How Workers Use 401(k) Plans:

The Participation, Contribution, and Withdrawal Decisions

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Abstract

This paper examines how workers use 401(k) plans by examining their participation, contribution, and withdrawal decisions. Sixty-five percent of eligible workers participate in 401(k) plans. Employee participation rises with income, age, job tenure, and education. While participation also rises if the employer matches contributions, 401(k) participation does not grow with the *rate* of matching. When pension plan assets are withdrawn in lump-sum distributions before retirement, just 28 percent of distribution recipients (representing 56 percent of distribution assets) roll over the withdrawn funds into tax-qualified savings plans. Our findings suggest that many workers, particularly those with low incomes, do not use 401(k) plans to save for retirement.

Introduction

An increasing fraction of the work force is being offered an employer-sponsored pension plan where the worker makes the critical plan decisions. These decisions include whether to participate, how much to contribute, how to invest the plan assets, and what to do with the plan assets should one receive them upon switching jobs. Such salary reduction plans, of which the 401(k) is the most common type,[1] are now available to more than 40 percent of the workforce. Half of the workers offered such plans are offered no other employer-sponsored retirement plan.[2]

In this study, we use data from the April 1993 Current Population Survey and its Survey of Employee Benefits supplement (CPS) to examine how workers use 401(k) plans. Participation, contribution, and distribution rollover decisions are reviewed in aggregate and across income groups, and models are developed that relate participation and rollovers to a variety of factors. We also use a new question on the April 1993 CPS to determine how employer matching contributions affect the participation decisions of employees.

Among workers offered 401(k) plans, we find that 35 percent do not participate. While 81 percent of workers with family incomes of at least $75,000 choose to participate, only 36 percent of workers with family incomes less than $15,000 participate. Other factors besides income that are positively related to the participation decision include age, job tenure, education, home ownership, and whether the 401(k) is the only employer-sponsored retirement plan. Workers with employer matches are also more likely to participate in 401(k) plans than workers without such matches. No evidence is found that the *level* of the employer match has a positive impact on employee participation, however.[3]

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We also find that nearly one half of workers who had a pension plan on a previous job report taking a lump-sum distribution from the plan before retirement age. In recent years, only 28 percent of the distribution recipients have rolled over this money into tax-qualified plans, representing 56 percent of the distributed assets. Workers with higher incomes, those with more education, and those who own a home are more likely to roll over their distributions. The size of the distribution is also an important predictor, with larger distributions more frequently being rolled over into tax-qualified plans (Chang (1996), Gelbach (1995), and Poterba, Venti, and Wise (1995a) similarly report distribution size and demographic variables to be important to the rollover decision in related analyses).

It may be that 401(k) plans have expanded pension plan sponsorship, and that many workers are participating now who otherwise would have had no coverage. Nevertheless, our findings show that a large number of workers, particularly those with low incomes, are not using 401(k) plans to save for retirement. Participation rates in 401(k) plans are low, contributions are modest, and substantial amounts of pre-retirement distributions are allocated for purposes other than retirement saving.

Our discussion proceeds in the following steps: We begin by describing the different types of pension plans and examining recent trends in their use. After briefly discussing our data source, we review the evidence on employee participation and contributions to salary reduction plans, with an emphasis on the role of income. We then discuss employer match rates and their possible influence on employee actions. Statistical models that measure determinants of the participation decision are presented in the following section. Finally, we examine recent evidence on pre-retirement lump-sum pension plan distributions and factors that influence the rollover decision.

Pension Plans Defined[4]

Employer-sponsored pension plans can be categorized as defined benefit (DB) or defined contribution (DC).[5] In a DB plan, the employer makes a promise to provide a lifetime nominal annuity to eligible employees at retirement.[6] The size of the obligation to each covered employee usually depends on the worker's salary and years of service. A typical plan might promise an annual benefit equal to 1.5 percent of salary times years of service, where salary is calculated as the average salary of the five highest paid years. Employers use actuarial techniques to estimate the pension liability and fund the liability as it accrues. Employers direct management of the plan assets, and assume responsibility for investment gains and losses. Participant benefits are partially insured by the Pension Benefit Guaranty Corporation (PBGC).

In a DC plan the employer makes a contribution to each participant's individual account. The size of the contribution depends on employee salary, employee contributions, employer profits, or some other criteria, but is rarely actuarially based. Workers assume responsibility for the plan's investment gains and losses, and often direct how their assets are invested. DC plans provide no guarantee as to the level of benefits that will ultimately accrue, and plan assets are not insured by the PBGC.

In addition to these differences in funding and management, employee access to retirement plan assets varies greatly across the fund types. Workers with DB plans have no access to the plan funds before retirement, even if they leave their sponsoring employer.[7] In contrast, workers with DC plans who stay with their employer may be offered the opportunity to borrow funds from their plan. Certain types of DC plans (profit sharing and stock bonus plans that are not qualified as 401(k)s) also allow plan withdrawals after a fixed period of time or service. In addition, workers who leave their

employer have the option of receiving a lump-sum distribution of the DC plan assets.[8]

DC plans can also protect against inflation better than DB plans for workers who switch jobs. The reason is that DB plan benefits are typically based on final nominal salary and therefore freeze when a worker switches jobs. A worker who leaves a job with a DB plan suffers a capital loss directly proportional to future expected nominal wage growth (which should at least partly incorporate expected future inflation).[9] In contrast, a worker who leaves a job with a DC plan suffers no such loss. DC plan assets can remain invested when an employee switches jobs and, depending on the investment vehicle, can earn a return that offsets future inflation.

The types of DC plans include employee stock ownership plans, money purchase pension plans, profit sharing plans, simplified employee pensions, stock bonus plans, target benefit plans, and thrift or savings plans. The most common DC arrangement is the 401(k). A 401(k) is a profit sharing or stock bonus plan that contains a cash-or-deferred-arrangement (CODA). With a CODA, eligible employees have the option of having their employer make a contribution to a plan on their behalf, or of receiving an equivalent amount in cash. Plan contributions are excluded from employee income for the year in which they are made, subject to limitations.[10]

The most prevalent CODA is a salary reduction agreement.[11] With a salary reduction agreement, eligible employees may elect to reduce their compensation and have the difference contributed to the plan by the employer. Employers often add a matched amount to the plan that depends on the amount contributed by the employee. A typical employer match is 50¢ for each $1 contributed by the employee, with the match ending when employee contributions reach six percent of salary.

401(k) plans are thus a particularly flexible form of DC plan. Like other DC plans, state and

Federal taxes on contributions and investment earnings are deferred until the assets are distributed or withdrawn.[12] Participants assume responsibility for the plan's investment performance, and typically direct the management of their investment across a menu selected by their employer.[13] Plan loans are allowed and plan assets are usually distributed to participants when leaving the sponsoring employer. Unlike other DC plans, the participation and contribution decisions are solely or mostly at the employee's discretion. Accessing funds is also generally easier with 401(k) plans as sponsors can allow early withdrawals for hardship purposes.

The Growth of 401(k) Plans

Figure 1 illustrates the percent of workers participating in DB plans, DC plans, and 401(k) plans between 1975 and 1993. The percent of the workforce with DB plans has declined steadily from 39 percent in 1975 to 26 percent in 1993. Meanwhile, the percent of the workforce with DC plans has increased rapidly, from just 14 percent in 1975 to 37 percent in 1993. Rapid growth in 401(k) plan use has been the primary driver of increased DC plan use in recent years with 401(k) participants now comprising the majority of all DC plan participants.

Not surprisingly, the increased use of 401(k) plans has coincided with tremendous growth in the amounts contributed to 401(k) plans. Figure 2 illustrates annual contributions to DB plans, DC plans, and 401(k) plans between 1975 and 1993. The annual amount contributed to DB plans declined from $65 billion in 1975 to $52 billion in 1993.[14] DC plan contributions increased from $34 billion in 1975 to $102 billion in 1993. Again, it is easily seen that the growth in contributions to 401(k) plans in recent years explains the corresponding rise in DC plan contributions. 401(k) contributions in 1993 were $69 billion, accounting for 68 percent of all DC contributions and exceeding total DB

contributions.

One reason for the rapid growth of DC plans relative to DB plans is that they are less costly to operate (Clark and McDermed (1990), Kruse (1995)), particularly for small plans (Ippolito (1995)).[15] DC plans do not require employer contributions. They are fully funded by definition, eliminating the need to work with detailed funding compliance requirements or to purchase PBGC insurance. Employees are often responsible for managing account assets, eliminating the need for the employer to manage the assets. Finally, DC plans are portable, so employees can take the plan assets with them when they leave, eliminating the firm's need to manage assets and paperwork for the former employee's lifetime.

Another important reason for the growth of DC plans is the changing preferences and demographics of the workforce. In particular, workers today are less likely to work in manufacturing, to be employed by a large firm, and to be represented by a labor union, all associated with high DB plan coverage. Gustman and Steinmeier (1992) show that at least half of the shift from DB toward DC plans between 1977 and 1985 can be explained by this shift in employment mix. Ippolito (1995) finds that changing preferences with the appearance of 401(k) plans also appear to be an important factor. Consistent with these findings, Kruse (1995) and Papke, Petersen, and Poterba (1996) show that very little DC growth is attributable to firms terminating DB plans. In contrast, Papke (1996) finds that 401(k) and other DC plans *are* replacing terminated DB plans and that the adoption of a DC plan increases the probability of a DB plan termination.

All else equal, the introduction of a low cost alternative to DB plans should have boosted pension plan coverage. In spite of the rapid growth of DC plans, overall pension coverage actually declined in the 1980s (Parsons (1991)). Bloom and Freeman (1992) find the decline between 1979

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and 1988 concentrated among younger and less-educated male workers. They attribute about 50 percent of the decline in coverage for male workers to shifts in employment mix and demographic characteristics. Even and Macpherson (1994) argue that the shift toward 401(k) plans where participation is voluntary is an additional factor in this decline.

The rapid growth of 401(k) plans means that more workers are making critical decisions regarding their retirement savings. These include whether to participate, how much to contribute, how to invest the plan assets, and what to do if they receive a lump-sum distribution. Furthermore, the decline of DB plans means that fewer workers have an alternative employer-funded and government-guaranteed plan that they can rely on. For this reason, employee 401(k) participation and contribution decisions are an increasingly important determinant of retirement saving.

Current Population Survey Data

The data source for this study's analyses is the April 1993 Current Population Survey and its Survey of Employee Benefits supplement (CPS). The CPS is conducted monthly by the Bureau of the Census and is the source of official government statistics on employment and unemployment. The employee benefits supplement is conducted every four or five years as an addition to that month's CPS to provide detailed information on retirement, disability, and health insurance benefits. The April 1993 supplement questions were asked of persons employed for pay in one half of the CPS sample, or over 27,000 individuals.

The Census Bureau matches the supplement responses with labor force data from the April and May 1993 CPS and with income data from the March 1993 income supplement to the CPS. Weights are also included to make the sample representative of the U.S. population. Our descriptive

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analyses are conducted with the weights while our multivariate statistical analyses are not.[16] Except where noted, missing observations are dropped from our analyses without adjustment to the weights. However, each calculation in the paper is carried out on the largest sample possible (for example, a worker with a missing value for job tenure is not excluded from analyses where job tenure is not a variable).

Our participation and contribution analyses are limited to the 19,200 survey participants aged 18 to 64 who work at least 20 hours per week, who are not self-employed, and who know whether they are participating in a 401(k) plan or not. Much of the participation and contribution analysis is based on a smaller sample of 8,129 individuals who are offered a 401(k) plan by their employer. In our analysis we define 401(k) participation by a planned contribution for 1993, and nonparticipation by the lack of a planned contribution for 1993. Our results are very similar when participation is defined more broadly as any worker reporting participation in a 401(k) plan whether or not contributions are planned for 1993.[17]

401(k) Participation and Contribution Rates

Evidence from the CPS indicates that the decline in pension plan coverage observed in the 1980s has stalled. The number of nonagricultural wage and salary workers participating in a retirement plan increased from 46 percent in 1988 to 47 percent in 1993 (after falling six percentage points from 1979 to 1988).[18] This increase in coverage is attributable to the increased participation in 401(k) plans for those workers offered such plans, from 57 percent in 1988 to 65 percent in 1993. Nevertheless, over one-third of the workers offered 401(k) plans continues not to participate.

For workers who participate, the mean (median) contribution rate is seven percent (six

percent), the same rate found by Andrews (1992) using the 1988 CPS data. Figure 3 illustrates the variation across participants in 401(k) contribution rates.[19] The clustering of contribution rates at five percent and six percent likely reflects the concentration of employer match rate policies that stop matching when employee contribution rates reach this level. Consistent with this conjecture, a 1994 survey by Buck Consultants found that six percent is the most common maximum percentage of salary matched, followed by four percent, three percent, and five percent.

The mean (median) dollar amount contributed in 1993 is $2,715 ($1,950) for workers who participate. Half (51 percent) of the annual contributions are less than $2,000, with 23 percent between $1 and $1,000, and 28 percent between $1,000 and $2,000. Just under half (47 percent) are between $2,000 and $9,000. The remaining two percent of contributions are estimated to be greater than $9,000, exceeding the 1993 tax-deferred maximum of $8,994.[20]

One of the most important determinants of 401(k) participation is income level. Low-income workers face lower tax rates and hence benefit less from the tax-deferred nature of 401(k) plans than high-income workers. Low-income workers are also more likely to be liquidity constrained and therefore have better uses for their funds than retirement saving. Further, some low-income workers are more likely to be covered by means-tested welfare programs (either at the time or in the future) and therefore face high implicit tax rates on their savings (Hubbard, Skinner, and Zeldes (1995)). Finally, Social Security income replacement rates are higher for low-income workers, reducing their incentive to save (Smith (1995)).

Table 1 examines 401(k) plan sponsorship, participation, and contributions across family income levels.[21] While 42 percent of all workers are offered 401(k) plans, this percentage ranges from 15 percent for workers with family incomes less than $15,000 to 62 percent for workers with incomes

of at least $75,000. While 65 percent of workers who are offered plans choose to participate, this rate ranges from 36 percent for workers with incomes less than $15,000 to 81 percent for workers with incomes of at least $75,000. This income-participation relationship is similar to that found by other studies using CPS data, but much larger than that found by studies using data from the Survey of Income and Program Participation (Engen, Gale, and Scholz (1994), Poterba, Venti, and Wise (1994, 1995b)).[22]

The contribution rate varies with income as well, with a mean rate of five percent for participants with incomes less than $15,000 to eight percent for participants with incomes of at least $75,000. Low-income workers are thus less likely to be offered a 401(k) plan, less likely to participate given sponsorship, and contribute smaller fractions of their salary given participation.

Given these facts, it is not surprising to find that high-income groups receive a disproportionate share of the tax benefits from 401(k) plans. Table 2 shows that workers with family incomes less than $15,000 make up 15 percent of the working population, but account for just six percent of workers offered 401(k) plans, three percent of 401(k) contributors and one percent of contributions. Workers with family incomes of at least $75,000 make up 11 percent of the population, but account for 16 percent of workers offered 401(k) plans, 20 percent of 401(k) contributors and 35 percent of contributions. Since marginal tax rates increase with income, the distribution of tax benefits from 401(k) plans is even more skewed toward high-income workers than the distribution of benefits show in Table 2.

The low participation rate of workers in 401(k) plans, particularly low-income workers, should be kept in perspective. It seems probable that more workers are offered plans, and that more may be participating, than if the low-cost 401(k) plan had never been introduced.[23] Furthermore, DC

plans can be much more valuable to workers who change jobs several times because DC plan payouts depend on market returns rather than length of service, age, or salary at separation from the firm as in a DB plan.

Before proceeding, we note that we make no attempt in this study to measure whether 401(k) plans change total household saving or change aggregate national saving. While tax incentives are likely to raise saving in the tax-advantaged program, the impact on overall household saving depends on whether tax incentives lead households to simply shift saving into tax-advantaged plans or whether the plans actually encourage additional saving.[24] Since our primary data source does not provide good measures of household saving or wealth, we cannot determine whether 401(k) plans change total household saving.

Effects of Employer Match Rate on Participation

One potential way to increase 401(k) plan participation is for the sponsoring employer to adopt a match rate. An employer providing a match agrees to contribute a certain amount to a worker's 401(k) plan for every dollar that an employee contributes, up to a certain percent of the worker's salary. As with employee contributions and investment earnings, the employer match is tax-deferred until the plan assets are distributed or withdrawn. This results in a large initial return on the employee's investment that supplements the tax advantages of 401(k) plans, creating a greater incentive to participate and/or increase contributions.[25] For 401(k) plans with an employer match, 401(k) plans are always preferable to regular saving as long as the match rate somewhat exceeds the penalty rate.[26]

Earlier research on the effects of employer matching on 401(k) participation has provided

mixed results. Using data from the May 1988 CPS, Andrews (1992) finds that employer match rates have a positive effect on participation. Papke (1995) uses plan level data from the Internal Revenue Service (IRS) and finds that participation increases with the match rate. Using survey data from 43 firms, Papke and Poterba (1995) find that participation is higher when employers provide a matching contribution, but find only weak evidence that participation increases with the level of the match rate. Finally, Kusko, Poterba, and Wilcox (1994) find that widely varying match rates at one medium-sized manufacturing firm had little effect on the participation rate of individuals in that firm over a four year period.

The main data source in this paper, the April 1993 CPS, contains more detailed information on employer matching than earlier employee surveys. The 1993 survey contains the first CPS question concerning the level of the employer match rate.[27] We find that almost three-fourths (74 percent) of employees offered a 401(k) plan are also offered a match rate. The mean (median) match rate for workers offered a match is 62 percent (50 percent). This is somewhat greater than the 52 percent average match rate Papke (1995) finds with the IRS data for 1987 but similar to the 59 percent match rate found in a recent survey by Buck Consultants (1994).

Figure 4 presents the frequency distribution of the (non-zero) match rates offered to 401(k) participants. Match rates vary tremendously, with 15 percent of employees offered match rates less than 25 percent and three percent offered match rates above 100 percent. The match rates cluster at round numbers, with six percent at 25 percent, 23 percent at 50 percent, and 26 percent at 100 percent. While such clustering is not surprising, the large fraction of workers with match rates of 100 percent is substantially higher than that found in other studies. Buck Consultants (1994) finds that 14 percent of employers with match rates choose to match at 100 percent while Papke (1995) finds

that only six percent of plan participants (and eight percent of plans) have average match rates between 76 and 100 percent.

Table 3 compares participation and contribution rates by whether the employer offers a match rate.[28] For all workers, participation rates are higher when there is an employer match, 67 percent versus 60 percent. The conditional contribution rate given participation is lower for employees with a match, seven percent versus eight percent. There is no difference in the unconditional contribution rate for employees with or without a match. The effect of match rate is similar across income groups. The descriptive results suggest that an employer match can boost participation rates, but it cannot boost the mean level of employee contributions. A more formal test of the match rate's effects on participation is presented in the next section.

Modeling the Participation Decision

The decision to participate in a 401(k) plan depends on both the attractiveness of the plan and the saving propensity of the household. Existence of an employer match makes 401(k) plan participation attractive to all households that would otherwise save, and to some households that would not otherwise save. However, the actual match rate may not be critical to the participation decision as long as it is somewhat larger than the ten percent penalty rate. Whether the 401(k) is the employer's sole plan or operates in conjunction with another plan should also influence the participation decision. An employee with no other plan is expected to be more likely to choose to participate in a 401(k) plan.

Characteristics of the household related to the propensity to save should also be correlated with the participation decision. The importance of family income was discussed and documented in

the previous section. Age is another important characteristic, as a worker's stage in the life-cycle can be expected to influence the propensity to save. Job tenure may be important as it relates to the vesting of employer match rates and to employee knowledge of the 401(k) plan. Education level may be correlated with propensity to save, as well as with worker knowledge of the plan. Home ownership is likely to be positively correlated with the propensity to save but is also a measure of household wealth, leading to an ambiguous prediction about its relation with participation. Controlling for family income, marital status and children are both measures of demands on income that might reduce saving propensity.

We model employee participation using probit. Probit is a statistical technique that measures the impact of explanatory variables on the probability of an individual choosing from a pair of discrete outcomes (such as whether to participate in a 401(k) plan or not). We also present linear probability estimates as measures of the sensitivity of the participation probability to changes in the explanatory variables around their means.[29]

The variables we use to explain the participation decision include the plan and household characteristics discussed above. Family income enters the models after being log-transformed. Age and job tenure are measured in years.[30] High school diploma, college degree, home owner, whether the 401(k) is the only pension plan, marital status, and whether the worker has children all enter the models as dummy variables. As many workers do not know the particular level of the match rate, or the match rate may vary, we present one model where the match rate enters as a single dummy variable. We also present a second model on a smaller sample of workers where the match rate is segmented into several dummy variables so we can assess the impact of varying match rates on participation. Descriptive statistics for the variables are shown in Table 4.

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The estimated probit and linear probability (OLS) coefficients and standard errors for the two models are presented in Table 5. As can be seen with our match rate dummy model results, having an employer match is positively related to participation. Participation is also substantially higher when the 401(k) plan is the only retirement plan offered by the employer. Income, age, job tenure, education, and home ownership are also positively correlated with plan participation, while being married is negatively correlated. Workers with children are not significantly less likely to participate.

Our segmented match rate model results also show that participation is higher for employees who have an employer match. There is little evidence, however, that participation increases as the level of the match increases.[31] This may reflect employer decisions to offer high matching rates as an incentive when most employees have low propensities to save. Incorporating match rate endogeneity into their modeling, Even and Macpherson (1996) find a substantially larger impact of match rates on participation. It is also possible that participation is simply not affected much by a changing match rate once the match rate exceeds a minimal threshold.

The OLS results provide estimates of the change in participation probability (expressed in percentage points) associated with a change in each explanatory variable. Evaluated at average characteristics of the sample, switching from a 401(k) plan without an employer match to one with a match raises the participation rate by nine percent. An additional $1,000 of family income (corresponding to about two percent of mean family income in the sample) is associated with a rise in participation of 0.3 percent (based on the match rate dummy model).[32] An additional year of age raises participation 0.2 percent, while an additional year of experience raises participation by one percent. Workers with high school diplomas have ten percent higher participation rates than those without, while a college degree boosts participation an *additional* four percent. Homeowners are nine

percent more likely to participate than nonowners. Participation is much more likely (14 percent) when the 401(k) is the only employer-sponsored retirement plan. Finally, married employees are seven percent less likely to participate than single employees (note that this comparison is effectively between workers with the same *family* income).

Our models suggest that both plan and household characteristics are important influences on the decision to participate in a 401(k) plan. Like Andrews (1992), Papke (1995), and Papke and Poterba (1995) we find that having an employer match rate raises participation levels. While we do not find a significant positive relationship between the level of the match rate and participation, other studies have found no relationship (Kusko, Poterba, and Wilcox (1994)) or only a weakly positive relationship (Papke and Poterba (1995)). Our findings on income, age, job tenure, home ownership, and the presence of another retirement plan are consistent with earlier findings using the May 1988 CPS data (Andrews (1992)).

Pre-Retirement Lump-Sum Pension Plan Distributions

A significant feature of 401(k) plans is that employees can often access the plan funds before retirement: through a loan, to serve a hardship purpose, or for any reason when leaving a job. This provides flexibility to the participant to meet expected or unexpected needs, and allows even short-tenure employees to accumulate funds and consolidate them with a new employer's pension plan. A risk is that employees may use their 401(k) assets for current consumption at the expense of adequate future consumption.

Loans from DC plans must be paid back with interest, and are therefore not permanent withdrawals. Hardship withdrawals, by definition, are intended to be used for immediate needs and

so are not paid back. Distributions received upon leaving an employer are under the employee's complete discretion. Should the employee choose to roll over the distribution into a new employer plan, an Individual Retirement Account (IRA), or another qualified retirement arrangement, taxes and future gains on the plan assets remain tax-deferred. When distributions are not rolled over they are subject to taxation in the year received. In addition, workers who have not reached the age of 59½ must pay an additional penalty tax of ten percent of the plan assets.[33]

Of all workers covered by a pension plan on a previous job, 47 percent report having received at least one lump-sum pension plan distribution. Nearly all of these are pre-retirement distributions; 95 percent of the recipients are between the ages of 18 and 54 at the time of the most recent distribution. Most of the analysis in this section is limited to the half (50 percent) of pre-retirement recipients who report receiving the distribution between 1988 and 1992.

The mean (median) pre-retirement lump-sum pension plan distribution received between 1988 and 1992 was $10,367 ($3,263).[34] Multiplying the mean amount by the number of workers represented by the recipients, we estimate that more than $59 billion was received in pre-retirement lump-sum distributions between 1988 and 1992, with $19 billion received in 1992 alone.[35] This represents 14 percent of the $431 billion contributed to DC plans over this period.[36]

Survey respondents who received lump-sum distributions are asked to classify how the proceeds of the distribution were allocated. Table 6 presents the distribution of reported allocations summarized into six categories.[37] Just 28 percent of recipients roll over their distribution into a tax-qualified retirement plan. The dollar-weighted 56 percent rollover rate indicates that rollovers are more likely with larger distributions. Financial investment accounts for an additional 11 percent of recipient uses, buying a house for seven percent, and other investment for eight percent. Over one-

sixth (17 percent) of recipients (eight percent dollar-weighted) use the distribution to pay down debt, and 29 percent (13 percent dollar-weighted) use the distribution on consumption.

The decision to spend funds or invest them outside of the tax-deferred option need not be a poor one, in spite of the ten percent penalty and immediate taxation. Recipients may have investment opportunities (such as education or starting a business) that reap higher financial returns than the rollover option. Even consumption of the distribution proceeds or paying down debt is optimal for recipients in particular circumstances. The fact remains, of course, that funds that are used for other purposes will not be available for retirement unless they are later replaced.

Distributions are being rolled over into tax-qualified plans at a growing rate, a trend noted with 1988 CPS data by Fernandez (1992) and Chang (1996). Figure 5 illustrates the increase of rollovers between 1980 and 1992. The percent of recipients rolling over pension plan distributions increased from 13 percent between 1980 and 1983 to 18 percent between 1984 and 1987 to 28 percent between 1988 and 1992. The percent of dollars rolled over increased from 30 percent between 1980 and 1982 to 41 percent between 1984 and 1987 to 56 percent between 1988 and 1992. This increase over time in the rollover rate explains why we find a rollover rate substantially higher than what studies have found using the 1983 and 1988 CPS data. Atkins (1986) found a rollover rate of just five percent with 1983 CPS data while Piacentini (1990), Fernandez (1992), and Chang (1996) found a rollover rate of 13 percent with 1988 CPS data.

The rising frequency of rollovers suggests that recipients are becoming more likely to save distributions for retirement. Regulatory changes, increases in the number of employer plans accepting rollovers, and changes in the mix of recipients may also explain the increasing rollover rate. Chang (1996) estimates, for example, that the imposition of the ten percent penalty tax on pre-retirement

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distributions (with the Tax Reform Act of 1986) increased rollover rates by 12 percent for higher-income workers and nine percent for lower-income workers.

The Rollover Decision

As with participation, high income workers are more likely to roll over distributions. Table 7 shows that workers with family incomes less than $15,000 roll over 16 percent of their distributions (31 percent dollar-weighted) into tax-qualified retirement plans. In contrast, workers with family incomes of at least $75,000 roll over 47 percent of their distributions (65 percent dollar-weighted). Not surprisingly, higher income workers generally receive larger distributions, with mean distribution size of $5,531 for workers with family incomes less than $15,000 versus $19,511 for workers with family incomes of at least $75,000.

We use a probit model to examine in detail what factors predict the rollover decision. We also present linear probability estimates to measure the impact on the rollover rate of changes in the explanatory variables.[38] Explanatory variables include the distribution amount, family income, and age, as well as dummy variables for high school diploma, college degree, home owner, marital status, and whether the worker has children. Descriptive statistics for these variables are shown in Table 8. The results of our analysis on pre-retirement lump-sum distributions received between 1988 and 1992 are presented in Table 9. We present results for the full sample of distributions as well as for distributions greater than $3,500 and distributions less than or equal to $3,500.[39]

For the full sample, distribution amount, family income, college degree, and owning a home are all significantly positively correlated with the decision to roll over a lump-sum distribution. Workers with children are significantly less likely to roll over a distribution. These results are

qualitatively similar to those of Chang (1996), Gelbach (1995), and Poterba, Venti, and Wise (1995a) although age is not a significant variable in our probit model.[40] When we split the sample by size of distribution, the results are similar to the full sample model.[41] However, only distribution amount, family income, and college degree are significant for the model estimated on distributions less than or equal to $3,500.

The linear probability model (OLS) coefficients allow us to estimate the change in rollover probability (expressed in percentage points) associated with changes in each explanatory variable. Evaluated at average characteristics of the sample, an increase in the distribution of $1,000 increases the rollover probability by three percent in the full sample model. An additional $1,000 of family income is associated with a rise in the rollover probability of 0.1 percent.[42] Workers with a college degree are 11 percent more likely to roll over a distribution and homeowners are seven percent more likely. Workers with children are six percent less likely to roll over a distribution.

The findings on lump-sum distributions corroborate the findings on 401(k) participation in several ways. While many workers are reluctant to contribute to a retirement account, many workers who do contribute remove their money when given the chance through a lump-sum distribution. Participation and rollover rates are particularly low among low-income workers, who are less likely to have other assets to support their retirement. Other factors besides income, such as education, owning a home, and number of children are significant predictors of both the participation and rollover decisions. As with participation, rollover rates have shown a sharp increase in recent years.

Conclusion

While retirement planning choices are increasingly becoming the responsibility of individual workers, many either are not participating or are participating in a minor way. Over one third (35 percent) of workers sponsored for a 401(k) plan declines to participate. Among workers with family incomes less than $15,000, only 36 percent choose to participate. Factors besides income that are positively correlated with participation are age, job tenure, education, home ownership, and whether the 401(k) is the only employer-sponsored retirement plan. Workers with employee matches are also more likely to participate, although no evidence is found that the level of the employer match is positively correlated with participation.

Nearly half of workers who had a pension plan on a previous job report taking a lump-sum distribution from the plan before retirement age. Only 28 percent of the distribution recipients report rolling over the funds into a tax-qualified retirement account in recent years, representing 56 percent of distribution assets. Among low-income workers, just 16 percent roll over pre-retirement lump-sum distributions into tax-qualified plans, representing 31 percent of their distribution assets. Besides family income, distribution size, education, and home ownership are all positively correlated with the rollover decision.

As our main data source does not measure household assets or saving, we cannot draw definitive conclusions about the overall adequacy of workers' retirement income. Nevertheless, our findings raise concern that many workers may not be adequately saving for their retirement years. These workers may therefore have to rely on Social Security or other government programs to support their consumption when they get older. At the same time, these programs are expected to be less generous in the future as the baby boom ages and longevity increases.

Several unresolved questions regarding 401(k) plans remain: Employer decisions to offer 401(k) plans and offer match rates are only beginning to be studied. Employee contributions to 401(k) plans in the context of match rates, caps on matches, and overall contribution rates have not been carefully examined due to a lack of sufficiently detailed datasets. Additional plan factors that impact participation, such as loan provisions, investment choices, and hardship withdrawal provisions, have not yet been examined controlling for other plan and participant attributes. Finally, the broader impact of 401(k) plans on household saving remains an unresolved issue in spite of numerous prior studies in this area.

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[1] The terms *401(k)* and *salary reduction* are used interchangeably throughout this paper. While all 401(k) plans are not salary reduction agreements, neither are all salary reduction agreements 401(k) plans. Non-profit employees can be offered 403(b) plans; local and state government employees can be offered 457 plans, and federal government employees can participate in the Federal Thrift Savings Fund. As all of these plans are analogous to the 401(k) plan with similar features and limits, and most 401(k) plans are salary reduction agreements, these two terms are used interchangeably throughout the paper.

[2] Using data from the April 1993 Current Population Survey, Survey of Employee Benefits, we find that 52 percent of workers offered a 401(k) plan report that their employer offers no other retirement plan.

[3] Andrews (1992) reports qualitatively similar results for participation using data from the May 1988 CPS. This earlier survey did not contain information on the level of the employer match, however.

[4] We thank James Fleming for his help explaining the various types of pension plans and their attributes. More detailed descriptions of pension plan characteristics are provided by Franz et al. (1995), Krass (1995), and Employee Benefit Research Institute (1997).

[5] Cash balance plans, offering features of both DC and DB plans, may become more common after a recent IRS ruling that clarified the tax-deductibility of employer contributions to these plans (see Johnston (1996)).

[6] Employee Benefit Research Institute (1997), page 183, reports that most DB plans do not provide an automatic inflation adjustment after retirement.

[7] Upon separation the employer may force the employee to take a distribution if the present value of the obligation does not exceed $3,500 (increased to $5,000 effective January 1, 1998). In rare situations an employee has the option of taking a pre-retirement lump-sum distribution from a DB plan.

[8] The employer may force the employee to take a distribution upon separation if the value does not exceed $3,500 (increased to $5,000 effective January 1, 1998). Nearly always an employee has the option of taking a pre-retirement lump-sum distribution from a DC plan regardless of plan value. These distributions are taxable in the year received unless they are reinvested in a qualified retirement plan. An additional ten percent penalty is imposed on the funds that are not reinvested if the recipient has not reached the age of 59½ (age 55 for recipients who receive the

distribution after leaving their employer).

[9] Dorsey (1987) derives this capital loss. Bodie, Marcus, and Merton (1988) discuss this issue as well as other differences between DB and DC plans. Samwick and Skinner (1995) analyze how the emergence of DC plans affects retirement income and find that DC plans yield a higher average return for the majority of workers and reduce income inequality among the elderly.

[10] Tax-deferred 401(k) employee contributions are limited to $10,000 per year per participant in 1998 ($8,994 in 1993). Total contributions (employee pre-tax + employee post-tax + employer) to a participant's DC plan (or DC plans) are limited to the lower of $30,000 per year, or 25 percent of the participant's compensation. Total deductible contributions (employee and employer) for an employer's DC plan participants are limited to 15 percent of compensation paid to all participants. Finally, employer-specific "non-discrimination" tests must be met to ensure that DC benefits are distributed relatively evenly across income levels at each sponsoring employer. Additional overall limits apply to firms that sponsor both DB and DC plans.

[11] Internal Revenue Service regulations adopted in 1981 allow the use of salary reduction arrangements as a source of 401(k) plan contributions. Even though most 401(k) plans are profit sharing plans, profit sharing (or even employer profits) is not required for employee or employer contributions to be made.

[12] Paré (1995) reports that many localities but only one state (Pennsylvania) tax 401(k) contributions. Social security taxes on 401(k) contributions are not deferred.

[13] The General Accounting Office (1988) finds that 95 percent of 401(k) plan assets are in plans where participants directed the investment. The mean number of investment options provided by employers is 5.4 according to Buck Consultants (1994).

[14] All dollar figures presented in this paper are in 1993 Consumer Price Index adjusted dollars (with the exception of figures that are established by regulatory decree such as pension plan contribution limits). The decline in annual DB contributions is at least partially attributable to the outstanding performance of the stock market in recent years as well as to the declining proportion of the workforce covered by DB plans.

[15] Olsen and VanDerhei (1997) show that there has been a much sharper reduction in the number of small than large DB plans in recent years.

[16] Results are similar when the weights are used in the multivariate statistical analyses.

[17] Only 46 individuals offered a 401(k) plan (one percent of sample) report participating in a 401(k) with planned contributions of zero. Note that the survey does not ask about past participation or the existence of an account with 401(k) funds, however. There are probably additional workers who have contributed to a 401(k) plan in the past but report themselves as nonparticipants since they have no planned contributions for 1993.

[18] See Employee Benefit Research Institute (1994), which provides a significant amount of descriptive information on the 1993 CPS and which compares the 1993 survey results to previous surveys' results.

[19] Contribution rates reported in excess of 25 percent are coded as missing values. DC plan limits do not allow annual account additions in excess of 25 percent of pay.

[20] Technically these 1993 contributions in excess of $8,994 are not 401(k) plan contributions as they are not tax-deferred. 401(k) plans often operate in conjunction with similarly structured thrift or savings plans, however, that allow contributions beyond the 401(k) limit that are not tax-deferred. Over half (57 percent) of the contributions estimated to be between $9,000 and $25,000 are less than $10,000.

[21] Family income is defined as the worker's usual weekly earnings times 52 plus the usual weekly earnings of the worker's spouse (if applicable) times 52 plus the unearned income of the worker and the worker's spouse as reported for 1992. Individual income figures in excess of $100,000 are not reported by the Census Bureau. One hundred twenty workers (one percent of sample) therefore have their weekly earnings censored at $1,923 ($100,000/52 weeks).

[22] We remain uncertain about the causes of the income-participation differences between the CPS and the Survey of Income and Program Participation (SIPP): Differences in the age screen criteria (the SIPP studies exclude 18-24 year olds) appear to be only a small factor. Further, neither the definitions of participation (current contributions in CPS versus positive 401(k) balance in SIPP) nor the unit of analysis (individual vs. family) seems to be an important factor.

[23] While no studies look at this precise issue, the results in Gustman and Steinmeier (1992), Parsons (1991), and Bloom and Freeman (1992) suggest that pension coverage would have fallen even faster in the 1980s if 401(k) plans had not been introduced.

[24] The evidence on this question is mixed. Venti and Wise (1987, 1990a, 1990b), Poterba, Venti, and Wise (1995b), and Hubbard (1984) find evidence consistent with tax-advantaged plans significantly raising saving while Engen, Gale and Scholz (1994), Gale and Scholz (1994), and Engen and Gale (1995) find little to no effects. Poterba, Venti, and Wise (1996) and Engen, Gale, and Scholz (1996) detail the arguments on both sides of this debate.

[25] Ippolito (1996) argues that the match rate can also serve to align employee pay and productivity. Workers with low discount rates are likely to both take advantage of the match rate and to make decisions in the long-term interest of the firm.

[26] Specifically, saving through a 401(k) plan is preferred if $m>p/(1-t-p)$ where m is the match rate, p is the penalty rate, and t is the employee's marginal tax rate. This calculation assumes that the employer match is immediately vested (employee contributions are always immediately vested, employer contributions may or may not be immediately vested), that the worker has immediate access to the funds (General Accounting Office (1988) finds that 93 percent of plans allow hardship withdrawals of employee contributions and that 83 percent of plans permit loans), and

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that the marginal tax rate on income remains the same throughout the planning period. Saving through a 401(k) plan is still preferred if m<p/(1-t-p) if the expected holding period is long enough so that the tax-deferral benefits of the 401(k) exceed the penalty costs.

[27] Specifically, respondents who indicate they are covered by a salary reduction plan are asked "If you were to contribute $100 to this plan, how much would your employer contribute?" The May 1988 CPS had a question concerning whether the employer matched contributions, but it did not ask the *level* of the employer match. Neither survey asks more detailed questions about the match rate policy, such as when the match rate stops, or what sort of non-discrimination limits apply. The surveys also do not ask about other 401(k) plan attributes such as investment options, loan provisions, or hardship withdrawal provisions. In our analysis the match rate is encoded as missing for four workers who report unreasonably high match rates of over 500 percent.

[28] Many (29 percent) workers do not know if their employer offers a match rate, particularly those who do not participate in 401(k) plans. The figures in the table are adjusted proportionately so that the weighted rates of match and no match participants equal the corresponding rate in Table 1. Without this adjustment, the participation rate for workers with no match rate is 71 percent and the participation rate for workers with a match rate is 78 percent even though the overall participation rate is only 65 percent. Our subsequent multivariate statistical analysis does not make any adjustments for these missing workers (Even and Macpherson (1996), however, do incorporate such workers in their analysis).

[29] Marginal probability estimates derived from the probit coefficients were also calculated and found to very similar to the linear probability estimates, with occasionally smaller standard errors. These results are available from the authors.

[30] Job tenure is coded as one-half year for workers that report tenure of less than one year.

[31] Participation is actually significantly lower (p-value < .01) for employees with match rates of 100 percent than for employees with a lower or higher match rate. Response error is one possible explanation for this finding - some workers with no match rate may respond that they have a match rate of 100 percent. The survey question is vague enough that workers with no match rate may state that the employer contributes the same amount that they have deducted from their salary. Our earlier finding that a disproportionate fraction of workers in the CPS say they have a 100 percent match rate supports this conjecture.

[32] The impact on participation of a change in family income cannot be read directly off Table 5 since income is measured in logs. Rather, to measure the change in participation probability associated with a $1,000 change in family income, the coefficient is divided by mean family income for the sample and then multiplied by 1,000.

[33] Age 55 for participants who receive the distribution after leaving their employer.

[34] Employee Benefit Research Institute (1994) provides detailed descriptive information on lump-sum distributions as reported in the 1993 CPS.

[35] These figures are underestimates for three reasons. First, fourteen respondents (out of 1,120 that report distribution size) have their reported distribution figures capped at $100,000, biasing downwards the reported mean. Second, respondents are only questioned about their *most recent* lump-sum pension plan distribution. Third, respondents may not report a lump-sum distribution if plan assets are directly transferred from an old employer's plan to a new employer's plan. This seems particularly likely when the plan trustee does not change.

[36] The two numbers are not strictly comparable as some distributions are not included in the sample (see prior footnote), while other distributions received are from DB plans. Total DC plan contributions are calculated from the Department of Labor's *Private Pension Plan Bulletin* (also see Figure 2).

[37] Eighty-five percent (85 percent) of pre-retirement recipients between 1988 and 1992 report allocations that fall into just one of the six categories. For the 15 percent who report more than one use, the proportional distribution of assets is not known. Distributions are therefore assumed to be equally allocated to all reported uses in calculating the summary statistics.

[38] Marginal probability estimates derived from the probit coefficients were also calculated and were quite similar to the linear probability estimates. These results are available from the authors.

[39] Workers can not be forced to receive a distribution exceeding $3,500 from either a DB or DC plan, but they can be forced to receive a distribution with a value of $3,500 or less (the limit was increased to $5,000 effective January 1, 1998). Larger distributions are therefore only made to voluntary recipients, while smaller distributions are made to both voluntary and involuntary recipients.

[40] Chang (1996) estimates probit models of the rollover decision using data from the May 1988 CPS. In different model specifications she finds distribution amount, age, family income, and the marginal tax price of nonrollovers to be significant variables. Gelbach (1995) estimates a multinomial logit model using data from the April 1993 CPS. He finds the probability of a rollover to increase with age and distribution amount. Poterba, Venti, and Wise (1995a) estimate a linear probability model, also using data from the April 1993 CPS. They find distribution amount, age, income, and education to all be significant factors in the rollover decision.

[41] We cannot reject the hypothesis that the coefficients are the same in the two subsamples (p-value = 0.91).

[42] The impact on the rollover rate of a change in distribution amount or family income cannot be read directly off Table 9 since these variables are measured in logs. To measure the change in rollover probability associated with a $1,000 change in these variables, the coefficients are

divided by their sample means and then multiplied by 1,000.

TABLE 1

401(k) SPONSORSHIP, PARTICIPATION, AND CONTRIBUTIONS
BY FAMILY INCOME, 1993

Income Interval ($ Thousands)	Sponsored Rate[a] (Percent)	Conditional Participation Rate[b] (Percent)	Conditional Contribution Rate[c] (Percent)	Conditional Contribution[d] (Dollars)
< 15	15.3	36.2	5.4	634
15 - 25	33.0	51.4	5.5	1,071
25 - 35	42.1	61.2	6.1	1,610
35 - 50	47.0	65.5	6.9	2,286
50 - 75	56.0	71.8	7.4	2,953
≥ 75	62.1	80.6	7.9	4,700
All	42.0	65.0	6.9	2,715

[a]Percent of workers offered 401(k) plan.
[b]Participation rate for workers offered 401(k) plan.
[c]Mean percent of salary contributed to 401(k) plan for workers participating in plan.
[d]Mean annual dollar amount contributed to 401(k) plan for workers participating in plan.
Source: Authors' calculations, based on data from the Current Population Survey.

TABLE 2

DISTRIBUTION OF WORKERS, 401(k) CONTRIBUTORS, AND
401(k) CONTRIBUTIONS BY FAMILY INCOME, 1993

Income Interval ($ Thousands)	Percent of Workers	Percent of Workers Offered 401(k)	Percent of 401(k) Contributors	Percent of 401(k) Contributions
< 15	15.3	5.6	3.1	0.7
15 - 25	18.9	14.9	11.8	4.8
25 - 35	16.8	16.9	15.9	9.7
35 - 50	19.9	22.3	22.5	19.4
50 - 75	18.3	24.4	26.9	30.1
≥ 75	10.8	16.0	19.9	35.3

Note: Figures represent percentage distribution across income groups of workers
with various pension plan characteristics.
Source: Authors' calculations, based on data from the Current Population Survey.

TABLE 3

401(k) PARTICIPATION AND CONTRIBUTION RATES BY FAMILY INCOME
FOR WORKERS WITH AND WITHOUT EMPLOYER MATCH RATE, 1993

Income Interval ($ Thousands)	No Match Rate			Match Rate		
	Participation Rate[a] (Percent)	Conditional Contribution Rate[b] (Percent)	Unconditional Contribution Rate[c] (Percent)	Participation Rate[a] (Percent)	Conditional Contribution Rate[b] (Percent)	Unconditional Contribution Rate[c] (Percent)
< 15	26.3	7.4	2.0	38.6	5.0	1.9
15 - 25	45.6	6.8	3.1	52.9	5.2	2.8
25 - 35	54.9	5.8	3.2	63.0	6.2	3.9
35 - 50	58.2	7.5	4.4	68.1	6.6	4.5
50 - 75	68.1	7.6	5.1	73.2	7.3	5.3
≥ 75	75.1	8.2	6.2	83.3	7.7	6.4
All	60.4	7.5	4.5	66.6	6.7	4.5

[a]Participation rate for workers offered 401(k) plan.

[b]Mean percent of salary contributed to 401(k) plan for workers participating in plan.

[c]Mean percent of salary contributed to 401(k) plan for all workers offered plan.

Note: Many workers do not know if their employer has a match rate, particularly those who do not participate in 401(k) plans. The numbers in columns 2, 3, 5, and 6 are adjusted proportionately so that the weighted rates of match and no match participants equal the corresponding rate in Table 1. Columns 4 and 7 are the products of columns 2 and 3 and 5 and 6 respectively.

Source: Authors' calculations, based on data from the Current Population Survey.

TABLE 4

CHARACTERISTICS OF WORKERS OFFERED 401(k) PLANS
BY PARTICIPATION STATUS, 1993

	Participate	Do Not Participate
Has match rate (percent)	75.0	66.8
	(43.3)	(47.1)
Family income	$ 53,625.6	$40,536.5
	($ 30,258.5)	($24,898.7)
Age (years)	40.5	36.8
	(10.0)	(10.6)
Job tenure (years)	10.4	7.1
	(8.3)	(7.8)
Has high school diploma (percent)	96.5	93.3
	(18.5)	(25.0)
Has college degree (percent)	39.6	29.3
	(48.9)	(45.5)
Home owner (percent)	79.8	65.7
	(40.2)	(47.5)
401(k) is only pension plan (percent)	55.1	45.6
	(49.7)	(49.8)
Married (percent)	70.8	61.7
	(45.5)	(48.6)
Has children (percent)	44.8	43.7
	(49.7)	(49.6)

Note: Mean and standard deviation (in parentheses) of various variables for workers that do and do not choose to participate when offered 401(k) plan by employer. Participant statistics are based on sample of 5,318 observations with the exception of *has match rate* (4,391)*, job tenure* (5,250)*, and *401(k) is only pension plan* (5,262). Non-participant statistics are based on sample of 2,811 observations with the exception of *has match rate* (1,355)*, job tenure* (2,788)*, and *401(k) is only pension plan* (2,756).

Source: Author's calculations, based on data from the Current Population Survey.

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TABLE 5

401(k) PARTICIPATION MODELS

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Explanatory Variable	Match Rate Dummy Model		Segmented Match Rate Model	
	Probit	OLS	Probit	OLS
Intercept	-5.31**	-1.96**	-5.33**	-1.87**
	(0.44)	(0.12)	(0.51)	(0.14)
Has match rate	0.33**	0.09**	-	-
	(0.04)	(0.01)	-	-
Match rate between			0.48**	0.13**
0 and 25%	-	-	(0.08)	(0.02)
Match rate equals 25%	-	-	0.40**	0.11**
			(0.11)	(0.03)
Match rate between			0.71**	0.17**
25% and 50%	-	-	(0.14)	(0.03)
Match rate equals 50%	-	-	0.56**	0.15**
			(0.07)	(0.02)
Match rate between			0.64**	0.17**
50% and 100%	-	-	(0.13)	(0.03)
Match rate equals 100%			0.25**	0.07**
	-	-	(0.06)	(0.02)
Match rate exceeds 100%			0.69**	0.16**
	-	-	(0.17)	(0.03)
Log (family income)	0.43**	0.12**	0.41**	0.11 **
	(0.04)	(0.01)	(0.05)	(0.01)
Age	0.01**	0.002**	0.01**	0.003**
	(0.002)	(0.001)	(0.003)	(0.001)
Job tenure	0.02**	0.01**	0.02**	0.01**
	(0.003)	(0.001)	(0.004)	(0.001)
Has high school diploma	0.32**	0.10**	0.48**	0.15**
	(0.10)	(0.03)	(0.11)	(0.04)
Has college degree	0.15**	0.04**	0.15**	0.04**
	(0.04)	(0.01)	(0.05)	(0.01)
Home owner	0.29**	0.09**	0.26**	0.08**
	(0.05)	(0.02)	(0.06)	(0.02)
401(k) is only pension plan	0.53**	0.14**	0.55**	0.14**
	(0.04)	(0.01)	(0.05)	(0.01)
Married	-0.23**	-0.07**	-0.22**	-0.06**
	(0.05)	(0.01)	(0.06)	(0.02)
Has children	0.02	0.01	-0.02	-0.004
	(0.04)	(0.01)	(0.05)	(0.01)
Number of observations	5,658	5,658	4,367	4,367
Log likelihood	-2,796	-	-2,051	-
Adjusted R^2	0.10	0.10	0.12	0.11

* Significantly different from 0 at .05 level.

** Significantly different from 0 at .01 level

Note: Coefficients and standard errors (in parentheses) from probit and ordinary least squares (OLS) models estimating participation decision (participation=1, non-participation=0). OLS standard errors are heteroskedasticity-consistent. Probit R^2 are computed following Estrella (1997).

Source: Authors' calculations, based on data from the Current Population Survey.

TABLE 6

USES OF PRE-RETIREMENT LUMP-SUM PENSION PLAN
DISTRIBUTIONS, 1988-92

	Percent of Recipients	Percent of Dollars
Rollover[a]	28.3	56.3
Financial investment[b]	11.2	10.9
House[c]	6.6	5.6
Other investment[d]	7.8	6.5
Debt[e]	17.3	7.5
Consumption[f]	28.8	13.2

[a]Distribution rolled over into an IRA, new employer pension plan, insurance annuity, or other retirement plan.

[b]Distribution invested in savings account or other financial instruments.

[c]Distribution used to buy house or pay mortgage.

[d]Distribution invested in business, health, education, or otherwise.

[e]Distribution used to pay off loan or other debts.

[f]Distribution spent on everyday expenses, car or other consumer items, or otherwise spent or disposed of.

Note: Distributions are assumed to be equally allocated to all reported uses in calculating the figures for this table.

Source: Authors' calculations, based on data from the Current Population Survey.

TABLE 7

PRE-RETIREMENT LUMP-SUM PENSION PLAN
DISTRIBUTIONS BY 1992 FAMILY INCOME, 1988-92

Income Interval ($ Thousands)	Distribution Size[a] (Dollars)	Rollover[b] (Percent)	Dollar-Weighted Rollover[c] (Percent)
< 15	5,531.4	15.6	30.6
15 - 25	5,045.2	10.0	23.8
25 - 35	6,153.7	21.1	35.0
35 - 50	7,155.4	23.0	48.5
50 - 75	14,211.6	39.1	67.4
≥ 75	19,510.5	47.1	64.9
All	10,367.2	28.3	56.3

[a]Mean amount of distribution in 1993 dollars.
[b]Percent of distributions rolled over into tax-qualified savings plan.
[c]Percent of distributions rolled over into tax-qualified savings plan, weighted by distribution size.
Note: Distributions are assumed to be equally allocated to all reported uses in calculating the figures for the last two columns.
Source: Authors' calculations, based on data from the Current Population Survey.

TABLE 8

CHARACTERISTICS OF RECIPIENTS OF PRE-RETIREMENT LUMP-SUM PENSION PLAN
DISTRIBUTIONS BY DISTRIBUTION USE, 1988-92

	Rollover[a]		Do Not Rollover[b]	
	Mean	Standard Deviation	Mean	Standard Deviation
Amount of distribution	$ 19,692.7	$ 26,732.3	$ 5,861.4	$ 11,306.9
Family income (1992)	$ 64,262.0	$ 40,289.2	$ 44,681.7	$ 31,479.4
Age at distribution	37.5	8.0	33.6	8.0
Has high school diploma (percent in 1993)	98.4	12.6	95.3	21.1
Has college degree (percent in 1993)	53.8	49.9	32.6	46.9
Home owner (percent in 1993)	78.6	41.0	65.5	47.6
Married (percent in 1993)	75.1	43.3	68.6	46.4
Has children (percent in 1993)	42.7	49.5	52.3	50.0

[a]Some or all of lump-sum distribution rolled over into tax-qualified retirement plan. Rollover statistics are based on sample of 370 observations with the exception of distribution amount (331) and family income (363).
[b]None of lump-sum distribution rolled over into tax-qualified retirement plan. Non-rollover statistics are based on sample of 860 observations with the exception of distribution amount (786) and family income (839).
Source: Authors' calculations, based on data from the Current Population Survey.

TABLE 9

PRE-RETIREMENT LUMP-SUM PENSION PLAN DISTRIBUTION ROLLOVER MODELS

| Explanatory Variable	Full Sample		Distribution > $3,500		Distribution ≤ $3,500	
	Probit	OLS	Probit	OLS	Probit	OLS
Intercept	-7.28**	-1.24**	-6.96**	-1.61**	-7.29**	-0.92**
	(0.87)	(0.16)	(1.27)	(0.29)	(1.49)	(0.21)
Log (distribution	0.34**	0.09**	0.31**	0.11**	0.29**	0.05**
amount)	(0.03)	(0.01)	(0.08)	(0.03)	(0.08)	(0.01)
Log (family income)	0.29**	0.05**	0.27*	0.05**	0.34*	0.06**
	(0.08)	(0.02)	(0.11)	(0.02)	(0.14)	(0.02)
Age	0.01	0.004*	0.02		0.01*	0.004
	0.001					
	(0.01)	(0.002)	(0.01)	(0.003)	(0.01)	(0.002)
Has high school	0.39	0.05	0.36		0.14	0.44
	0.03					
diploma	(0.30)	(0.05)	(0.41)	(0.13)	(0.47)	(0.04)
Has college degree	0.35**	0.11**	0.38**	0.15**	0.32*	0.08*
	(0.09)	(0.03)	(0.12)	(0.04)	(0.15)	(0.03)
Home owner	0.25*	0.07**	0.37*	0.14**	0.14	0.03
	(0.11)	(0.03)	(0.16)	(0.05)	(0.16)	(0.03)
Married	-0.24	-0.05	-0.27*	-0.10*	-0.16	-0.03
	(0.13)	(0.03)	(0.18)	(0.06)	(0.18)	(0.04)
Has children	-0.20*	-0.06*	-0.17		0.06	-0.21
	-0.04	(0.10)	(0.03)	(0.14)	(0.05)	(0.15)
	(0.03)					
Number of observations	1,094	1,094	493	493	601	601
Log likelihood	-534	-	-305	-	-227	-
Adjusted R^2	0.23	0.20	0.14	0.12	0.09	0.06

* Significantly different from 0 at .05 level.

** Significantly different from 0 at .01 level

Note: Coefficients and standard errors (in parentheses) from probit and ordinary least squares (OLS) models estimating participation decision (participation=1, non-participation=0). OLS standard errors are heteroskedasticity-consistent. Probit R^2 are computed following Estrella (1997).
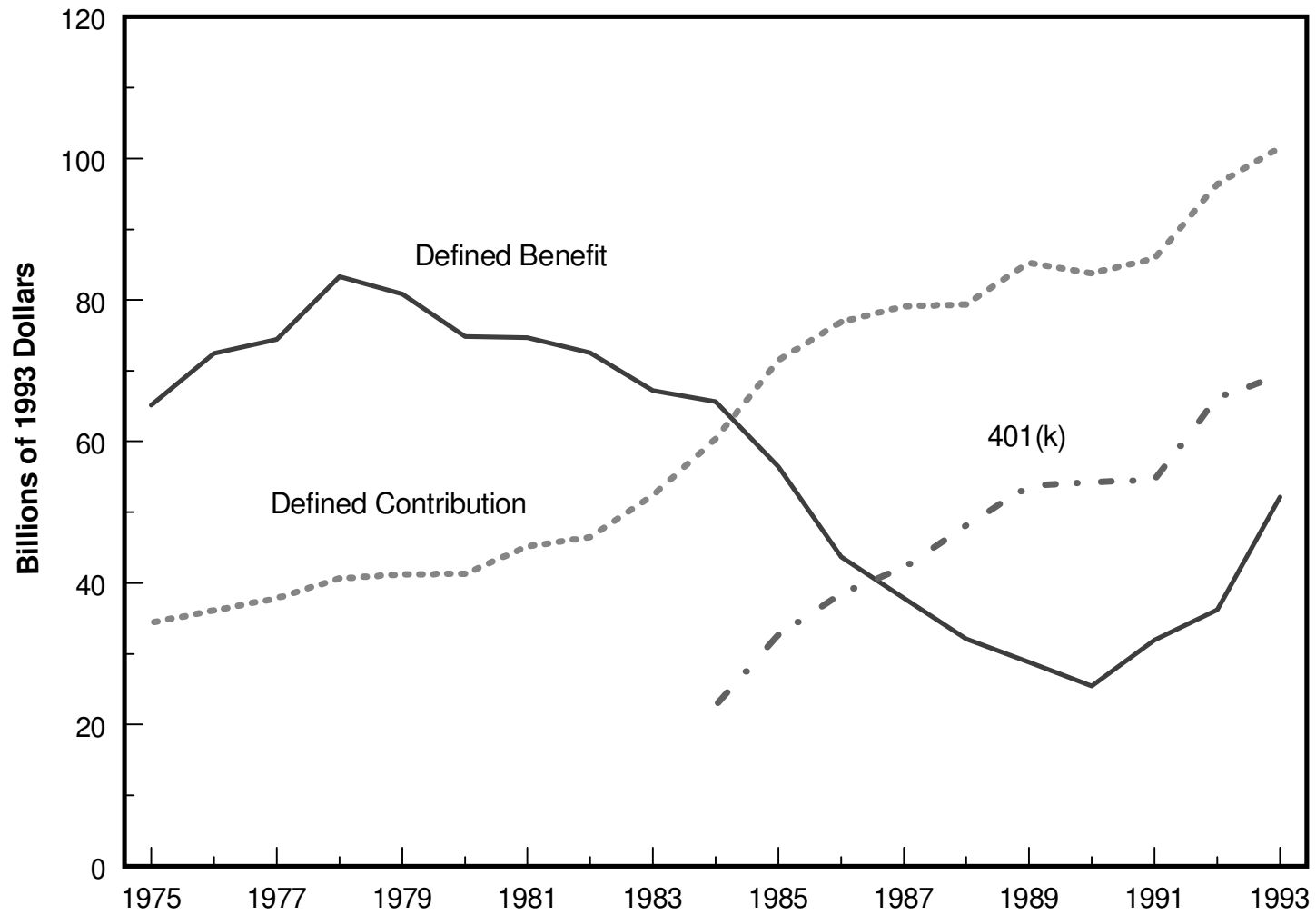
Source: Authors' calculations, based on data from the Current Population Survey.

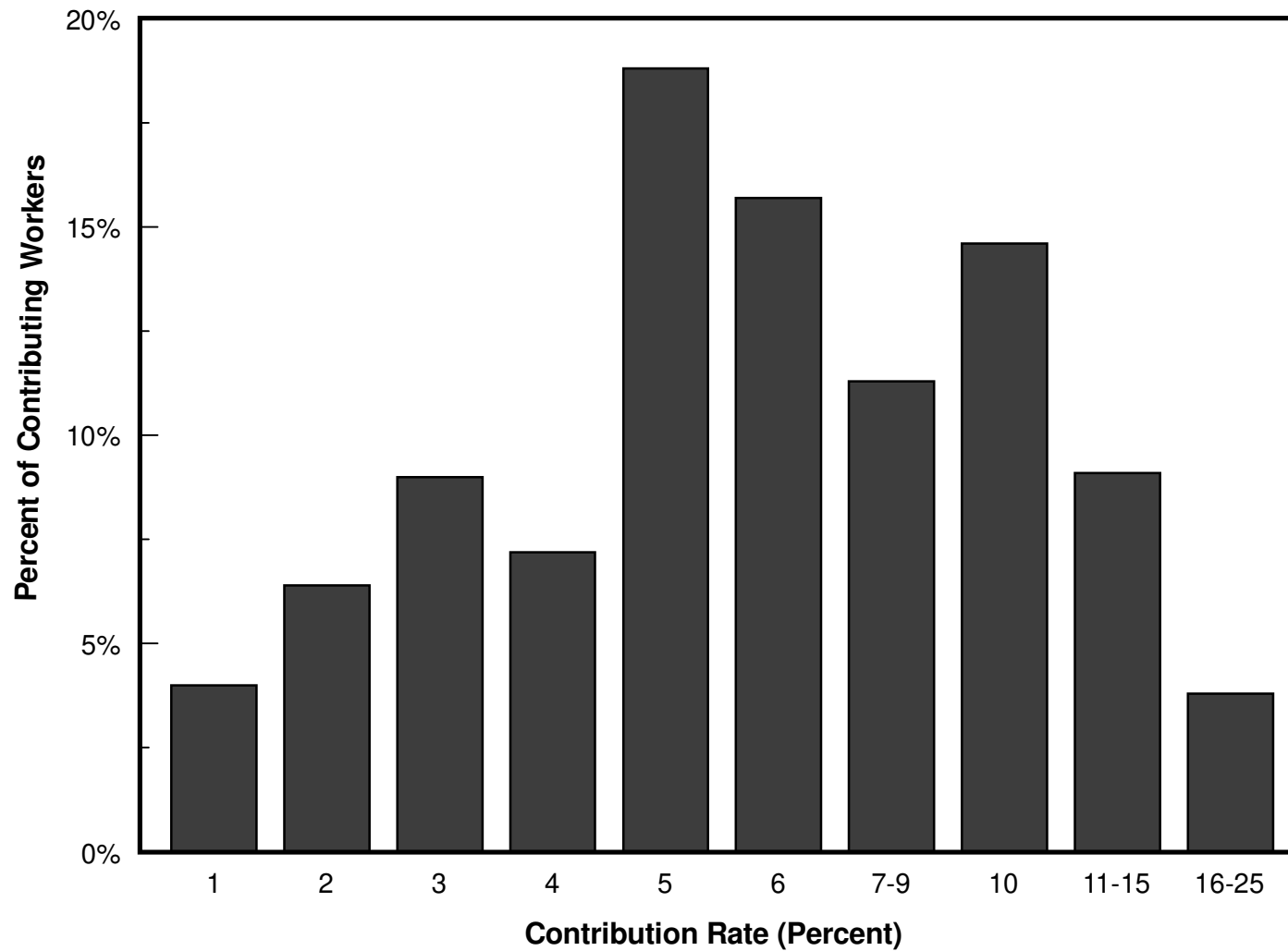**FIGURE 1.** Pension Plan Participation, 1975-93
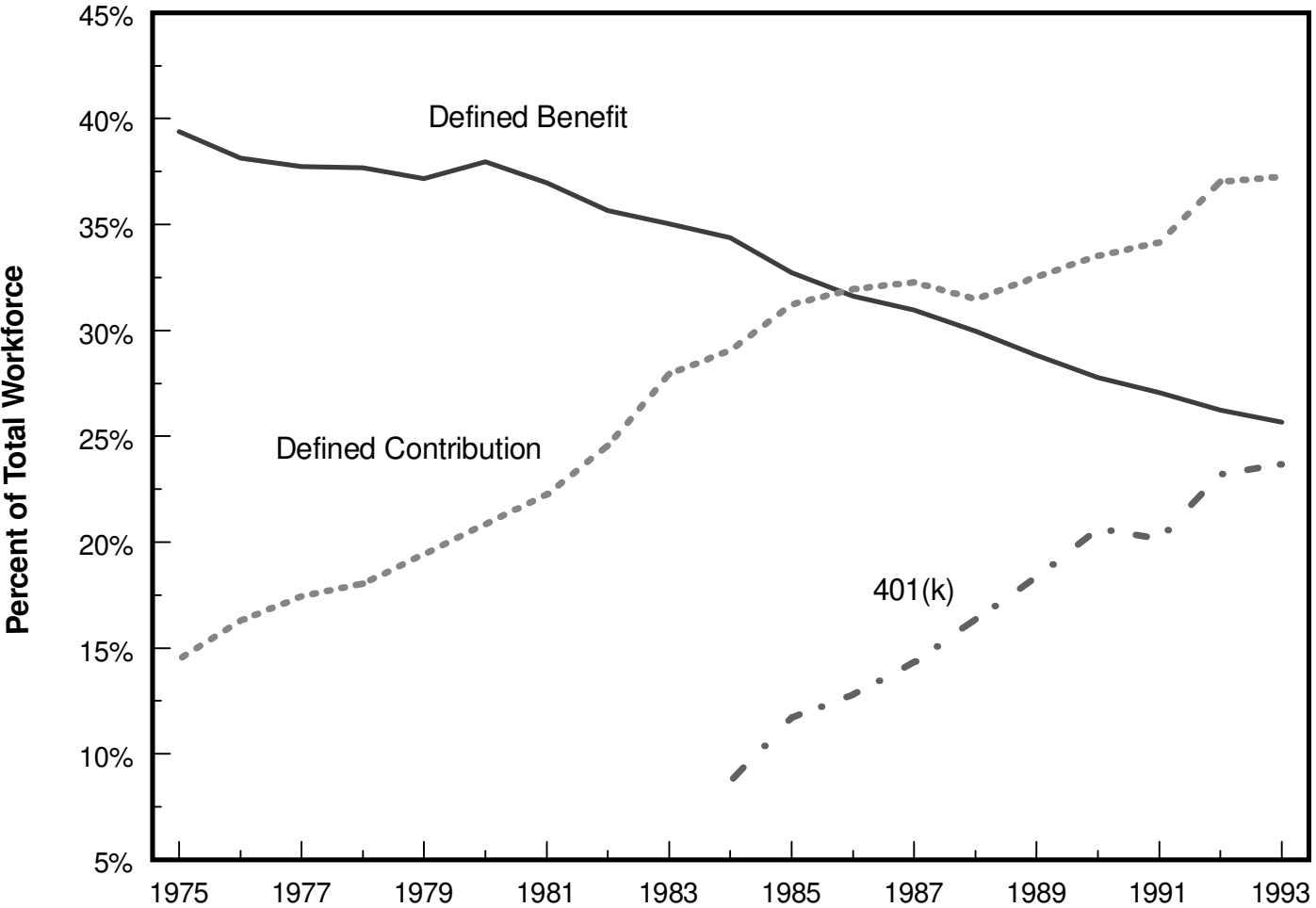
Source: "Private Pension Plan Bulletin" (U.S. Department of Labor).

FIGURE 2. Pension Plan Contributions, 1975-93

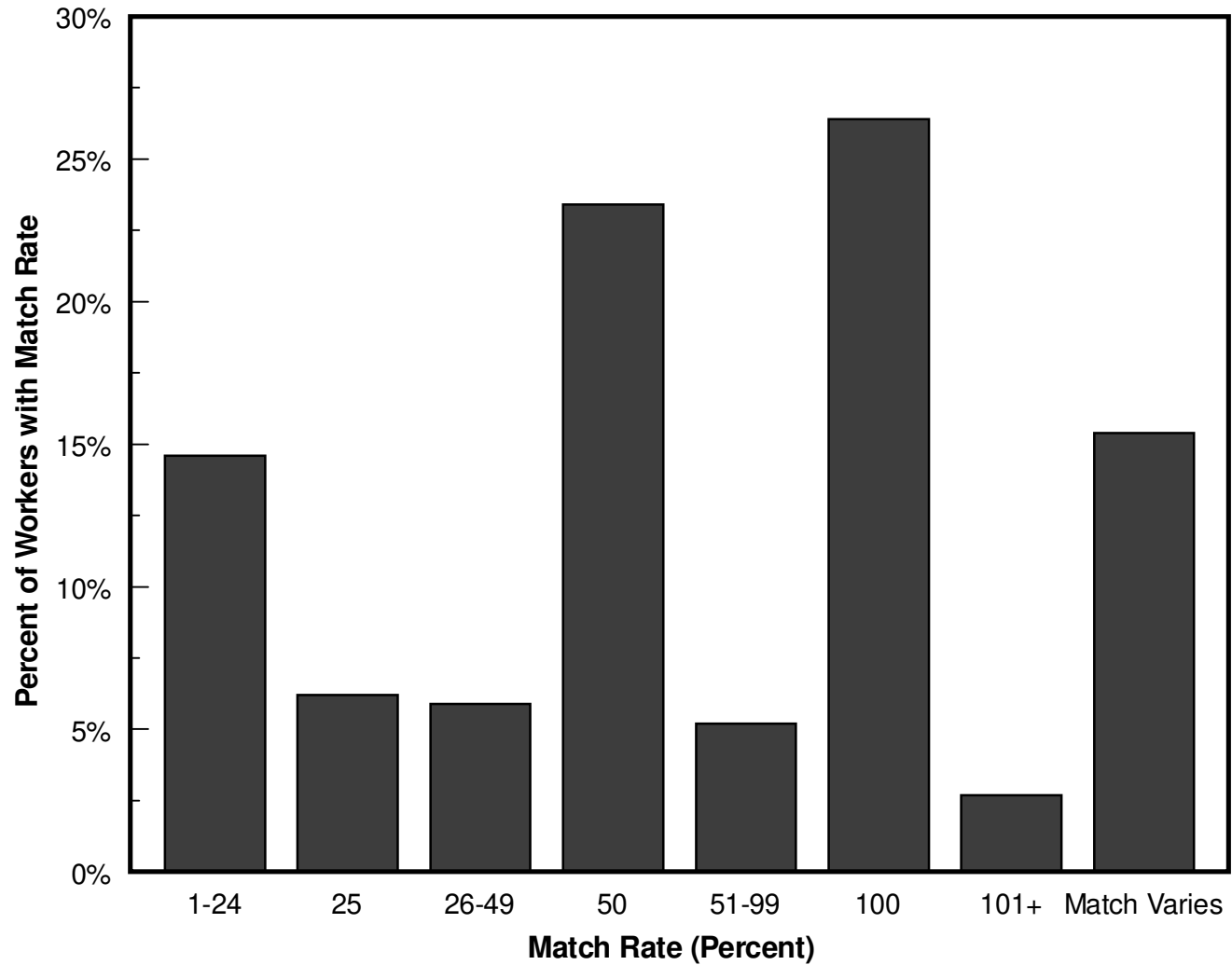Source: "Private Pension Plan Bulletin" (U.S. Department of Labor).

FIGURE 3. 401(k) Contribution Rate, 1993

Source: Authors' calculations, based on data from the Current Population Survey.
Note: Contribution rate is defined as the percent of pay contributed to the 401(k) plan.

FIGURE 4. 401(k) Match Rate, 1993

Source: Authors' calculations, based on data from the Current Population Survey.
Note: Match rate is defined as the employer's percentage matching contribution to a 401(k) plan for each $1 employee contribution.

FIGURE 5. Pension Plan Distributions Rolled Over into Tax Qualified Plans, 1980-92
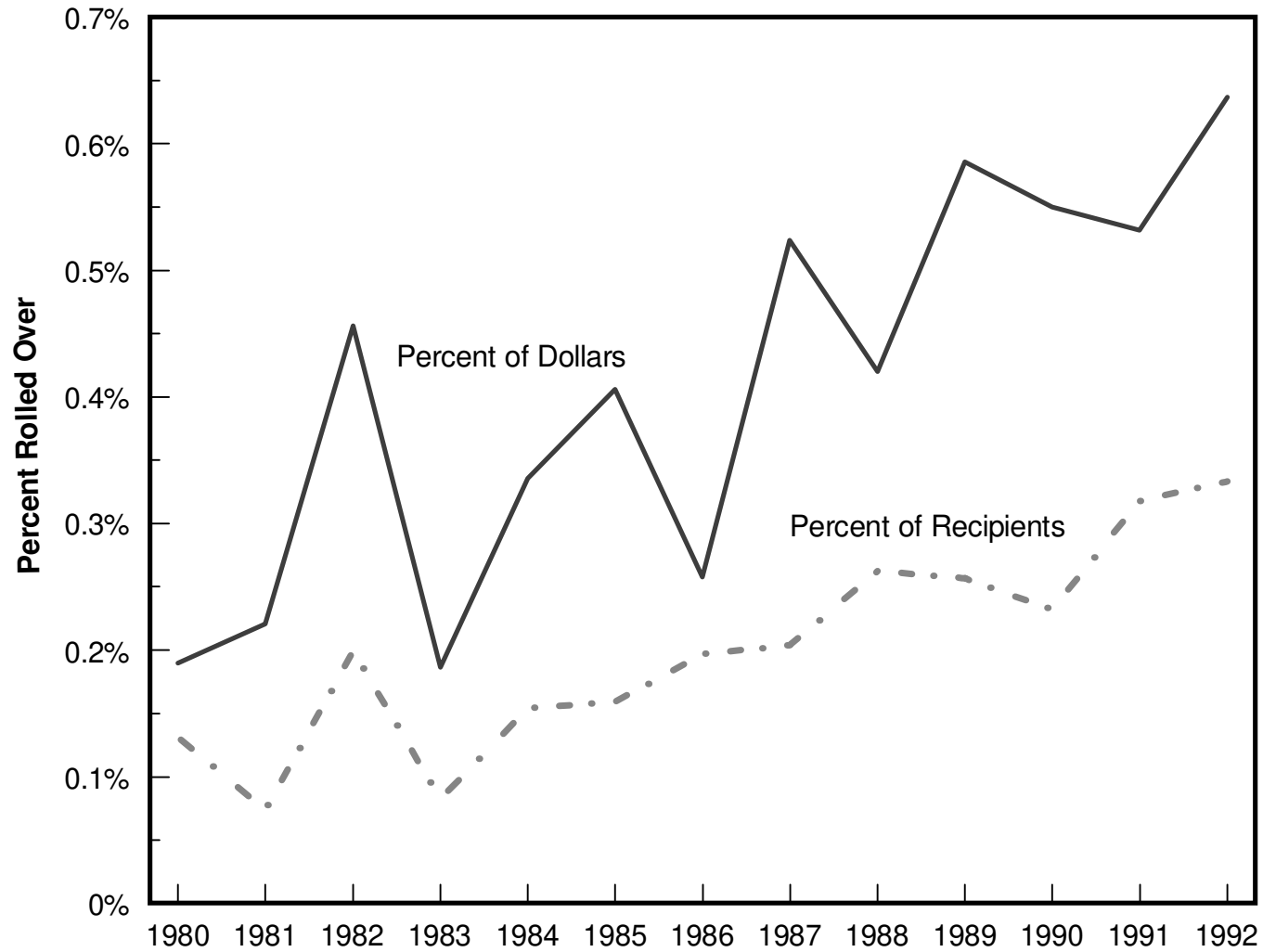
Source: Authors' calculations, based on data from the Current Population Survey.

Note: Distributions are assumed to be equally allocated to all reported uses in calculating the numbers for this figure.