US firms are starting DB plans from afresh these days, the DC environment is clearly an area of substantial growth. Here, employee contributions as a function of earnings are the norm. Commonly too, employers match these contributions at a modal rate of 6% of pay; but employer matching appears to be falling over time. Other changes in DC plan characteristics include the following:

- DC plan participants are increasingly able to elect where to invest their own and their employer's contributions. Over time, participants have gained access to diversified stock and bond funds, but fewer are permitted to invest in own-employer stock, common stock funds, and guaranteed insurance contracts.

- DC participants may access their DC accounts via loans prior to retirement; and after retirement, fewer participants can access a life annuity as a payout option. This too implies reduced protection against longevity risk.

These developments in the pension environment raise questions about the future role of pensions as retirement income vehicles. For example, many pension systems have low hurdles for employee vesting and participation, making it easier for mobile workers to gain benefit rights. Yet giving employees access to loans and lump sums, and permitting plan participants to take lump sums, may undercut productivity enhancement and retirement security objectives. Allowing earlier retirement may be preferred by some workers and their employers, but this trend goes against other efforts to extend the worklife as population aging continues. Also the ever-changing legislative environment has also driven changes in pension plan redesign. In the past, policymakers have sometimes provided contradictory signals to plan sponsors and employees as to the appropriate role of pensions. As an example, plan development has sometimes been spurred by tax concessions and permitting large social security offsets. However, at other times, regulatory policy has curtailed plan saving and permitted the leakage of pension accumulations through loans and cash-outs.

Researchers examining pension design to date have not always recognized the dynamic nature of the pension environment. Our evidence indicates that future pension growth will be concentrated in the DC arena, with increasing participant control being exerted over all aspects of the plans – including contributions, investment mix, and payouts. They will grow more flexible as accumulation plans, allowing portability and earlier access, but they will probably offer disability and other ancillary benefits. As the labor market ages and pension plans are asked to play new roles in retirement security, they will continue to change. In the United States,

at least, private pensions have not been cast in stone. Rather, the pension institution responds to external stimuli including labor market pressures, to internal corporate requirements, and to legislative change as well as financial market developments.

References

Brown, Jeffrey, Olivia S. Mitchell, James Poterba, and Mark Warshawsky. 2001. *The Role of Annuity Markets in Financing Retirement*. Cambridge, MA: MIT Press.

Bureau of Labor Statistics (BLS). Various years. *Employee Benefits in Medium and Large Private Establishments*, U.S. Department of Labor Bulletin. US Government Printing Office, Washington, D.C.

Clark, Robert L. and Sylvester J. Schieber. "Taking the Subsidy Out of Early Retirement: Converting to Hybrid Pensions". 2001. In *Innovations in Managing the Financial Risks of Retirement*. Eds Olivia S. Mitchell, Zvi Bodie, Brett Hammond, and Stephen Zeldes. University of Pennsylvania Press: Philadelphia.

Even, William and David Macpherson. "Benefits and Productivity". This volume.

Jeffrey Brown, Olivia S. Mitchell, James Poterba, and Mark Warshawsky. 2001. *The Role of Annuity Markets in Financing Retirement*. Cambridge, MA: MIT Press.

Fernandez, Phyllis. 1992. "Pre-retirement Lump Sum Distributions". In *Trends in Pensions 1992*. Eds. John Turner and Daniel Beller. Washington, D.C.: U.S. Dept. of Labor, PWBA.

Fields, Gary S. and Olivia S. Mitchell. 1984. *Retirement, Pensions, and Social Security.* Cambridge, Mass.: MIT Press.

Gustman, Alan, and Olivia S. Mitchell. 1992. "Pensions and the U.S. Labor Market." In *Pensions and The Economy.* Eds. Zvi Bodie and Alicia Munnell. Philadelphia, PA: Univ. of Pennsylvania Press, 1992: 39-87.

Gustman, Alan, Olivia S. Mitchell, Andrew A. Samwick, and Thomas L. Steinmeier. 1999. "Pension and Social Security Wealth in the Health and Retirement Study". In *Wealth, Work, and Health: Innovations in Survey Measurement in the Social Sciences.* Ed. Robert Willis. Ann Arbor, University of Michigan Press: 150-208.

Gustman, Alan, Olivia S. Mitchell and Thomas Steinmeier. 1995. "Retirement Measures in the Health and Retirement Survey". *Journal of Human Resources* 30, Supplement: S57-S83.

Gustman, Alan S., Olivia S. Mitchell and Thomas Steinmeier. 1994. "The Role of Pensions in the Labor Market". *Industrial and Labor Relations Review* 47 (3): 417-438.

Ippolito, Richard A. 1986. *Pensions, Economics, and Public Policy*. Homewood, Il: Dow Jones-Irwin.

Levine, Phillip, Olivia S. Mitchell, and John Phillips. 2001."Worklife Determinants of Retirement Income Differentials Between Men and Women". In *Innovations in Financing Retirement.* Eds. Zvi Bodie, Brett Hammond, and Olivia S. Mitchell. Philadelphia, PA: University of Pennsylvania Press.

Levine, Phillip, Olivia S. Mitchell, and James F. Moore. 2000. "Women on the Verge of Retirement: Predictors of Retiree Well-being". In *Forecasting Retirement Needs and Retirement Wealth.* Eds. Olivia S. Mitchell, Brett Hammond, and Anna Rappaport. Philadelphia, PA: University of Pennsylvania Press: 167-207.

Lofgren, Eric, Sylvester Schieber and Steve Nyce. "Designing Total Reward Programs for Tight Labor Markets". This volume.

Lumsdaine, Robin and Olivia S. Mitchell. 2000."New Developments in the Economics of Retirement". In *Handbook of Labor Economics*. Eds. Orley Ashenfelter and David Card. New York: North-Holland: 3261-3308.

Luzadis, Rebecca and Olivia S. Mitchell. 1991. "Explaining Pension Dynamics". *Journal of Human Resources* 26 (Fall): 679-703.

McGill, Dan, John Haley, Gordon Goodfellow, and Sylvester Schieber. 1996. *Fundamentals of Private Pensions*, 7e. Philadelphia: University of Pennsylvania Press.

Mitchell, Olivia S. 2001. "Developments in Pensions". In *Handbook of Insurance*. Ed. Georges Dionne. New York: Kluwer Academic Publishers, Boston,:873-899.

Mitchell, Olivia S. 1992. "Trends in Pension Benefit Formulas and Retirement Provisions". In *Trends in Pensions 1992*. Eds. John Turner and Daniel Beller. Washington, D.C.: U.S. Dept. of Labor, PWBA: 177-216.

Mitchell, Olivia, and Edwin Hustead, Eds. 2000. *Pensions in the Public Sector*. Pension Research Council. Philadelphia, PA: University of Pennsylvania Press.

Mitchell, Olivia S. and Rebecca Luzadis. 1998. "Changes in Pension Incentives Through Time." *Industrial and Labor Relations Review* 42, October: 100-108.

Mitchell, Olivia S., David McCarthy, Stanley C. Wisniewski, and Paul Zorn. 2000. "Developments in State and Local Pension Plans." In *Pensions for the Public Sector*. Eds. Olivia S. Mitchell and Edwin Hustead. Philadelphia, PA: University of Pennsylvania Press: 11-40.

Mitchell, Olivia S., James Poterba, Mark Warshawsky, and Jeffrey Brown. 1999. "New Evidence on the Money's Worth of Individual Annuities". *American Economic Review*. December: 1299-1318.

Mitchell, Olivia S. and Sylvester Schieber, Eds. 1998. *Living with Defined Contribution Pensions*. Philadelphia, PA: University of Pennsylvania Press.

Piacentini, J. and T. Cerino. 2000. *EBRI Databook on Employee Benefits*. Washington D.C.: EBRI.

Rappaport, Anna M., Michael Young, Christopher Levell, and Brad Blalock.1998. "Cash Balance Pension Plans." In *Living with Defined Contribution Pensions*, Eds. Olivia S. Mitchell and Sylvester Schieber. Philadelphia, PA: University of Pennsylvania Press: 29-45.

Sass, Steven. 1997. *The Promise of Private Pensions*. Cambridge: Harvard University Press.

Turner, John and Daniel J. Beller, Eds. 1999. *Trends in Pensions 1988*. Washington, D.C.: U.S. Dept. of Labor, PWBA

.

Table 1
Age and Length of Service Requirements for Pension Participation: Defined Benefit Pension Plans, 1981-97

	Percentage of full-time participants				
Type of requirements	1981	1985	1991	1995	1997
No minimum age and/or service requirements	41	40	29	31	31
With minimum age and/or service requirements	59	59	71	69	68
Service only	20	23	26	27	28
<=1 year	NA	21	26	25	27
Age only	4	3	4	3	1
Age and service	35	32	39	36	36
Age 25 and 1 year*	NA	NA	NA	NA	NA
Age 21 and 1 year*	NA	13	36	34	34
With maximum age limitation**	58	61	NA	NA	NA

Notes and Key to All Tables

NA means data not available, and "---" means less than 0.5 percent.

Data exclude supplemental pension plans. Column sums may not equal totals because of rounding.

In 1988 the BLS changed its sampling frame to include smaller firms and more industries than before. As a result, the EBS tabulations for 1998 and after are not precisely comparable with earlier figures though a comparison tabulation using both methodologies indicates results are close.

Source for All Tables:

Mitchell (1992), and U.S. Department of Labor, Bureau of Labor Statistics, "Employee Benefits in Medium and Large Firms, 1981-1997".

and unpublished data from the BLS for 1988† figures.

* The Employee Retirement Income Security Act (ERISA) of 1974 required that pension plans allow full-time employees age 25+ with at least 1 year of service to participate. The Retirement Equity Act of 1984 required that nearly all plans allow participation to full-time employees age 21+ with at least 1 year of service by June 1986. The 1986 data surveyed plans prior to the law change.

** ERISA permitted plans to impose a maximum age for participation within 5 years of the plan's normal retirement date. The Omnibus Reconciliation Act of 1986 eliminated such maximums for plan years beginning in January 1988, with slightly later dates for collectively bargained plans.

Table 2
Minimum Age and Service Requirements for Early Retirement: Defined Benefit Pension Plans, 1980-97

Type of requirement	Percentage of full time participants					
	1980	1981	1985	1991	1995	1997
Plans permitting early retirement *	98	98	97	98	96	95
Service requirements alone	10	5	4	7	NA	8
30 years required	9	5	4	6	NA	8
Age requirements alone	9	10	9	6	NA	3
Age 55	8	9	9	5	NA	3
Age and service requirements:						
Age 55 and 5 years	3	4	3	17	NA	20
Age 55 and 10 years	NA	36	43	32	NA	30
Age 55 and 15 years	NA	11	8	10	NA	9
Age 60 and 10 years	NA	4	4	4	1	2
Age 62 and 10 years	NA	---	---	2	--	1
Age plus service sum	5	9	10	6	4	8
Sum equals 80 or less	NA	NA	5	2	3	6
Sum equals 85 or more	3	6	4	1	---	1
Plans not permitting early retirement	2	2	3	2	4	5

See Notes to Table 1.

* Early retirement is defined as the point when a worker can retire and immediately receive accrued benefits based on service and earnings; benefits are reduced for years prior to the normal age.

Table 3
Minimum Age and Service Requirements for Normal Retirement: Defined Benefit Pension Plans, 1980-97*

	Percent of full-time participants					
Type of requirement	1980	1981	1985	1991	1995	1997
Service requirements alone	11	14	14	8	6	5
30 years required	11	14	14	7	5	4
Age requirements alone	45	46	37	39	48	41
Age 60	2	2	4	2	1	3
Age 62	4	4	4	6	3	3
Age 65	39	39	29	30	36	29
Age & service reqs.	37	33	39	46	48	46
Age 55 and 30 years	NA	2	2	1	3	---
Age 60 and 30 years	NA	2	3	2	2	2
Age 62 and 10 years	NA	8	11	7	9	11
Age 62 and 15-20 years	NA	**2	4	4	7	3
Age 62 and 30 years	NA	2	2	---	2	1
Age 65 and 5 years	2	1	1	10	9	15
Age 65 and 10 years	NA	3	2	4	2	3
Age plus service sum	6	7	10	6	9	8

See Notes to Table 1.

*At normal retirement a participant can retire and receive unreduced benefits immediately.

**Data available for 15 years' service only instead of 15-20.

Table 4
Benefit Formulas in Defined Benefit Pension Plans, 1980-97

Formula based on	Percentage of full-time participants					
	1980	1981	1985	1991	1995	1997
Dollar amount*	30	32	29	23	23	23
Earnings	68	66	70	70	69	67
Terminal earnings	53	50	57	56	58	56
Career earnings	15	16	13	14	11	11

See Notes to Table 1

*Dollar amount refers to a flat monthly amount per year of service.

Table 5
Integration of Benefit Payments With Social Security: Defined Benefit Pension Plans, 1980-97

Type of formula	Percentage of full-time participants					
	1980	1981	1985	1991	1995	1997
Without integrated formula	55	57	39	46	49	51
With integrated formula	45	43	61	54	51	49
Benefit offset by SS payment*	30	33	40	19	14	13
Excess formula**	16	10	27	36	37	36

See Notes to Table 1

*Pension benefit calculated is reduced by a portion of primary social security payment.

**Pension formula applies lower benefit ratio to earnings subject to social security taxes below a specified dollar threshold.

Table 6

Reduction Factors for Early Retirement: Defined Benefit Pension Plans, 1982-97

	Percentage of full-time participants				
Type of formula	1982	1985	1991	1995	1997
Early retirement reduction factor where applied:					
Uniform percentage* per year	46	49	47	40	43
6.0% or more	24	17	19	19	21
Percent varies with:					
Age	30	49	49	57	57
Service	3	2	3	3	4

See Notes to Table 1

*Uniform percentage early retirement factors may approximate actuarial reductions.

Table 7

Average Pension Replacement Rates for Specified Illustrative Workers: Defined Benefit Pension Plans, 1984-93

	Retirement annuity as percent of final earnings*				
Illustrative worker with	1984	1985	1989	1991	1993
10 years of service and final annual earnings of:					
$ 20,000	9.9	9.8	10.9	NA	NA
30,000	9.7	9.5	9.9	NA	NA
45,000	---	---	---	10.8	6.4
55,000	---	---	---	10.8	6.3
65,000	---	---	---	10.8	6.3
20 years of service and final annual earnings of:					
$ 20,000	18.8	19.1	21.1	NA	NA
30,000	18.5	18.6	19.8	NA	NA
45,000	---	---	---	20.9	13.5
55,000	---	---	---	20.8	13.3
65,000	---	---	---	20.1	13.3
30 years of service and final annual earnings of:					
$ 20,000	27.4	28.3	31.3	NA	NA
30,000	26.5	27.3	29.4	NA	NA
45,000	---	---	---	30.2	21.5
55,000	---	---	---	29.0	21.0
65,000	---	---	---	29.1	21.0

See Notes to Table 1

*The maximum private pension was calculated using the earnings and service shown, not reduced for early retirement or joint-and-survivor annuities. Replacement rates refer to the ratio of the retirement pension to the final year's earnings.

Table 8
Employee Contributions in 401(k) Plans, 1997

	1997
Plans Using Fraction of earnings	87
LT10%	9
10-15%	53
16-19%	18
Other	8

See Notes to Table1

Figure 1: US Defined Benefit Plans Continue To Reward Minimum Service

Source: BLS, various years.

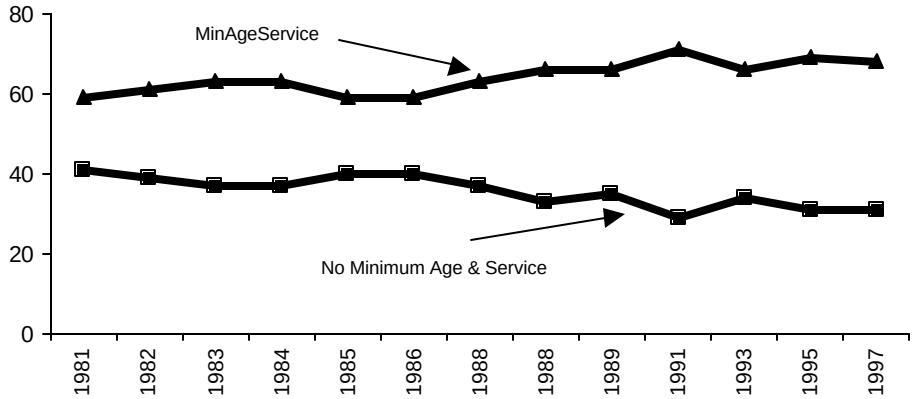


Figure 2: Vesting Getting Easier in US Defined Benefit Plans

Source: BLS, various years.

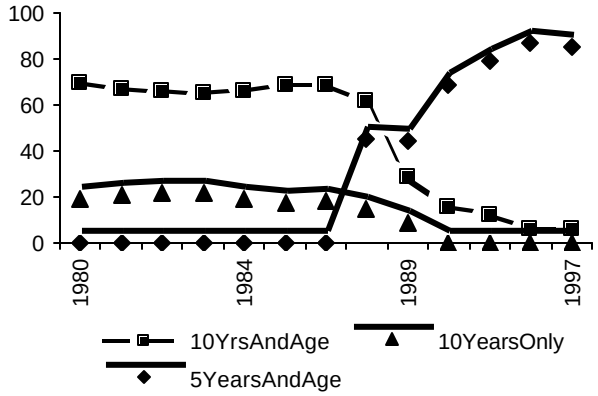


Figure 3: US DB Plans Move to Base Pay in Formula, Less Other Compensation

Source: BLS, various years.

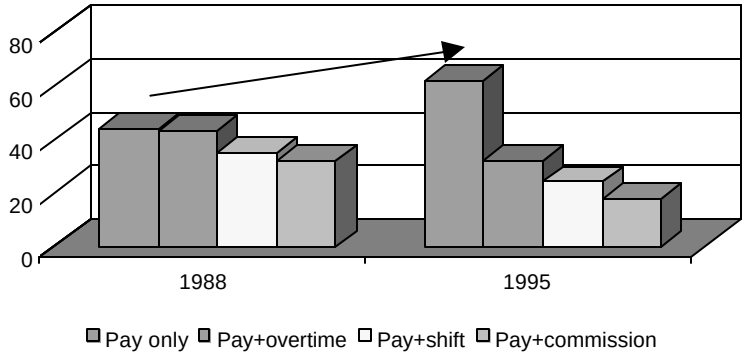


Figure 4: More DBs Permit Lump Sums

Source: BLS, various years.

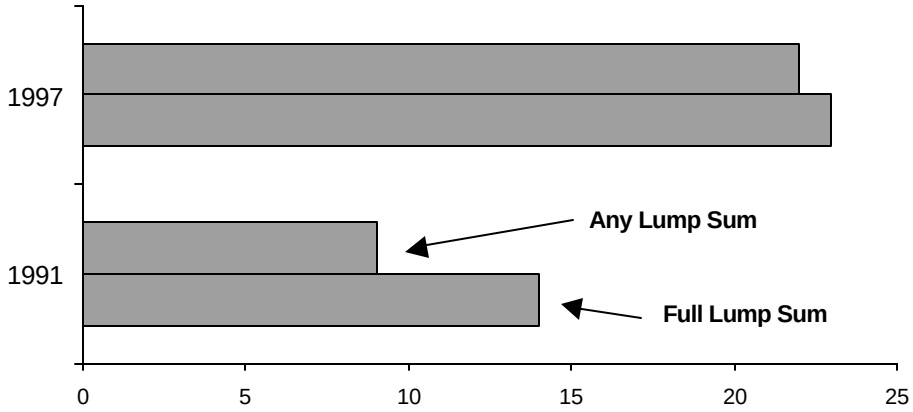


Figure 5: Disability Retirement Provisions in US DB Plans

Source: BLS, various years.

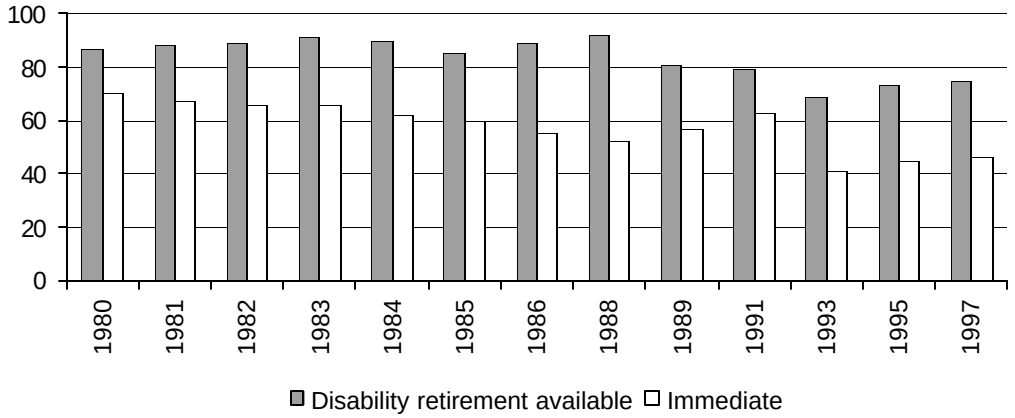


Figure 6: Employer Match as Percent of Pay in 401(k) Plans

Source: BLS, various years.

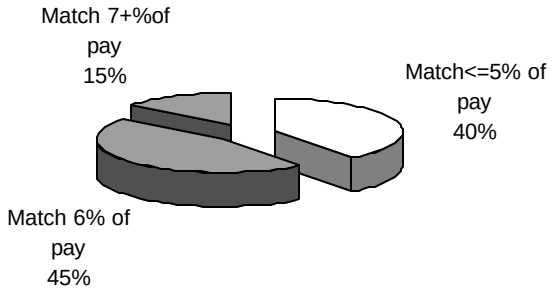
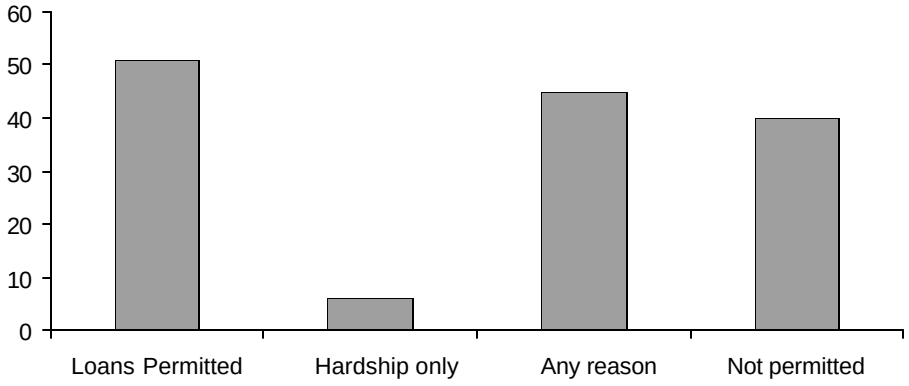


Figure 7: Access to 401(k) Accumulations a Concern

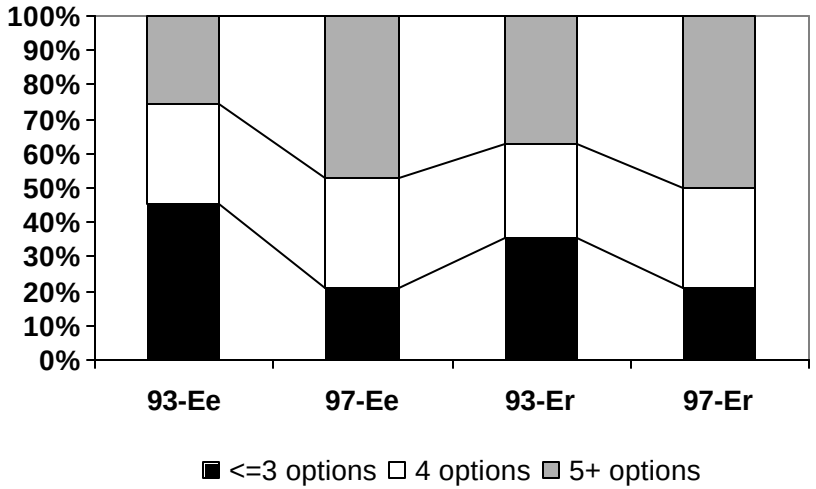
Source: BLS various years.



.

Figure 8: Investment Choices in 401(k) Plans for Employee (Ee) and Employer (Er) Contributions, 1993 and 1997

Source: BLS various years.



Endnotes:

[1] Support for this research was provided by the Pension and Welfare Benefits Administration of the U.S. Department of Labor. Useful comments were provided by Daniel Beller, Phyllis Fernandez, David McCarthy, and Jack Vanderhei. Opinions and conclusions are solely those of the author.

[2] For a discussion on the role of pensions in women's retirement income see Levine et al. (2000 and 2001).

[3] For a discussion of these and other effects see Even and McPherson (this volume), Gustman et al (1995), Ippolito (1986), and Mitchell (2001).

[4] Trends in public pension characteristics are discussed in Mitchell and Hustead (2000).

[5] This discussion builds on Mitchell (1992).

[6] Cash balance plans are sometimes seen as a third type of plan, in that they combine elements of both DB and DC pensions. However these are DB plans under US law, because the plan sponsor guarantees the promised rate of return on participant assets, and are not tabulated separately in available EBS survey reports (Clark and Schieber, 2001; Rappaport et al., 1998).

[7] For a more complete discussion of integration with Social Security see McGill et al (1996).

[8] Unfortunately the BLS does not permit nongovernmental analysts to access the underlying micro survey data for research purposes.

[9] In analyzing these trends, the reader should note that over time some pension definitions were altered by the BLS: changes were driven by regulatory reform, market conditions, and external developments (such as the boom in the U.S. stock market during the 1990s). Thus since the mid 1980s the survey tracked profit sharing and savings/thrift plans, and more recently it added 401(k) information. In addition, some series collected in the 1980's were not continued over the entire period, and new series were added for the first time in early 1990's. The BLS also did not use identical table formats across all years, it phased out some tabulations and changed definitions over time. Finally, in some cases tabulations cannot be compared because they use a different base over which the prevalence of a certain feature is computed. For instance, it is not possible to derive a time series on the percent of workers with multiple plans of particular types, since the base over which these numbers were calculated changed in the early 1990s. Here we provide as much data as possible recognizing that the changes render some of these tabulations time-inconsistent; greater consistency in data collection and reporting would be beneficial for the future.

[10] Changes in pension integration practices over this period are probably also due to the Tax Reform Act of 1986 that limited the permissible difference between contributions paid and benefits received by low-paid versus highly-paid employees (see McGill et al., 1996).

[11] Early retirement may also be subsidized in other plans using factors that vary with age and service, but this cannot be determined from available tabulations.

[12] A further issue is that "retirement" plans are defined in the EBS as plans where employer contributions are required to remain in the participant's account until retirement, death, disability, termination, hardship, or attainment of age 59 ½. By contrast "capital accumulation" plans are defined to be those where a participant may withdraw the money under other circumstances.

[13] Exactly what constitutes a hardship according to plan sponsors is somewhat imprecise. The BLS indicates that possible reasons include purchase or repair of primary residence, illness or death in the family, education of an immediate family member, or sudden uninsured loss.

[14] In some cases, a DC plan retiree can roll a lump sum into an Individual Retirement Account and then purchase an individual life annuity. That retiree would, however, loose access to the group risk pool and would be forced to pay for adverse selection costs as well as possibly higher loadings in the individual retail market (Mitchell et al., 1999).