

Trends in Pension Benefit Formulas and Retirement Provisions

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Abstract

Changes in pension plan retirement formulas and benefit provisions over the last decade are examined, drawing on data collected and tabulated by the U.S. Department of Labor's Employee Benefits Survey of medium and large firms. The evidence shows that pension provisions have changed a great deal over the last decade, among both defined benefit and defined contribution plans.

In the defined benefit environment, participation and vesting rules changed substantially; early retirement became more accessible and benefits somewhat more generous; normal retirement ages declined; and pension benefits were increasingly likely to depend on final rather than career earnings. Benefit integration with social security also grew to almost two-thirds of all participants in defined benefit plans. Overall, though pension replacement rates rose slightly over time, benefit ceilings remained pervasive for work at older ages and disability benefit provisions became more stringent.

Defined contribution pension plans also changed a great deal over the decade of the 1980s. Workers were increasingly likely to be covered by combinations of defined benefit and defined contribution plans, with the latter usually a savings and thrift plan permitting a lump sum distribution. Profit sharing and stock plans appear to have stagnated during the latter part of the 1980s.

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INTRODUCTION

The decade of the 1980s witnessed a transformation in the U.S. private sector pension environment. Employee demands for pension programs changed, partly as a result of the aging of the baby boom, because of increasing numbers of working women and minorities, and because of changes in taxes that affected the overall demand for employee benefits. Employer willingness to supply pensions also changed, in part because of shifts in the industrial and occupational mix of employment, and possibly also because of regulatory constraints increasingly restricting pension provisions. (For a discussion of these effects see the studies reviewed in Gustman and Mitchell [forthcoming], Ippolito and Kolodrubetz 1986, and Ippolito 1986).

The purpose of this report is to discuss changes in pension plan retirement formulas and benefit provisions over the decade of the 1980s. Data for the analysis were collected over the last decade by the Bureau of Labor Statistics (BLS) of the U.S. Department of Labor, who has conducted an Employee Benefits Survey (EBS) for many years. Individual year survey tabulations of pension plan characteristics appear in a series of annual BLS reports, collected here for the purpose of examining the transformation of pension provisions over time. In some cases, the published reports have been supplemented by unpublished tabulations generously provided by the BLS.

A substantive section begins the discussion with an analysis of how retirement benefit formulas and provisions affect the environment in which older workers make retirement decisions. Following this appears an analysis of observed trends in retirement provisions and benefit formulas found in defined benefit and defined contribution plans over time. The paper concludes with a summary of findings.

PENSION PLAN FORMULAS AND RETIREMENT PROVISIONS

Pensions in the United States can be classified into two general types, namely defined contribution plans and defined benefit plans. In a defined contribution plan, the sponsoring group makes a specified contribution to the pension fund on behalf of each participating employee. These funds are then invested in the capital market; the retiree receives pension benefits that depend on the outcomes from this investment process. In a defined benefit plan, in contrast, what is specified is the eventual pension benefit that workers will receive on retirement, or more generally the formula for determining the eventual benefit. Defined benefit plan formulas generally relate retirement payments to workers' age, pay, and/or service levels.

Both types of pension plans embody many different provisions and formulas, ranging from rules regulating participation and vesting in the plan, to requirements that must be met in order to receive retirement payments, to formulas determining contributions into and payouts from the plan. In addition there are myriad special provisions regarding post-retirement benefit increases, provisions for special payouts (e.g., disability or lump-sum cashouts), and other features.

Pension research in the last decade has demonstrated that many of these institutional provisions and formulas powerfully affect the nature of the pension promise (c.f., Gustman and Mitchell 1991, Quinn et al. 1990). For instance, an employee covered by a pension plan permitting lump-sum cashouts after only a minimal vesting period gains access to pension savings early in the worklife. In contrast, an employee who cannot cash out the pension accrual, or who is required to work the maximum legal period before becoming vested, must defer access to the accrued pension. These and other structural features of pensions have been demonstrated to alter turnover patterns among workers at younger ages. Benefit provisions and formulas have also been found to powerfully affect older workers' behavior. Thus, for example, an early retiree receives higher benefits when his or her defined benefit plan imposes only a small early retirement reduction factor; conversely early retirement is penalized when early retirement reduction factors are high (c.f., Lazear 1985, Kotlikoff and Wise 1987). Eventual retirement benefits from defined contribution plans are also shaped by their institutional structures: for example, benefit accruals

may be more predictable when contributions are determined as a fraction of earnings, versus when they are determined by such factors as corporate profits.

Evidence on trends in pension provisions and formulas over time is provided in a series of reports issued by the U.S. Bureau of Labor Statistics (BLS). Here we focus on published tabulations covering the period from 1980 to 1989 summarizing evidence from a survey conducted periodically by the BLS on employee benefits, called the Employee Benefits Survey (EBS). This survey has examined the incidence and characteristics of employee benefit plans covering private sector establishments in the continental United States. (Cost information for these benefit plans was not collected in the same format.) In a few cases unpublished information was generously provided by the BLS to supplement the published tables.

Before describing the data and trends in more detail, it is first useful to define terminology and explain the importance of specific pension provisions.

Plan Participation and Vesting

Workers covered by a pension generally do not become plan participants immediately. Instead, many pensions limit participation to workers who have been at the firm more than 1 year, and further restrict participation to employees over a certain age. (The Employee Retirement Income Security Act [ERISA] of 1974, as amended, mandated that plan participation requirements could not be more stringent than this, but plans may be more generous). The definition of plan participation matters because many pensions begin to count years of service (used in benefit computations) from the date that a worker becomes a plan participant.

Vesting refers to the point at which the worker gains a legal claim to an eventual benefit from a pension plan in which he or she is a participant. Relatively few firms grant their workers immediate rights to a benefit; instead, plans tend to specify that workers will gain this legal claim only when they meet the criteria specified in the plan's vesting formula. This is often expressed in terms of a minimum age and/or years of service required to gain a legal claim over a retirement benefit. In 1974, ERISA spelled out a series of legally permissible vesting schedules including the very common "10-year cliff vesting rule", which required a worker to be vested after 10 years of

service. 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 private pension plans specify that an employee must complete a certain number of years of service, and/or attain a specified age, in order to receive a pension annuity payment. Thus, for instance, a worker may be eligible for early retirement if he or she is at least 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. Many plans also denote particular age and/or service conditions for what is often termed "delayed" retirement, or retirement after the plan's normal age.

Such age and service requirements are important because they establish conditions under which the worker can claim plan benefits, and are common in both defined benefit and defined contribution plans. However these requirements play a special role in defined benefit plans, since age and service also affects the level of benefits a retiree can expect. This is because defined benefit plans often base payments on a retiree's age and/or service as of his or her departure date. For instance, an early retiree might receive a lower annual benefit amount than the one payable at the plan's normal retirement age. The higher benefit for normal retirement is reflective of the fact that at the 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, defined benefit plans frequently structure their benefit formulas so as to subsidize early retirement (Fields and Mitchell 1984, Kotlikoff and Wise 1987, Luzadis and Mitchell 1991). Hence retirement requirements are important insofar as they establish when a worker may begin to receive subsidized early payouts.

Until recently, firms were also permitted to induce older workers to leave by limiting pension accruals. However the Omnibus Reconciliation Act of 1986 required pension plans to continue benefit accruals after the normal retirement age, a ruling which took effect for most private sector pensions in 1988. (Collectively bargained plans were permitted somewhat longer to come into compliance.) Hence retirement eligibility rules for postponed or delayed retirement must be understood, because they determine benefit incentives to remain employed at older ages.

Retirement Contribution and Benefit Provisions

Defined Benefit Plans:

Defined benefit plans use a variety of methods to compute participants' payouts. As the data will show, some pension benefit formulas provide for flat dollar amount entitlements. In most cases, however, workers are covered by plans wherein benefits are based on the worker's pay, age and/or service at retirement.

When pension benefits depend on earnings, the formula generally specifies what percentage of earnings will be paid per year of service. In addition, earnings-based plans must indicate the definition of earnings that is relevant. For instance straight-time pay alone may be considered, or alternatively the plan can include overtime, shift pay, and/or commissions in 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 some cases pension formulas are integrated with social security rules, following two general patterns. "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 special benefit rules, many of which affect retirement benefits under certain conditions. Data have been collected by the BLS for several years on benefit reduction factors, important in determining the rate at which annual benefit payments are reduced for workers retiring early. These reduction factors often turn out to

encourage early retirement, because they reduce early retirement benefits by less than the amount required to be actuarially neutral. In other words, early retirement pension payments often prove to be larger than the normal retirement benefits in present value terms, providing a pension subsidy for early retirement (Fields and Mitchell, 1984). Trends in these are examined in the next section.

Useful tabulations on other aspects of defined benefit plans may be developed with other Employee Benefits Survey tabulations. Of some interest is a time series on average replacement rates for employees of varying pay and service levels, indicating how retirement pensions compare to pay levels just prior to retirement. These tabulations indicate the extent to which pensions have risen relative to final pay. In addition benefit maximums are indicated, usually as a function of service and/or pay. Many plans also offer pension increases after retirement, in partial recognition of the declining purchasing power of benefits fixed in nominal terms. Though most pensions do not formally index benefit payouts, ad hoc increases are fairly prevalent and contribute to increased economic security in retirement (Allen et al. 1986) .

Two other features of some interest are provisions describing workers' access to pension accruals for special reasons, including for early receipt of vested benefits and for disability. When workers have access to vested accrued benefits, they sometimes fail to save the accumulations for retirement, a subject of much policy debate of late (Fernandez, this volume). Disability pensions are another way in which workers can receive benefits prior to becoming qualified for a regular pension, which also plays a role in increasing economic security.

Defined Contribution Plans:

The institutional structure of defined contribution plans is as varied as among their defined benefit counterparts, but along different dimensions. There are many different types of plans, categorized according to various classification schemes. One approach, used by the BLS, is to distinguish between what it calls "retirement" versus "capital accumulation" plans, where the former generally prohibits withdrawal of pension accruals prior to retirement, and the latter lends easier access to plan assets. Of course as the BLS recognizes, "most defined contribution plans can

be used to provide retirement income or to accumulate financial assets" (US DOL, 1989, p. 107). In addition many of these plans allow lump-sum cash-outs rather than a benefit annuity. For these reasons, the distinction between the two plan types, retirement versus capital accumulation, is somewhat arbitrary from an economic perspective.

An alternative approach, also used in BLS data, differentiates defined contribution plans according to what gives rise to them, or on the basis of their holdings. Examples here include a variety of offerings such as savings and thrift plans, profit-sharing programs, money purchase pension plans, and employee stock ownership/stock bonus 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 based on workers' pay or other formulas. Early withdrawals or loans are rather less common here than in other plans. In a money purchase plan, employer contributions are fixed, usually as a fraction of earnings, whereas in stock ownership and stock bonus plans the employer contributions are usually in the form of company stock.

Individual company practice and the tax code limits the amount and distribution of funds going into defined contribution plans, as well as withdrawals from these plans. The Employee Benefits Survey offers some information on changes in these practices over time for both profit sharing and savings/thrift plans. In addition there is limited information on participation and vesting requirements in defined contribution plans over time, though the time series are shorter than for defined benefit provisions.

Data Sources

Before discussing specific trends in pension plan formulas and retirement provisions, a few comments are in order about the data used in developing this report. Until 1988, the BLS Employee Benefit Survey used a sampling frame that focused on firms employing at least 50, 100, or 250 workers, depending on the industry in question. Thus in the mining, construction, retail trade, and some manufacturing and transportation sectors, only establishments employing 250 workers or more were included. In accounting, auditing, and bookkeeping, the minimum firm size was 50 employees. Beginning in 1988, however, the BLS altered its survey sampling frame by making the universe of all firms employing at least 100 workers the new focus of analysis. As a result, in 1988 the survey sample size increased from about 1,300 to about 2,100 firms by virtue of this change in scope (US DOL, 1989).

In addition to the change in firm size, the BLS also extended industrial coverage of the benefits survey as of 1988. Industries analyzed prior to the change included mining; construction; manufacturing; transportation; communications; electric, gas, and sanitary services; wholesale and retail trade; finance, insurance, and real estate; and selected services. Beginning in 1988, coverage for the service sector became more extensive; in particular, health and educational services had previously been underrepresented and are now included in the sample.

In all years, the BLS has consistently concentrated its data collection efforts on three major occupation groups: professional and administrative, technical and clerical, and production and service. Not included in the survey are executive management workers and part-time, seasonal, temporary, and traveling employees.

As a result of these changes in EBS scope and coverage, it is important to recognize that pension information collected before and after 1988 is not strictly comparable. In particular, from 1988 onward, the tabulations cover more small firms and offer slightly broader industrial coverage. Selected summary tables were prepared by the BLS in 1988 only, for the purpose of indicating how the changed survey scope altered reported pension statistics; these do not, however, indicate whether differences in reported tabulations due to coverage format changes are statistically

significant. Parallel tabulations using both the "old" and the "new" coverage formats are presented for four of the time series discussed below.

We conclude that along many of the important pension dimensions of interest here, the 1988 tabulations of pension data using both the "old" and the "new" scopes appear similar. Some differences do emerge, mainly because the expanded surveys of 1988 and thereafter include more smaller firms where benefit coverage as well as benefit generosity is typically less. Thus using the new format, pension coverage appears lower, requirements for normal retirement appear more stringent, and fewer plans appear to provide post-retirement benefit increases among defined benefit plan participants. In the defined contribution area, even more changes are evident, partly because such plans are more prevalent among smaller firms. For this reason, the reader should be aware that the "new scope" 1988 and 1989 data are not precisely comparable with the "old scope" information from previous years.

TRENDS IN PLAN FORMULAS AND RETIREMENT PROVISIONS--DEFINED BENEFIT PLANS

Available tabulations of Employee Benefits Survey data provide time series data on three important institutional characteristics of defined benefit pension plans: (1) participation, eligibility and vesting; (2) benefit formulas, and (3) special provisions. Each set of trends is examined in turn.

Participation, Eligibility, and Vesting.

Defined benefit pension plans frequently specify criteria that workers must meet before becoming full-fledged pension participants. Such requirements are justified by the need to reduce administrative costs that would otherwise be incurred for young workers. Their effect is to reduce turnover by offering workers an incentive to remain with the company (See the review in Gustman and Mitchell, forthcoming). Under the Employee Retirement Income Security Act (ERISA) of 1974, full-time employees age 25 or older had to be granted participant status after completing 1 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, some plans that make vesting immediate on participation are still permitted a 3-year participation requirement).

Published information on plan participation patterns over time indicates remarkable stability in the fraction of full-time workers with no minimum age and/or service requirements between 1981 and 1986 (Table 1). After 1986, however, there were some apparently large changes in participation patterns. Consistent with expectations under REA, the fraction of participants covered by the "age 21/service 1" rule grew quickly, almost doubling from 18 percent in 1986 to one-third of all participants by 1988; on this count, then it appears that the law change was successful in bringing about earlier participation for many workers. On the other hand, and more unexpected, is the large decline in the fraction of workers permitted to participate in their plans immediately, and the concomitant increase in the probability of facing minimum age and/or service rules for participation.

It may be that the law change actually prompted plans to impose minimum requirements instead of bringing about intended liberalization, for some portion of the workforce. However confirming this hypothesis is difficult using published data because the "new scope" figures published for 1988 cannot be precisely compared with earlier data. Patterns remain somewhat inconclusive even when using unpublished "old scope" data generously provided by the BLS for this analysis (these appear in the column headed "1988†"). Part of the trend during the latter part of the 1980s may be due to changes in survey scope, though by no means all. Coverage figures were once again quite stable for 1988 and 1989.

Also in Table 1 is information on a practice permitted by ERISA until 1988, which was the imposition of participation limits when a worker joined a pension plan within 5 years of the plan's normal retirement age. These rules made it possible for firms to hire older workers without incurring large pension obligations, and until 1986 these rules were very common -- about 60 percent of plan participants were covered by this practice. The Omnibus Reconciliation Act (OBRA) of 1986 eliminated maximum age restrictions as of 1988 for most pension plans, and

comparable data were not tabulated in 1989. Judging from the fact that the practice was widespread during the mid-1980s, OBRA was probably important for older workers taking new jobs close to a firm's normal retirement age. Nevertheless it must be recognized that relatively few employees would be in this category, concentrated in a few industrial sectors (Hutchens, 1986, 1988).

Once a worker becomes a plan participant, he or she must often meet a plan service requirement before gaining a legal vested right to the plan (Table 2). It is widely held that these vesting requirements are structured to deter worker turnover, inasmuch as vesting guarantees an eventual retirement benefit which would otherwise be lost upon moving (c.f., Gustman and Mitchell, forthcoming). ERISA specified a number of different vesting formulas, including a 10-year cliff vesting practice requiring an employee to participate in the plan for ten years before becoming 100 percent vested. The Tax Reform Act (TRA) of 1986 required single-employer plans 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 during 1989. Table 2 indicates that most defined benefit plans used cliff vesting both before and after TRA, but the modal number of years until vesting fell from 10 to 5 between 1988 and 1989, consistent with expectations (Turner and Beller, 1989). Graduated vesting schedules give an employee rights to a gradually increasing share of accrued benefits, eventually reaching 100 percent at a specified age and/or service point. Graduated vesting schedules covered about 11 percent of all defined benefit participants in 1989, with little clear evidence of change over time. In general, vesting requirements appear to have eased over the decade of the 1980s.

Defined benefit plans generally specify age and/or service criteria under which a worker can retire and receive "early" benefits (Table 3). Virtually all defined benefit plans in the Employee Benefits Survey sample have permitted early retirement during the last decade, with coverage between 97 and 98 percent since 1980. However, the fact that early retirement was usually available obscures changes in criteria for collecting early benefits. To some extent, rule changes have made earlier retirement more accessible: two-thirds of all participants could leave at age 55 in

1989, up from 60 percent 10 years earlier (ignoring service). More people can now leave at age 55 and 10 years of service, and between 1988 and 1989 participation in plans requiring only age 55 and 5 years of service for early retirement more than doubled. Only half as many participants in 1989 were required to have 30 years of service as compared to a decade ago.

In most defined benefit plans, the modal normal retirement age is age 65, as it has been since 1980 (Table 4). However what is changing is the fact that many workers can retire before this age and still receive full (unreduced) benefits. For instance, 10 percent of all workers could retire at age 60 or 62 with no particular service requirement in 1989, up from 6 percent in 1980. Many others could take retirement in their early 60s if they met a service criterion: 26 percent could leave prior to age 65 in 1989, up from 22 percent in 1981, after working a specified number of years. Moreover, service requirements seem to be declining: the "30-and-out" rule here covered 11 percent of participants in 1980, and only 7 percent by 1989. These patterns are in line with findings from other studies indicating that many pension plans have encouraged earlier retirement over time (Luzadis and Mitchell forthcoming, Mitchell and Luzadis 1988). Whether or not this pattern will persist into the labor market shortages some have predicted for the 1990s remains to be seen.

Table 4 also contains information useful for comparing the "old" and "new" scopes of the EBS survey, since the BLS published 1988 data computed both ways. There are some strong similarities between the two 1988 data columns: for instance, the same general patterns of requirements are evident, in roughly the same proportions. However noteworthy differences also stand out: the "old" scope survey revealed a much lower rate of plans using age alone (35 percent versus 42 percent), a higher rate of service (9 percent versus 7 percent), and a higher rate of age and service combinations (41 percent versus 39 percent). While it is not clear whether the differences are statistically significant, the differences here should reinforce the point made above that the 1988 and 1989 surveys are not strictly comparable with those from earlier years.

In the past, many defined benefit pension plans provided no credit for work after age 65, a policy intended to discourage work after the normal retirement age. Thus, for instance, between

1981 and 1986 more than half of all participants were given no credit for service after age 65 (Table 5). Less than a fifth of all plans credited all service after age 65, and half of the plans deferred pension payouts with no actuarial increase. In 1986, however, the Omnibus Reconciliation Act mandated that benefit accruals had to be continued for work beyond the plan's normal retirement age (subject to any plan maximum credited service provisions), beginning in 1988 for most plans. As a result, the 1988 figures represent only partial year information (both "old scope" and "new scope" data are remarkably close here), and most of the entries are not available for 1989. Hence there is little information on how practices which discouraged continued work at older ages prior to 1988 have changed.

Benefit Formulas.

The vast majority of defined benefit plans surveyed use workers' earnings in their benefit formulas. The evidence shows that the prevalence of earnings-based plans is increasing (Table 6). In 1980, 68 percent of participants had earnings figure directly in their payments; the fraction rose to 72 percent by 1986, and 75 percent of the participants had earnings-based formulas by 1989. (Data are presented for 1988 using both the old and the new survey scope, and here the patterns are quite similar; apparently the change in scope makes little difference to the results). There has also been a trend toward the use of terminal earnings in the benefit formula with a rather large jump observed between 1988 and 1989 from 55 percent to 64 percent. Conversely, the fraction of workers in 1989 with career average (11 percent) and flat dollar amount (22 percent) plans is lower than previously.

Each of these changes somewhat reduces the risk of inflation that workers bear in their prospective pension payments, by linking benefits to pay during the final few years prior to retirement. In addition, the increasing prevalence of terminal earnings plans ties retirement benefits much more tightly to individual performance toward the end of the worklife, as compared to previously more popular career average plans. The fact that benefits and pay have become more tightly linked over time is confirmed by the tendency in 1989 of plans not to offer alternative

minimum benefits for employees with short service or low earnings. In contrast, at the beginning of the decade, alternative minimum formulas were far more prevalent.

In the three-quarters of all plans that linked benefits to earnings in 1989, roughly half (53 percent) included only base or straight-time pay in the formula (Table 7). This was a substantial increase from the previous year (44 percent of both career and terminal earnings plans used this pay formula). When base pay became more widely used, other forms of compensation (e.g., overtime pay, commissions, bonuses, and shift differentials) declined in importance insofar as determining benefits. This pattern is consistent with an earlier conclusion: limiting earnings used in computing benefits clearly reduces incentives to remain employed at older ages.

Among the almost two-thirds of pension participants with terminal earnings plans in 1989, the vast majority (81 percent) had formulas that averaged pay over 5 years (Table 9). Of these, most plans used the highest consecutive 5 years (65 percent) prior to retirement. Only 16 percent used 3 years of earnings in the benefit formula, though this fraction seems to have increased in the last several years. These plans typically provided a flat percentage per year of service (54 percent in 1989 used this approach), with the modal figure being between 1.25 and 1.75 percent of terminal pay ever since 1983 when the figures were first tabulated in this fashion. Just over one-tenth of the participants received 2 percent or more per year of service, with no clear-cut trend over time.

About 11 percent of plan participants had benefit formulas based on career earnings in 1989. Of these, the vast majority (59 percent) received benefit entitlements that varied with service, earnings, age, or a combination of these factors, and the pattern has changed little since 1983 (Table 8). Many of these plans are integrated with social security; for instance, such a benefit formula might provide 1 percent of pay up to the social security earnings threshold per year of service, and 1.5 percent for pay above this level. When a career earnings plan employs a flat percent per year of service, the modal percent is between 1.25 and 1.74, similar to the most common fraction used in terminal earnings plans. Most of these patterns seem fairly constant over the time period covered by the Employee Benefits Survey data. At the top end some increases in

benefit generosity are evident: 8 percent of all eligibles had benefits worth 2 percent per year of service or more in 1989, up four times the rate in 1983. However the small number of these plans, and the change in survey scope, may account for some of the variability in these estimates.

Plans paying retirees a dollar amount per year of service covered 22 percent of all participants, and four-fifths of these (81 percent) utilized a flat amount in the benefit formula (Table 10). For instance, 23 percent of the plans paid monthly amounts of around \$20 per year of service in 1989; in such a case, a worker retiring with 20 years of service would have expected \$400 per month. Benefit multiples have grown over time, most probably in recognition of inflation: the modal flat payment in 1983 was smaller than in 1989, at around \$15 per month. The early 1980s saw a decline in the prevalence of dollar amount benefit formulas, with a resurgence between 1988 and 1989. The U-shaped coverage pattern suggests a decline in flat monthly amounts between 1983 and 1986, followed by an apparent rise between 1986 and 1988. Even if differences in the survey scope before and after 1988 are taken into account, the trends remain contradictory. Perhaps the simplest conclusion is to recognize that fewer workers today are covered by dollar amount benefit formulas than previously, but when they are, flat dollar credits per year of service remain the norm.

One unmistakable trend in the Employee Benefits Survey data pertains to the growing practice of integrating pension benefits with social security (Table 11). In 1980 fewer than half (45 percent) of all participants were in integrated plans, while by 1989, almost two-thirds were integrated (63 percent). Integration takes two forms, and both forms became more prevalent over the period, with most of the changes occurring between 1980 and 1985. The practice of reducing or offsetting pension benefits by a portion of social security payments grew from 30 to 40 percent, and plans using the excess formula increased from 16 to 27 percent over the first 5 years of the decade. During the latter part of the 1980s, integration practices appeared to have changed far less quickly, and the change in sampling format had no important impact on the figures between 1986 and 1988. It is of interest to recognize that the largest changes in pension integration practices coincided with substantial payroll tax increases resulting from the 1983 social security reforms

(Fields and Mitchell, 1984), and though a causal relationship cannot be proven in the data, the correlation is striking.

Early retirement has for some time been virtually universal among defined benefit plans, but eligibility requirements are making early retirement more accessible. Table 12 suggests that subsidization of early retirement is widespread: in 1989, two-thirds of all workers covered by a uniform early retirement reduction factor faced benefit reductions smaller than 6 percent for each year he or she left early (6 percent is often considered to be a roughly actuarially neutral reduction factor for early retirement; see McGill 1984). It is possible that early retirement is also subsidized in other plans using factors which vary with age and service, but this cannot be determined from available tabulations. Data on reduction factors applied to deferred vested benefits are even sketchier since the tabulations begin only in 1986, but here too, the evidence suggests that two-thirds of all workers covered by a uniform reduction factor for vested deferred benefits face benefit reductions smaller than 6 percent. Deciding whether this tendency is increasing or declining over time will require additional survey years of data, however.

One way in which pension analysts compare retirement payments across defined benefit pension plans is to compute "replacement rates", or the ratio of the retirement pension to the final year's earnings. The BLS calculated replacement rates at the normal retirement age in the EBS pension plan surveys between 1984 and 1989; data are reported using six standardized pay levels and three seniority profiles (Table 13). Replacement rates generally rise with service, holding pay level fixed, for a given year and across all years. If one compares replacement patterns within service categories, the plans appear redistributive in that replacement rates decline as pay rises for particular levels of service -- in all cases except the \$40,000 bracket where rates rise slightly in all years. It must be recognized that the illustrative pay levels reported in the table are not comparable over time since a constant nominal earnings assumption actually implies falling real pay levels over the 6-year period. One can take this into account by comparing the replacement rate for a \$25,000 worker in 1984 with that for a \$30,000 level in 1989, which roughly controls for the change in inflation over this period. This comparison shows that pension benefits became more generous

over the period, but by not as much as one might gather from focusing on the constant nominal pay levels (i.e., looking at the same nominal pay level in 1984 and 1989, benefits appeared to increase 7.2, 8.7, and 11.7 percent at 10, 20, and 30 years of service; but holding constant real pay levels the benefit increases were smaller, at approximately 2.0, 7.0, and 10.5 percent).

Special Provisions.

In general most retirees are vulnerable to inflation (Allen et al. 1986), because pension benefits are usually paid in the form of fixed nominal annuities. Rarely is the benefit explicitly indexed to a cost of living index; indeed in 1989 only 7 percent of EBS participants were covered by a COLA, and most often the COLA was capped at some maximum amount. Quite frequently benefits are not increased at all: for instance between 1984 and 1988, the Consumer Price Index rose 19 percent, during which time one-half to three-quarters of defined benefit plan participants were in plans where retirees were awarded no post-retirement increases at all (Table 14). When benefits after retirement were increased, an ad-hoc adjustment factor was used which tended to be a flat amount (56 percent in 1989). The most common alternative was to offer an amount per year of service (29 percent) or per year since retirement (15 percent). It is interesting to note that many fewer participants in 1989 had a post-retirement increase than in 1983 (24 versus 51 percent) but it must be recognized that declining inflation rates over the decade drive this trend.

For various reasons, pension plans frequently impose a ceiling on benefit amounts. This phenomenon has been prevalent for some time, as is evident from Table 15. Though information is available only since 1984, few dramatic changes over time are evident: about two-fifths of all plans imposed a maximum limit on benefits over time, mostly in the form of service years. The modal choice for a maximum has generally been between 30 and 39 years of service, though this seems to be declining and higher limits becoming more widespread (e.g., 40 or more years) since 1985.

Most defined benefit plans in Employee Benefits Survey tabulations contain special disability provisions (Table 16). The prevalence of disability pensions remained in the high 80s and low 90s from 1980 until 1988, whereupon there was a sudden and substantial drop in

