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PENSION SUBSTITUTION IN THE 1980S: WHY THE SHIFT TOWARD DEFINED CONTRIBUTION PENSION PLANS?

Douglas L. Kruse

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ABSTRACT

The relative decline of defined benefit (DB) pension plans, and growth of defined contribution (DC) plans, has been often noted but not extensively explored. This paper reports on the construction of a new longitudinal company-based dataset on pension plans for the years 1980-86 (including all U.S. companies with large plans, and a 10% sample of companies with small plans, within this period). Among the findings are that the decline in DB coverage is primarily due to fewer participants in companies maintaining such plans, while very little of the growth in DC coverage is due to companies terminating DB plans. Also, multinomial logit analysis of manufacturing company choices indicates that the higher administrative costs of DB plans play a statistically significant, but small, role in their decline, while new pension adopters in less stable industries are more likely to choose DC plans.

Douglas L. Kruse
Institute of Management
and Labor Relations
Rutgers University
New Brunswick, NJ 08903
and NBER

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I. Introduction

The past fifteen years have seen a shift in the U.S. from defined benefit pension plans to defined contribution pension plans. From 1975 to 1985 the number of U.S. workers in defined benefit pension plans increased from 27.2 to 29.0 million; however, the percent of wage and salary workers in such plans decreased from 39% to 33% (Turner and Beller, 1989). At the same time, the number of workers in defined contribution pension plans has tripled: from 11.2 million workers (14% of the workforce) to 33.2 million workers (30% of the workforce).[1] These trends have attracted growing attention in popular and practitioner literature (see, e.g., Modic, 1988; Szabo, 1989; Zoghlin, 1988; Chernoff, 1989).

The reasons for this switch have not been well-explored. Two advantages of defined contribution (DC) plans relative to defined benefit (DB) plans are that: (1) DC plans are subject to fewer regulatory and administrative costs, since they need not meet an actuarial standard ensuring that a defined benefit will be provided in the future;[2] and (2) DC plans provide more flexibility for the employer, since contributions may be linked to the current performance of the employer, and the employee bears the subsequent financial risk of the pension assets. Such a shift of risk to employees would, under conditions of good labor market mobility and information, induce higher compensation levels as compensating differentials to employees; this mitigates but is unlikely to eliminate the firm's incentive to shift a portion of new-found risk to

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[1] See Power (1987) for an analysis of net plan adoptions by type, which clearly shows a 1976-85 time trend favoring DC adoptions.

[2] For estimates of these costs by plan size for typical employers, and of how DB costs increased more rapidly than DC costs over the 1981-91 period, see Hay/Huggins (1990). For an example of the widespread concern over regulatory costs, see Chernoff (1989).

employees. These two advantages would suggest that employers have increasingly favored DC plans as a means of lowering costs or of increasing flexibility in the more uncertain economic environment of the late 1970's and 80's. A third advantage which may help explain the shift to DC plans is that: (3) Unlike DB plans, DC plans can be structured so that more than 10% of the pension assets can be invested in or loaned to the sponsoring company; this provides the company with capital which may be costly to obtain in other ways.

II. Literature Review

An analysis of the role of unions, firm size, and industry composition in the shift from DB to DC plans was done by Gustman and Steinmeier (1989). Using repeated cross-sections of pension plan data from the federal Form 5500 series, they found that employees in primary defined benefit plans as a percent of all employees in primary pension plans declined from 89.7% in 1977 to 79.3% in 1985. The use of constant weights across the period by union status, firm size, and industry produced a decline only half this large, implying that no more than half of the decline took place within firms of given union, size, and industry characteristics.

Another study, by Clark and McDermed (1990), analyzed the issue using several data sources: the 1979 and 1983 Current Population Survey (CPS) supplements on pension coverage, the 1983 Survey of Consumer Finance, and the 1977 and 1985 Form 5500 data on large plans matched to industry mean values from the CPS. Using probits on DB coverage with the individual-level data, they conclude that demographic, employersize, and broad industry and occupation variables explain substantially none of the coverage decline between 1979 and 1983. Using the firm-level data, they conclude that only 3.1

of the 15 percentage point decline of the proportion of DB coverage (among primary pension plans with 100+ participants) can be explained by changes in the size distribution of firms and industrial composition. They also cast suspicion on the idea that increased levels of financial market, labor market, and inflationary risks have propelled the move toward DC plans, and conclude that "Pension regulation appears to be largely responsible for the greater use of defined contribution plans" (1990: 106).

The findings of Gustman and Steinmeier, and Clark and McDermed, were re-examined by Ippolito (1990). Excluding multiemployer plans, and including new union codes, Ippolito found in contrast to Gustman and Steinmeier that virtually all of the loss of DB market share from 1979-87 was due to employment shifts. Among smaller plans (100-1000 participants), there was a shift toward DC plans (perhaps due to increased regulatory costs), but among larger plans (1000+) there was a small drift toward DB plans, leading to no net aggregate change in DB market share. He notes that the result for smaller plans (100-1000) is consistent with Clark and McDermed, who do not weight their plans by size and therefore give emphasis to the more numerous small plans. He also notes the growth of 401(K) plans over this period, concluding that it came at the expense of both DB plans and other DC plans.

Other studies at the firm or plan level have examined the factors behind DB terminations (without directly examining the overall shift toward DC plans). Peterson's (1989) results are consistent with Stone (1988) and Hamdallah and Ruland (1986) in finding that financial factors play a strong role in the decision to terminate overfunded DB plans (specifically, firms which show greater needs for capital, and higher costs in obtaining external capital, are more likely to terminate overfunded plans to claim the excess

assets). He also finds some support for the theory that firms are effecting a transfer from workers to firms by breaking the "implicit contract" which pension plans may represent (see Ippolito, 1985).

Both the implicit contract view, and the view that DB terminations are part of the efficient restructuring of a firm, are tested by Ippolito and James (forthcoming) using data on leveraged buyouts. They find that there is a "strong and statistically significant increase in pension terminations following LBO announcements" (p. 27). However, neither view of the motivations for DB terminations is dominant in the results of their analysis: the efficiency view plausibly explains a number of terminations, but not enough to undermine the transfer view. (See Gustman and Mitchell, 1990; Ippolito, 1986; and Chen and Lee, 1988, for an overview of other empirical literature on pensions.)

This paper will further explore the trend toward increased use of defined contribution plans by examining company-level data from the Form 5500. It extends the analysis of Gustman and Steinmeier, and Clark and McDermed, by longitudinal matching of plans across a seven-year period. Through such matching, one can construct a profile of how many companies adopt and terminate the different kinds of plans, and make estimates of the number of employees involved. Also, statistical analyses can be performed to predict terminations and adoptions of plans. The dataset is based on the universe of companies with plans covering 100+ participants, and a 10% sample of companies with plans covering fewer than 100 participants.

This method can provide some hard evidence on questions which have not been well-answered. For example, much attention has been paid to terminations

of DB plans: has the decline in percentage of employees covered by DB plans been primarily due to (well-publicized) terminations of such plans? Has the growth in DC plans come primarily from companies which previously had or still maintain DB plans, or from new companies?

This paper first reports on the basic patterns of pension plan adoption, maintenance, and termination of U.S. companies over the years 1980-86. Next, it uses multinomial logit analyses of the manufacturing sample to predict pension plan status according to 3-digit industry characteristics. To preview some of the key results: the decline in DB participant coverage is due more to declining coverage within companies maintaining DB plans than to terminations of such plans; very little of the growth in DC plans came from companies terminating DB plans; the difference in administrative costs between DB and DC plans is a significant but minor predictor of changes in plan status for manufacturing companies with plans in 1980; and industry employment variability is a significant predictor of type of plan adopted for manufacturing companies adopting new plans.

III. Data

To create a company-based longitudinal file on pension plans, pension plan data were matched across fiscal years 1980 to 1986. The Form 5500 must be filed every year by pension plan administrators for plans with more than 100 participants ("large plans"); while the Form 5500C must be filed at least once every three years for plans with fewer than 100 participants ("small plans").

This project uses the full set of data on companies with large plans, and a 10% sample (constant across the seven years) of the companies using small plans (the 10% sample was given a weight of ten in all reported statistics). (Sample construction is described in the Appendix.) For this project, each plan was classified into one of four categories: maintained throughout the period, terminated within the period, begun within the period, or mismeasured. The first three categories constitute what will be referred to as "trackable" plans: their status is clearly known in both years. The fourth category consists of those plans which could not be tracked; e.g., they report in 1986 that they began before 1980, but no 1980 report can be found, or they report in 1980 and not 1986 without filing a report indicating termination in the meantime. These plans may be untrackable either because they did not file a plan, or because they filed a plan but the company identifier or plan number was misreported or miscoded. As detailed in the Appendix, a number of techniques were used to track the untrackable plans; these trimmed down but did not eliminate the group.

The sensitivity of the aggregate statistics to untrackable plans is assessed using alternative assumptions in Appendix Table A-1. In the multinomial logit analyses, account is taken of nontrackable plans by treating them as a separate category for the logits.

IV. Basic Patterns

Table 1 provides a first cut at the data. For each type of plan, each company was coded as a "keeper" (had at least one such plan in both years), "adopter" (had no such plan in 1980, but had adopted at least one by 1986), or "dropper" (had at least one such plan in 1980, but had terminated all by

1986)[3] Total company estimates are rounded to the nearest 100, and total participant estimates are rounded to the nearest 1000. It should be noted that the total participant counts in Tables 1 and 2 will double-count some employees covered by more than one plan (the Form 5500 does not allow one to precisely identify the extent of such double-counting)(Table 3, in contrast, avoids all double-counting by considering only the largest plan within each company).

The numbers in Tables 1 to 3 are based only on trackable plans; for yearly counts of participants in all plans see Kruse (1991) and Turner and Beller (1989). In Appendix Table A-1 some estimates are presented on the company distribution under alternative assumptions about non-trackable plans.

As can be seen in the defined benefit category of Table 1, 97,600 companies kept DB plans over the period, 89,100 adopted plans, and 47,600 dropped plans. Total participants in trackable DB plans declined by over one-third of a million: from 28.6 million in 1980 to 28.2 million in 1986. Companies terminating all DB plans were responsible for a decline of 1.4 million DB participants, while companies maintaining DB plans were responsible for a decline of 1.7 million DB participants; this indicates that, while the two groups roughly share equal responsibility for the decline in total DB participants, DB terminations are not the primary culprit in this decline.

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[3] Note that these designations do not deal with the issues of what percent of the company's employees are covered through this period, or of whether the same employees are covered by different types of plans. A company designated as a DB dropper and DC adopter may have terminated a DB plan covering 100% of workers and adopted a DC plan covering only 10% of workers. Calculations similar to those in Tables 1 and 2 have been done for only the plans which cover more than 50% (or alternatively 25%) of employees in either year; these results, which do not show greatly different patterns from those in Tables 1 and 2, are available from the author.

This analysis is not limited to "primary" plans, which have been a focus in several recent studies.

The figures for all defined contribution plans indicate that 218,900 companies kept such plans, and 233,400 adopted such plans, over the period. Clearly the gross number of companies with such plans, and the gross number adopting DC plans, is much larger than for DB plans. The DC participant count for 1980 is 19.3 million, rising to 33.0 million in 1986. Ten million participants were added to DC plans by firms adopting such plans in the period, while only 4.7 million were added by firms keeping such plans through the period. Therefore the growth in DC participants is primarily attributable to new plans.

The remainder of Table 1 provides additional information exploring the composition of the defined contribution plans. Many companies have added plans with 401(k) options, in which employees may make a tax-deductible contribution to the plan, which may be matched by an employer contribution. This option has been available since 1978. One hypothesis for the growth in DC plans is that firms and employees are taking advantage of the 401(k) provision. Data on 401(k) options are not available for 1980, or for small plans in any year; however, the last column presents counts of the number of participants in large DC plans with 401(k) provisions. While this necessarily understates the actual number of participants in 401(k) plans, it does indicate that probably less than half of DC participants are in plans with 401(k) options.

The numbers on deferred profit-sharing plans, which are a major subset of DC plans, show the same basic patterns as for all DC plans.

Another innovation which was increasingly used during the 1980's is the Employee Stock Ownership Plan (ESOP), under which employees indirectly own stock in their company through their pension trust. ESOPs are generally a

form of stock bonus plan, and have been given a number of special tax incentives (see Blasi, 1988, and Blasi and Kruse, 1991). The data on ESOPs in Table 1 indicate that about 5,600 companies adopted plans with ESOP features over the period, with slightly over 6 million participants. About 1500 companies terminated such plans, while 2600 kept such plans. The overall growth in ESOP participants--from 5 million to 10.7 million--is clearly due to adoption rather than growth within ESOP companies.

Table 2 breaks down the change in DB and DC participants according to whether the firm adopted, dropped, or kept DB or DC plans. There are fifteen classes into which a company may fall, representing the permutations of four DB categories (adopter, dropper, keeper, and none in either year) with the same four DC categories (with the none-none category deleted).

Three key points may be drawn from Table 2:

1) Very little of the growth in DC participants came from companies which terminated DB plans. The growth in DC participants among DB droppers was 381,000 to 959,000 (cols. 5 and 6), representing only 4% of the total growth in DC participants (col. 8). The largest share of growth in DC participants was among companies which never had a DB plan (44%, col. 8), followed by those which kept DB plans over the period (42%, col. 8). Therefore DC plans appear to play an important role both as supplements to DB plans, and as the primary plans in many companies.

2) The decline in DB participants among companies dropping all DB plans is more than offset by new participants in companies adopting DB plans. As shown in columns 3 and 4, 2.8 million participants were added by DB adopters, with a decrease of only 1.4 million from DB droppers. Total DB participants grew in companies which adopted DC plans (rows 1, 5, 9, and 13).

3) Relatedly, the largest declines in DB participants came from companies which had no change in DB or DC status. As shown in rows 11 and 12, a decrease of 1.3 million DB participants occurred in firms which maintained DB and DC plans over the period, while a decrease of 1.0 million occurred in firms which had no DC plans over the period.

Profit sharing and ESOPs accounted for a significant portion of the growth in DC participants. Overall, 52% of DC participant growth is due to profit sharing, and 42% to ESOPs (columns 9 and 10). The increase due to ESOPs is highest among companies which maintained DB plans (66%), and lowest among companies with no DB plans over the period (20%). In fact, only 3.4% of the growth in ESOP participants occurred in companies terminating DB plans, while 75.1% of this growth occurred in companies adopting or maintaining DB plans. This strongly suggests that ESOPs tend to supplement rather than replace DB plans. (In a recent analysis of ESOP press reports over the 1980's, only 41 were discovered in which a DB plan had been terminated (Blasi and Kruse, 1991: 328-9)). The increase due to profit sharing, in contrast, is fairly evenly spread across the DB status categories.

V. Industry Breakdowns

Much of the patterns of change in Table 2 may be due to industry changes: in particular, the decline in DB participants may be concentrated among traditionally unionized industries. Table 3 provides an industry breakdown of percent of workers covered by DB and DC plans. Unlike Tables 1 and 2, this table does not use total participant counts (which involves double-counting workers in more than one plan), but counts only the participants in the company's largest DB and DC plans (which avoids double-

counting, but will also tend to underestimate total workers covered). As before, only trackable plans are included.

Overall, this method indicates that the percentage of private sector workers (excluding self-employed) covered by trackable DB plans fell by 2.8 points.[4] The breakdown of percentage point changes indicates that DB adopters pushed the percentage up by 3.0 points, but the percentage was pulled down by DB keepers (-4.1 points) and droppers (-1.7 points). The largest declines in percent covered occurred in construction (-9.0 points) and transportation, communication and utilities (TCU)(-8.7). The only industries with increased DB coverage are non-durable manufacturing (+1.3 points), health services (+1.2), trade (+0.1), and finance, insurance, and real estate (FIRE)(+4.2).

Did the industries with large declines in DB coverage also have large increases in DC coverage, implying that DC plans are substituting for DB plans? The four industries with increases in DB coverage were among the six industries with the strongest growth in DC coverage (durable and non-durable manufacturing, trade, FIRE, TCU, and health services), indicating no simple story about trade-offs between DB and DC. Of the 8.6 point increase in percentage of workers covered by DC plans, almost half (4.2 points) came from companies with no DB plan in 1980 or 1986. Again, these numbers indicate that growth in DC plans may be coming at the expense of DB plans not by direct substitution of the former for the latter, but by the decision of pension adopters to choose DC rather than DB.

VI. Predicting Pension Status Changes

[4] Counts of private sector employees come from U.S. Dept. of Commerce, Survey of Current Business, various July issues.

The numbers in Tables 1-3 clearly indicate a shift toward DC plans relative to DB plans, and further show that very little of this shift can be attributed to direct substitution of DC plans for DB plans. An important question is the extent to which the two principal advantages of DC plans--lower administrative costs and more flexibility for the employer--have accounted for the shift. Very little data are available at the firm level (other than company size) to help explain this shift, but an industry identifier can be used to match the pension data to industry characteristics (at the 3-digit SIC level). This section reports on an analysis of pension plan patterns for manufacturing companies, using 1970-80 data from the Census of Manufactures and Annual Surveys of Manufactures (as collected in the NBER Trade and Immigration Database). Unlike the data presented in Tables 1 to 3, this analysis includes companies with mismeasured plan status.

The analysis is based on a conditional multinomial logit model (see Maddala, 1983), in which firms may choose among four pension categories in 1986: no plan, only DC, only DB, and both DC and DB. A fifth category is for companies with missing plan status.[5] The categories are not treated as ordered. To simplify the analysis and presentation, multinomial logits were calculated separately for three samples: (1) those firms which had no pension plan in 1980 (but had adopted by 1986); (2) those firms which had at least one pension of any kind in 1980; and (3) those firms with mismeasured status in 1980. For sample 2, dummy variables were included for the firm's pension

[5] Having a nontrackable plan will not necessarily put a company into this category. If, for example, a company has a trackable DB plan over the entire period, this by default establishes it as a DB keeper despite nontrackable DB plans. A company falls into the mismeasured status category only if the nontrackable plan's status would make a difference in the company's status.

status category in 1980.

The hypothesis that the relative shift toward DC plans is explained by the administrative costs of DB plans is addressed by calculating cost differences between the two types of plans. For each 3-digit industry, the average ratio of administrative costs to total plan assets was calculated for both DB and DC plans, for fiscal year 1980. Across all plans, administrative costs were an average of 1.0% of DB plan assets, and 0.75% of DC plan assets. The cost difference by industry (COSTDIFF) was calculated by subtracting the DC ratio from the DB ratio. Identification of the effect of the administrative cost difference relies on variation in this difference across industries; such variation could be expected based on industry differences in turnover, employee demographics, plan sizes, and possibly other factors which would complicate the calculation of a defined benefit.

The hypothesis that the shift toward DC plans is due to an employer need for flexibility is addressed by including a variable (EMPVAR) measuring the standard deviation of the yearly change in log(industry employment) over 1970-80. This approximately represents the standard deviation in percentage terms around an industry time trend. The period 1970-80 was chosen instead of the 1980-86 period to avoid problems of simultaneity: industry pension choices over 1980-86 are likely to affect industry employment in that period, but not in the prior period. Note, however, that this measure will not reflect any increased or decreased variability of demand in the 1980's, which may be a strong influence on company decisions.

Other independent variables were included which may affect pension choices. Unions are historically associated with negotiated DB plans, so that the industry unionization rate (UNION80, for the year 1980), may make a

difference. Industry growth and competitive pressures may matter, as measured respectively by the change in natural log(deflated industry shipments) from 1970 to 1980 (SHIPCHANGE), and the change in the import penetration ratio from 1975 to 1980 (IMPCHANGE). Other industry characteristics included are the natural logarithm of the average company size in 1980 (COSIZ80, calculated from Form 5500 for company, not establishment), the natural logarithm of the average industry wage in 1980 (WAGE80), and the proportion of employees who are blue-collar workers in 1980 (BC80). All independent variables are defined prior to the 1980-86 period to avoid questions of simultaneity. For sample (2), to account for the company's pension category in 1980, dummy variables representing the "only DC" category (ONLYDC80) and "only DB" category (ONLYDB80) were included.

Results are reported in Table 5 (with variable definitions and descriptive statistics in Table 4). In sample (1), covering firms with no pension plans in 1980, the analysis of variance indicates that BC80, KL80, COSIZ80, and EMPVAR each explain a portion of the variance at the 5% significance level. The coefficient signs on EMPVAR are consistent with the hypothesis that greater economic uncertainty leads companies to adopt DC plans instead of DB plans. While the coefficient signs on COSTDIFF are consistent with the idea that higher administrative costs of DB plans drive firms toward DC plans, this variable is not significant at the 5% level.

The magnitude of these effects is most easily seen in Table 6 which, for typical values of the independent variables, calculates changes in probabilities of being in a particular status category. From row 1, for companies with no pension plan in 1980, the predicted probabilities based on mean industry characteristics are that 70.9% of firms would adopt only DC

plans by 1986, 23.5% would adopt only DB plans, and 5.6% would adopt both. As shown in row 7, increasing the administrative cost difference between DB and DC plans from zero to its mean value (.0025) is estimated to increase the percentage choosing DC plans by 0.6 points (at the expense of the other two categories). As shown in the final row, increasing the standard deviation of 1970-80 industry employment from zero to its mean value is estimated to increase the percentage choosing DC plans by 7.1 points.

Sample (2) consists of those firms with a (DB or DC) pension plan in 1980. The analysis of variance indicates that all independent variables except WAGE80, UNION80, and SHIPCHANGE are significant contributors to explaining variance at the 5% level. The COSTDIFF coefficients take the expected signs, indicating that higher administrative cost differences favor DC plans, while the EMPVAR coefficients indicate that higher 1970-80 employment variability favors a slight shift toward DB plans among firms which had some kind of plan in 1980.

The magnitudes are again presented in Table 6. Within sample (2), based on mean characteristics, 25.0% of companies are estimated to terminate all plans, 25.6% to have only DC plans in 1986, 17.2% to have only DB plans in 1986, and 11.0% to have both kinds of plans in 1986 (with 21.2% having mismeasured status). The average administrative cost difference between DC and DB plans is associated with an increase of 0.7 points in the percentage who choose to have only DC plans in 1986. The average standard deviation of industry employment, however, increases the percentage who choose to have only DB plans by 1.1 points, at the expense of each of the other categories. A higher proportion of blue-collar workers (BC80) led to an increase of 1.5 points in terminations of all plans.

In summary of the results on the two key variables of interest (COSTDIFF, measuring administrative cost differences betweeb DB and DC plans, and EMPVAR, measuring industry variability):

1) Both firms with and without pension plans in 1980 move toward DC plans in industries with lower administrative costs of DC plans relative to DB plans (although this variable is statistically significant only for those with plans in 1980). If administrative costs had been equal between the two types of plans (as a percentage of plan assets), the coefficient magnitudes suggest that there would have been about 1.7% more companies with DB plans in 1986 (generalizing to the entire private sector, this implies roughly 3200 more companies with DB plans in 1986, using a base of 186,700 from Table 1). When estimated separately for plans with less than 1000 participants in 1980, to compare the results with Ippolito (1990), there was a small increase in the importance of administrative costs for leading firms to move away from DB plans, suggesting that such costs do play more of a role for small plans.

2) Employment instability over the 1970-80 period increases the likelihood that firms without pension plans in 1980 will adopt only DC plans by 1986, but has the slight opposite effect for firms with pension plans in 1980. The first part of this result is consistent with the hypothesis that employers requiring more flexibility will favor DC plans, but the second part is not. A potential explanation is that firms which existed and had pension plans in 1980, and were therefore "survivors" of the economic instability of the 1970's, were in a position to terminate many of the DC plans adopted to deal with that instability.

While not the focus of analysis, several other variables produce findings of note. Unionization in an industry, which is generally associated

with DB plan coverage, was not significantly associated with changes in pension plan status in the 1980-86 period (consistent with Peterson, 1989, who found that unionization had no statistically significant effect on the probability of plan termination). Smaller average company sizes in an industry favored shifts toward DC plans in the 1980-86 period (consistent with Ippolito, 1990). Similarly, higher capital/labor ratios, which are a complement to worker skill, favored shifts toward DC plans. Average wages and growth in industry shipments were not statistically significant predictors of pension status changes.

VII. Conclusions

How can the growth of DC plan coverage, and the decline of DB plan coverage, be explained? This paper has reported on the construction of a longitudinal company-based dataset on pension plans for the years 1980-86. The dataset includes all companies with large plans within this period, and a 10% sample of companies with small plans within this period. The results included an analysis of basic patterns of plan adoption, maintenance, and termination; and a statistical analysis of the industry characteristics affecting pension plan choices among manufacturing firms.

Several key findings follow:

1) The primary factor in the decline of DB plan coverage is not companies terminating such plans, but declining numbers of participants among firms maintaining these plans. This is consistent with Ippolito's conclusion that "most of the [DB] reduction is explained by relatively slow growth in employment in firms that have evinced a preference for defined benefit plans" (1990: 21).

2) Only 4% of the growth in DC participants came from firms terminating all DB plans, while 52% came from firms adopting or maintaining DB plans over the period. Clearly it is rare for DC plans to directly substitute for DB plans--they more often appear to supplement such plans (although whether the same employees are covered within the firm cannot be known from these data).

3) The growth in ESOPs also appears not to have come directly at the expense of DB plans: only 3.4% of ESOP participant growth occurred among DB terminators, while 75.1% occurred among DB adopters or maintainers.

4) Increases in DC coverage within industries were often associated with increases in DB coverage, indicating no simple story about trade-offs.

5) Statistical analysis indicated that, as expected, greater costs of administering DB plans relative to DC plans were associated with company choices to move toward DC plans. The magnitude, however, is not large: if costs were equal between the two types of plans, the number of companies with DB plans would have been roughly 1.7% larger in 1986. This is in contrast to the conclusion of Clark and McDermed (1990) that regulatory costs were mainly responsible for the relative decline of DB plans, although it is clear that the measure in this study does not necessarily capture the effects of general increases in regulatory costs over this period. Consistent with Ippolito (1990), this variable was found to be slightly more important for smaller plans (<1000 participants).

6) Greater economic instability in an industry leads new pension plan adopters to be more likely to choose DC plans than DB plans, presumably because the former represent less risk for the firm.

Appendix: Creation of Dataset

The 1980-86 Form 5500 and 5500C tapes provide, in theory, the universe of private pension plans which existed at any point in the 1980-86 period. While plans with fewer than 100 participants do not need to file a form each year, they must file a Form 5500C at least once every three years, and in the years in which plans were begun, terminated, or amended. However, establishing longitudinal information on plans may be hampered by: 1) failure of plans to report (which may be especially prevalent among failed companies); 2) misreporting of information on the forms; or 3) miscoding of information on the computer tapes. Even assuming a very low rate of misreporting or miscoding, the potential for error in matching plans across time is high due to the number of digits involved in matching. The plans are matched by a 9-digit Employer Identification Number (EIN) and a 1- to 3-digit plan number, while adoptions are measured by a 2-digit year code and terminations are measured using a one-character code. An error in any of these 15 digits or characters can cause a plan to fall into the "mismeasured" category. For example, if one in 200 digits are mistyped, the chance of no error in the EIN is $.995^9 = 95.6\%$. To some extent, such errors can be reduced by checking company names, states, and industries, but a significant amount of error may remain.

Following is a description of the procedures used to match 1980 and 1986 data, including a discussion of attempts to reduce measurement error. Three main groups of firms were constructed. The first group (Group A) includes just the trackable plans which filed Form 5500: (1) in both years; (2) in 1980 and not 1986, and filed a Form 5500 in 1980-85 indicating termination of the plan; or (3) in 1986 and not 1980, and the 1986 filing indicated that the plan

began since 1980.

Among the Form 5500C filers, a 10% sample was constructed due to the extremely large size of the full file. This sample (called Group B) was selected based on the randomly-distributed seventh digit of the EIN; the sample therefore contains all plans within a 10% sample of companies. In the reported statistics of Tables 1 to 6, the Group B plans were given a weight of 10 to reflect the 10% sampling of the Form 5500C. Since these small plans may be filed as seldom as once every three years, a 1980 5500C file was created by using 1980 filings combined with 1981 and 1982 filings for plans which did not report in 1980 but existed in 1980 (as indicated by the plan's beginning date). Similarly, a 1986 5500C file was created by using 1986 filings combined with 1984 and 1985 filings for plans which did not report in 1986 but existed in 1986 (as indicated by the lack of a termination code in 1984 or 1985). Having constructed these two files, plans were matched within the 5500C sample, and between the 5500C sample and the non-matchers from Group A. Within Group B, five sub-samples were created: (1) small plans which existed in both 1980 and 1986 (as indicated by filings in 1980-82 and 1984-86); (2) small plans which existed in 1986 but not 1980 (as indicated by a beginning date since 1980); (3) small plans which existed in 1980 but not 1986 (as indicated by a termination code within the 1980-85 period); (4) plans which filed a 5500 in 1980 but a 5500C in 1984-86 (indicating that the plan shrunk); and (5) plans which filed a 5500C in 1980-82 but a 5500 in 1986 (indicating that the plan grew).

Matching was done using the EIN and plan number. When a plan filing indicated that the EIN had changed since the last filing, the old EIN was substituted to ensure an accurate match. An inspection of plans which could

not be matched across the period, and for which there had not been an adoption or termination, revealed many clear cases where the EIN had been mistyped or changed without being reported (e.g., the company name, state, industry, and plan characteristics clearly matched, but the EIN did not). To deal with this group, the two groups of 1980 and 1986 non-matchers were matched by company name, state, industry, and plan number; this resulted in 848 additional plans added to Group A. In addition, among the non-matchers, there were a large number of missing values for beginning date of the plan. Among the 1986 non-matchers, beginning dates were checked for filings in previous years, in order to fill in missing date values or correct misreported or miscoded dates in the 1986 filing; this resulted in 221 additional plans added to Group A.

The final totals were 41,804 trackable plans in Group A (in 26,854 companies), and 85,152 trackable plans in Group B (in 64,571 companies). Following are the breakdowns of plans by data source and trackability. Note that, as explained above, Group A includes only Form 5500 plans, while Group B includes Form 5500C plans and those which switched between filing a 5500 and 5500C.

	Form 5500		Form 5500C	
	1980	1986	1980	1986
Total plans reporting	37,587	48,584	58,370	83,502
Percent tracked	86.3%	91.6%	82.2%	83.5%
Percent of DB tracked	85.3%	90.2%	81.3%	90.3%
Percent of DC tracked	88.4%	93.4%	82.5%	81.4%
Mean participants, DB				
Tracked plans	1130.5	1073.2	20.4	19.7
Non-tracked plans	689.8	698.3	28.4	50.9

Mean participants, DC				
Tracked plans	1197.5	1091.0	13.9	14.1
Non-tracked plans	549.3	685.5	13.6	9.6
No beginning year reported in 1986				
Tracked DB		1.2%		0.9%
Non-tracked DB		3.0%		12.1%
Tracked DC		1.2%		0.8%
Non-tracked DC		4.4%		11.7%

One obvious difference between trackable and non-trackable plans on the Form 5500 is that the trackable plans are, on average, larger; however, this does not hold true for the Form 5500C plans. The biggest single cause of non-trackability among the 1986 plans was the lack of a reported beginning year; given the inability to find earlier filings for these plans, it is quite possible that they are primarily new plans.

The sensitivity of reported statistics to assumptions about non-trackable plans is examined in Appendix Table A-1. This contains the distribution of companies, using the format of Table 2, under three alternative assumptions about non-trackable plans: that they truly did exist throughout the period, that they were all adopted or terminated within the period, and that they were adopted or terminated in the same proportion as trackable plans throughout the period. Since many of the non-trackable plans were in companies with trackable plans, the company status was not always changed by these assumptions (e.g., a trackable DB plan throughout the period causes a firm to be a "DB keeper", despite any non-trackable plans).

Companies with mismeasured status due to non-trackable plans were included in the multinomial logit analyses. Companies with mismeasured status in 1986, but not in 1980 (i.e., there were one or more filings in 1980 which

had no counterpart in 1986, but also no termination codes prior to 1986), were included in sample (2) and a special category for the mismeasured 1986 status was included. Companies with mismeasured status in 1980, (i.e., there were one or more filings in 1986 without a 1980 counterpart but also without any indication that the plan began after 1980), and possibly 1986 as well, were included in separate multinomial logits in sample (3).

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TABLE 1: Changes in Company Pension Plan Status, 1980-86

	No. of cos.	Total participants (000's) 1980	1986	w/ 401(k) option, 1986*
Defined Benefit				
Keepers	97,600	27,167	25,421	
Adopters	89,100	0	2,823	
Droppers	47,600	1,442	0	
		28,609	28,244	
All Defined Contribution				
Keepers	218,900	18,080	22,802	5,481
Adopters	233,400	0	10,187	2,255
Droppers	64,700	1,216	0	0
		19,296	32,989	7,736
Profit sharing				
Keepers	164,300	8,552	10,535	4,709
Adopters	185,800	0	6,234	3,030
Droppers	53,300	1,128	0	0
		9,680	16,769	7,739
ESOP's				
Keepers	2,600	4,641	4,671	
Adopters	5,600	0	6,076	
Droppers	1,500	358	0	
		4,999	10,747	

Keepers: Those companies with at least one plan of given type in both years.
Adopters: Those companies with no plan of given type in 1980, but which added (at least) one by 1986.
Droppers: Those companies with at least one plan of given type in 1980, but had terminated all such plans by 1986.

* 401(k) status is available for large plans in 1986, and not at all for 1980. Because the participant estimates exclude small plans, these will be underestimates of 1986 participants in plans with 401(k) options.

Table 2: Disaggregation of Pension Participant Growth by Status of DB and DC Plans Adopted, Dropped, and Kept by Company, 1980-86

	Company's pension change, 1980 to 1986		Total DB participants (000's)		Total DC participants (000's)		Proportion of total 1980-86 change accounted for		Proportion of DC change from changes in	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	DB	DC	1980	1986	1980	1986	DB	DC	Profit Sharing	ESOPs
1)	Adopter	Adopter	0	1,133	0	1,405	-3.08	0.10	0.37	0.34
2)		Dropper	0	191	188	0	-0.52	-0.01	0.27	0.05
3)		Keeper	0	309	506	600	-0.84	0.01	0.91	0.30
4)		None	0	1,190	0	0	-3.23	0.00	0.00	0.00
		subtotal	0	2,823	694	2,005	-7.67	0.10	0.42	0.37
5)	Dropper	Adopter	404	0	0	470	1.10	0.03	0.55	0.21
6)		Dropper	167	0	119	0	0.45	-0.01	0.50	0.13
7)		Keeper	211	0	262	489	0.57	0.02	0.48	0.49
8)		None	663	0	0	0	1.80	0.00	0.00	0.00
		subtotal	1,445	0	381	959	3.93	0.04	0.53	0.34
9)	Keeper	Adopter	2,663	3,173	0	3,585	-1.39	0.26	0.44	0.46
10)		Dropper	185	218	115	0	-0.09	-0.01	0.49	0.15
11)		Keeper	12,172	10,837	10,870	13,213	3.63	0.17	0.64	0.94
12)		None	12,147	11,193	0	0	2.59	0.00	0.00	0.00
		subtotal	27,167	25,421	10,985	16,798	4.74	0.42	0.52	0.66
13)	None	Adopter	0	0	0	4,727	0.00	0.35	0.57	0.18
14)		Dropper	0	0	793	0	0.00	-0.06	0.69	0.08
15)		Keeper	0	0	6,441	8,500	0.00	0.15	0.50	0.22
		subtotal	0	0	7,234	13,227	0.00	0.44	0.53	0.20
	TOTAL		28,612	28,244	19,294	32,989	1.00	1.00	0.52	0.42
	Change, 1980-86		-368		+13,695					

DB: Defined benefit pension plan
DC: Defined contribution pension plan (includes profit sharing, ESOP's, other stock bonus, target benefit, money purchase, and others)

Adopter: Company which had no DB (DC) plan in 1980, but had adopted at least one by 1986.
Dropper: Company which had at least one DB (DC) plan in 1980, but terminated all DB (DC) plans by 1986.
Keeper: Company which had at least one DB (DC) plan in both 1980 and 1986.
None: Company which had no DB (DC) plans in 1980 or 1986.

Table 3: Disaggregation of Pension Participant Growth, by Industry and Type of Plan

	Industry	Percent covered 1980*	Percent covered 1986*	Change in percentage points	Breakdown of percentage point changes by change in company DB status from 1980-86: DB Adopter	DB Dropper	DB Keeper	None
Defined Benefit Plans	Agriculture	9.4%	5.6%	-3.8	0.7	-1.2	-3.4	0.0
	Mining	39.8%	34.1%	-5.7	4.1	-3.5	-6.3	0.0
	Construction	26.7%	17.7%	-9.0	1.6	-1.2	-9.4	0.0
	Manufacturing	43.6%	43.9%	0.3	4.0	-2.2	-1.4	0.0
	Durable	43.3%	43.0%	-0.3	3.9	-1.9	-2.4	0.0
	Non-durable	44.0%	45.3%	1.3	4.1	-2.8	0.1	0.0
	TCU	48.0%	39.2%	-8.7	5.3	-1.2	-12.9	0.0
	Trade	14.8%	14.9%	0.1	1.9	-1.1	-0.7	0.0
	FIRE	36.7%	40.9%	4.2	5.2	-3.0	2.0	0.0
	Services	13.9%	13.8%	-0.1	2.0	-1.3	-0.8	0.0
	Bus./repair	11.3%	10.7%	-0.6	1.2	-0.9	-0.9	0.0
	Health	25.0%	26.2%	1.2	3.2	-2.4	0.4	0.0
	Total	31.6%	28.7%	-2.8	3.0	-1.7	-4.1	0.0
Defined Contribution Plans	Agriculture	5.1%	8.2%	3.1	-0.0	0.3	0.5	2.3
	Mining	27.1%	30.8%	3.7	1.5	0.7	3.8	3.5
	Construction	16.2%	21.1%	4.9	-0.3	0.2	1.4	3.6
	Manufacturing	28.0%	44.7%	16.7	1.1	0.5	9.7	5.3
	Durable	27.4%	46.2%	18.9	1.0	0.3	11.2	6.4
	Non-durable	29.1%	42.5%	13.4	1.2	1.0	7.5	3.7
	TCU	35.1%	42.4%	7.2	6.5	1.2	-4.5	4.0
	Trade	12.8%	19.3%	6.5	0.2	0.2	2.6	2.8
	FIRE	29.6%	42.7%	13.1	0.5	0.7	6.0	5.9
	Services	8.8%	14.3%	5.5	0.2	0.2	1.4	3.7
	Bus./repair	9.6%	13.3%	3.7	0.1	-0.1	0.8	2.8
	Health	10.3%	17.5%	7.2	-0.0	0.3	2.2	4.7
	Total	19.9%	28.5%	8.6	1.0	0.4	3.0	4.2

* "Percent covered" is the sum of participants across the largest plans of each company, divided by industry's private wage and salary workforce. Because this counts only the largest plans in a company, it will tend to underestimate the actual percent covered.

Table 4: Variable definitions and descriptive statistics for regressions

Note: All variables are measured at 3-digit industry level.

Variable	Brief definition
Union80	Proportion unionized, 1980
Costdiff	Avg. (annual admin. costs/assets) for DB plans, minus same average ratio for DC plans
Wage80	Ln(payroll/employment), 1980
BC80	Proportion production workers, 1980
KL80	Ln(capital stock/employment), 1980
Estsiz80	Average establishment size, 1980
Shipchange	Change in log(deflated industry shipments), 1970-80?
Impchange	Change in imports/(domestic shipments+imports), 1975-80?
Empvar	Std. dev. of industry employment around a time trend, 1970-80
OnlyDC80	Dummy for company having only DC plans, 1980
OnlyDB80	Dummy for company having only DB plans, 1980

	Sample 1		Sample 2		Sample 3	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
Union80	0.2988	0.113	0.3108	0.113	0.3029	0.113
Costdiff	0.0025	0.006	0.0025	0.006	0.0023	0.006
Wage80	2.0800	0.268	2.0628	0.251	2.0589	0.251
BC80	0.7110	0.116	0.7112	0.110	0.7122	0.110
KL80	2.6870	0.588	2.7138	0.627	2.7576	0.627
Estsiz80	6.4352	0.386	6.4192	0.392	6.4261	0.392
Shipchange	0.2963	0.290	0.2613	0.262	0.2772	0.262
Impchange	0.0131	0.021	0.0133	0.023	0.0130	0.023
Empvar	0.0855	0.029	0.0831	0.028	0.0841	0.028
OnlyDC80			0.3549	0.479		
OnlyDB80			0.5265	0.499		
Companies in sample	3865		11370		524	

Table 5: Predicting Pension Status Changes (industry-level multinomial logits)

Effect of variable on prob. of . .		Sample 1: Cos. with no pension plan		Effect of 1-unit inc.	Sample 2: Companies with at least one plan in 1980			Effect of 1-unit inc.	Sample 3: Cos. with missing status in 1980		Effect of 1-unit inc.
		Coeff.	(s.e.)		Coeff.	(s.e.)			Coeff.	(s.e.)	
Having only DC in '86	Union80	0.104	(0.71)	-0.08	0.046	(0.41)		0.07	-2.093	(1.46)	-0.33
	Costdiff	13.617	(12.81)	2.24	21.641	(7.33)	**	2.60	12.773	(27.28)	3.07
	Wage80	0.110	(0.40)	0.05	0.226	(0.23)		0.02	1.867	(0.83)	* 0.20
	BC80	-2.449	(0.86)	** -0.13	0.400	(0.43)	**	-0.07	1.600	(1.63)	0.34
	KL80	0.123	(0.14)	** 0.05	0.129	(0.08)	**	0.02	-0.257	(0.27)	-0.05
	Ln(Emp)	-0.596	(0.21)	** -0.07	-0.328	(0.12)	**	-0.04	-0.355	(0.41)	-0.07
	Shipchange	0.012	(0.39)	0.05	0.444	(0.21)		0.00	0.094	(0.80)	0.06
	Impchange	-3.526	(3.89)	0.08	0.271	(2.23)	**	-0.38	0.327	(7.57)	1.51
	Empvar	12.077	(3.16)	** 0.83	-4.343	(1.69)	**	-0.05	-0.918	(6.26)	-0.05
	OnlyDC80				4.549	(0.12)	**	0.45			
	OnlyDB80				1.135	(0.12)	**	-0.20			
	Intercept	6.498	(1.78)		-0.190	(0.95)			0.335	(3.25)	
Having only DB in '86	Union80	0.595	(0.76)	0.09	-0.122	(0.43)		0.02	-1.145	(1.57)	0.11
	Costdiff	3.433	(13.76)	-1.65	10.189	(7.64)	**	-0.22	-1.077	(29.69)	-2.37
	Wage80	-0.169	(0.43)	-0.05	0.268	(0.24)		0.02	1.495	(0.89)	-0.01
	BC80	-2.269	(0.91)	** 0.00	0.406	(0.44)	**	-0.05	0.446	(1.72)	-0.16
	KL80	-0.176	(0.15)	** -0.05	0.032	(0.08)	**	-0.00	-0.007	(0.28)	0.04
	Estsiz80	-0.340	(0.23)	** 0.04	-0.133	(0.12)	**	0.01	-0.102	(0.44)	0.04
	Shipchange	-0.281	(0.41)	-0.05	0.424	(0.23)		-0.00	-0.243	(0.88)	-0.06
	Impchange	-4.843	(4.17)	-0.28	3.097	(2.34)	**	0.23	-8.472	(8.47)	-1.70
	Empvar	9.961	(3.38)	** -0.22	-3.412	(1.73)	**	0.13	-1.665	(6.78)	-0.22
	OnlyDC80				0.942	(0.18)	**	-0.32			
	OnlyDB80				3.724	(0.12)	**	0.31			
	Intercept	5.166	(1.90)		-1.782	(0.97)			-1.202	(3.52)	
Having no plan in '86	Union80				-0.561	(0.43)		-0.09			
	Costdiff				5.743	(7.53)	**	-1.44			
	Wage80				0.210	(0.24)		0.02			
	BC80				1.267	(0.45)	**	0.15			
	KL80				-0.117	(0.08)	**	-0.04			
	Estsiz80				-0.065	(0.12)	**	0.03			
	Shipchange				0.489	(0.22)		0.02			
	Impchange				-1.453	(2.32)	**	-0.80			
	Empvar				-4.230	(1.75)	**	-0.02			
	OnlyDC80				3.574	(0.13)	**	0.20			
	OnlyDB80				2.624	(0.12)	**	0.18			
	Intercept				-2.027	(0.99)					
Having missing status in '86	Union80				-0.304	(0.43)		-0.02	6.072	(5.20)	0.05
	Costdiff				13.007	(7.59)	**	0.32	37.744	(111.06)	0.18
	Wage80				-0.077	(0.24)		-0.05	-1.733	(2.60)	-0.02
	BC80				0.849	(0.45)	**	0.04	-7.777	(4.59)	-0.05
	KL80				0.207	(0.08)	**	0.03	-1.383	(1.10)	-0.01
	Estsiz80				-0.200	(0.13)	**	-0.01	-0.368	(1.44)	-0.00
	Shipchange				0.561	(0.23)		0.03	-0.556	(2.35)	-0.00
	Impchange				7.189	(2.31)	**	1.15	-10.852	(21.44)	-0.05
	Empvar				-6.655	(1.76)	**	-0.53	28.569	(21.02)	0.18
	OnlyDC80				2.672	(0.11)	**	-0.02			
	OnlyDB80				1.504	(0.10)	**	-0.08			
	Intercept				-0.438	(0.98)			8.304	(9.34)	
n		3865			11370				524		
Log-likelihood		-2879.32			-12866.60				-488.98		

The baseline group for the logits consisted of those companies with both DB and DC plans in 1986.
Variable definitions and descriptive statistics in Table 4.
** Variable contributes to explanation of variance at p<.05.

Table 6: Effects of selected changes in independent variables on 1986 pension status probabilities (derived from multinomial logit estimates presented in Table 5)

	Sample 1: Cos. with no pension plan in 1980				Sample 2: Cos. with at least one plan in 1980					
	pension status, 1986				pension status, 1986					
	only DC	only DB	both		none	only DC	only DB	both	missing	
Probabilities predicted from mean characteristics	0.709	0.235	0.056		0.250	0.256	0.172	0.110	0.212	
Effects of 10 percentage point increase in:										
Unionization (1980)	-0.008	0.009	-0.001		-0.009	0.007	0.002	0.002	-0.002	
Blue-collar (1980)	-0.013	0.000	0.013	**	0.015	-0.007	-0.005	-0.007	0.004	**
Effects of a 10% increase in:										
Wages (1980)	0.005	-0.005	-0.000		0.002	0.002	0.002	-0.002	-0.005	
K/L ratio (1980)	0.005	-0.005	-0.000	**	-0.004	0.002	-0.000	-0.001	0.003	**
Avg. est. size (1980)	-0.007	0.004	0.003	**	0.003	-0.004	0.001	0.002	-0.001	**
Effects of mean values of:										
Admin. cost difference between DB & DC plans	0.006	-0.004	-0.001		-0.004	0.007	-0.001	-0.003	0.001	**
Increase in real domestic shipments, 1970-80	0.015	-0.016	0.001		0.004	0.001	-0.000	-0.012	0.007	
Increase in import ratio, 1975-80	0.001	-0.004	0.003		-0.011	-0.005	0.003	-0.003	0.015	**
Std. dev. of industry employment, 1970-80	0.071	-0.019	-0.052	**	-0.001	-0.004	0.011	0.038	-0.044	**

** Based on variable which contributes to explanation of variance at $p<.05$.

Appendix Table A-1: Sensitivity Analysis of Different Assumptions on Non-Trackable Plans

Assumption A: Non-trackable plans did not exist throughout period (were terminated or adopted within 1980-86)
Assumption B: Non-trackable plans actually existed throughout period (were not terminated or adopted within 1980-86)
Assumption C: Non-trackable plans were terminated and adopted in same proportion as trackable plans throughout 1980-86

Company's pension change, 1980-86		Company distribution, only trackable plans		Company distribution under assumption A		Company distribution under assumption B		Company distribution under assumption C	
DB	DC	Number	%	Number	%	Number	%	Number	%
1) Adopter	Adopter	998	1.5%	1,332	1.6%	954	1.1%	1,109	1.3%
2)	Dropper	626	0.9%	736	0.9%	540	0.6%	589	0.7%
3)	Keeper	972	1.5%	1,065	1.3%	1,299	1.5%	1,252	1.5%
4)	None	6,211	9.4%	7,329	8.6%	5,897	7.0%	6,557	7.7%
	subtotal	8,807	13.3%	10,462	12.3%	8,690	10.3%	9,507	11.2%
5) Dropper	Adopter	976	1.5%	1,099	1.3%	911	1.1%	972	1.1%
6)	Dropper	454	0.7%	1,081	1.3%	431	0.5%	525	0.6%
7)	Keeper	767	1.2%	990	1.2%	945	1.1%	1,044	1.2%
8)	None	2,473	3.7%	4,342	5.1%	2,291	2.7%	2,882	3.4%
	subtotal	4,670	7.0%	7,512	8.9%	4,578	5.4%	5,423	6.4%
9) Keeper	Adopter	739	1.1%	838	1.0%	961	1.1%	972	1.1%
10)	Dropper	497	0.7%	673	0.8%	654	0.8%	719	0.8%
11)	Keeper	2,108	3.2%	2,170	2.6%	3,289	3.9%	2,802	3.3%
12)	None	6,283	9.5%	6,096	7.2%	9,579	11.3%	8,328	9.8%
	subtotal	9,627	14.5%	9,777	11.5%	14,483	17.1%	12,821	15.1%
13) None	Adopter	20,409	30.7%	29,990	35.4%	19,518	23.0%	24,869	29.3%
14)	Dropper	4,828	7.3%	8,967	10.6%	4,395	5.2%	5,497	6.5%
15)	Keeper	18,039	27.2%	18,037	21.3%	33,081	39.0%	26,628	31.4%
	subtotal	43,276	65.2%	56,994	67.3%	56,994	67.3%	56,994	67.3%
TOTAL		66,380	100.0%	84,745	100.0%	84,745	100.0%	84,745	100.0%

DB: Defined benefit pension plan
DC: Defined contribution pension plan (includes profit sharing, ESOP's, other stock bonus, target benefit, money purchase, and others)
Adopter: Co. with no DB (DC) plan in 1980, but adopted at least one by 1986.
Dropper: Co. with DB (DC) plans in 1980, but terminated all DB (DC) plans by 1986.
Keeper: Co. which had at least one DB (DC) plan in both 1980 and 1986.
None: Co. which had no DB (DC) plans in 1980 or 1986.