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401(k) PLANS AND INADEQUATE
PENSION SAVING

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ABANDONING THE NEST EGG?
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ABSTRACT

There has been rapid growth in "self-directed" pension programs such as the 401(k) plan. Because such plans are voluntary, there is concern that many workers neglecting to contribute will reach retirement with inadequate pension saving. First, we show that people who are eligible for 401(k)s, do not contribute to them, and have no alternative pension plan make up only 2-4 percent of the workforce. By contrast, nearly 50 percent of workers have no pension coverage at all. Imposing mandatory 3 percent or 5 percent contribution rates will improve retirement prospects among the lowest decile of pension-eligible, but would have small aggregate effects. Finally, restricting 401(k) withdrawals when the worker changes jobs could have a larger impact on retirement pension security.

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A whole generation of people are going to wake up years from now and say, "God, I wish I had known when I was 32 that I should have been putting this money in"
Myron Mintz, Chair, PBGC, quoted in Vise (1993)

I. Introduction

One of the fundamental changes in the United States pension system has been the shift toward defined contribution pension plans, and in particular toward 401(k) pension plans. Until the early 1980s, the typical pension was a defined benefit (DB) plan in which the employer guaranteed a fixed nominal retirement payment that depended on the employee's tenure and earnings history at the company. In defined contribution (DC) pension plans, employers and employees typically contribute to the worker's pension fund, which is then distributed when the worker leaves the firm. The fastest growing component of DC plans are 401(k)s, which are "self-directed," in the sense that the employee can make additional pre-tax contributions and to determine how his or her pension contributions will be invested. Between 1981 and 1989, the number of workers with a primary defined contribution plan rose from 6 million to 15 million; by contrast, the number of workers with primary DB plans fell from 30 million to 27 million (Silverman, 1993).

While defined contribution plans in general, and 401(k) plans in particular, provide a great deal of latitude for employees to control the size and composition of their pension plan, in some cases they allow eligible workers to eschew making any kind of pension contribution whatsoever. Furthermore, when employees who have

made DC contributions change jobs, they often spend the lump-sum proceeds of their pension from the former employer. Employees may use the pension distributions to buy a boat or car or to take a vacation (Schultz, 1993). The prospects of eligible workers who don't contribute to pensions, and workers who spend the proceeds of their pensions when they change jobs, has created concern that a sizable fraction of Americans will retire with minimal or non-existent pension wealth. As one commissioner at the Securities and Exchange Commission put it, "Using retirement assets to fund current consumption could be laying the foundation for future disaster."¹

In response to the concern about employees dipping into 401(k) retirement assets, some observers have proposed returning to defined benefit plans with mandatory coverage to ensure adequate retirement benefits for all covered workers (*Washington Post*, 1993). One need not return to defined benefit plan mechanisms to ensure mandatory coverage, however. One congressional proposal provided for a voluntary minimum 401(k) contribution rate of 3% for eligible workers; in return, the firm becomes exempt from onerous reporting requirements under federal non-discrimination laws.² Alternatively, the government could simply mandate minimum contributions to 401(k) plans among eligible workers, a proposal similar to that suggested by the President's Commission on Pension Policy (1981). Finally, there

1 J. Carter Beese, as quoted in Schultz (1993).

2 H.R. 4534 in the 103rd Congress.

are alternatives to the prevailing treatment of 401(k) accounts at job separation. Currently, workers separating from jobs are allowed to spend all of their 401(k) balances (less taxes and penalty). A frequently discussed alternative is to transfer the lump-sum distributions directly to a pension "clearinghouse" that would free the former employer from record-keeping duties and discourage employees from spending the distributions before retirement.

What effect would such restrictions on 401(k) contributions and distributions have on the pension saving of American workers? Presumably, mandating minimum contribution limits and sharply restricting lump-sum disbursements would improve pension saving for those who don't contribute to their 401(k) or who are planning to buy a boat with their 401(k) distributions. On the other hand, there are at least two reasons why such mandates may not achieve the goal of attaining financial security for those with inadequate retirement resources. First, many of the 401(k) eligible workers who aren't contributing may already have an existing primary pension plan or be relatively affluent in terms of non-pension saving. The anecdotal evidence about eligible employees who don't contribute to their defined contribution plans may reflect only a small fraction of total workers, especially in comparison to those workers who ineligible for *any* pension plan. And second, instituting minimum contribution guidelines or roll-over restrictions could cause some firms to drop their pension plan altogether, either because of additional costs to the employers or

because of employee resistance to restrictions on lump-sum distributions.

This paper considers how mandated contribution limits and rollover restrictions would affect the retirement income of U.S. workers. In order to analyze the distribution of pension entitlements among current workers, we utilize the *Survey of Consumer Finances 1989* (SCF) and the supplemental *Pension Provider Survey* (PPS). The SCF provides detailed information on the income and wealth of a representative cross-section of households and a special sample of high-income households drawn from tax files.³ The employers of SCF respondents who are covered by pensions were subsequently interviewed, and the full summary plan descriptions of the pension plans were recorded in the PPS. Our detailed information on roughly 800 pension plans among 1,000 workers allows us to answer the question of how mandated minimum pension contributions, or rollover restrictions, would affect the adequacy of pension income among a representative sample of the working population.

In this paper, we focus on three basic results. First, workers who are eligible for 401(k)s, do not contribute to them, and have no alternative pension plan make up between 2 and 4 percent of the

³ See Kennickell and Woodburn (1992) and Kennickell and Shack-Marquez (1992) for descriptions of the SCF 1989.

workforce.⁴ By contrast, roughly 50 percent of American workers have no pension coverage at all. In terms of both income and wealth, those who neglect to contribute to their pension plans appear to be somewhat better off than those who are ineligible to contribute to any plan. One puzzle is why there appears to be so much public concern about 401(k) eligible workers who neglect to contribute relative to the much larger group of people who are ineligible for any type of pension.⁵

Second, imposing a 3% or 5% minimum contribution for those who are eligible for 401(k) plans would improve financial security among the 5 - 10% of the pension-eligible workforce with the least generous anticipated pension income; overall, however, the effects would be quite modest. For example, under a 3% mandatory minimum contribution rate, we estimate that the annuitized pension stream at the bottom 10th percentile of workers covered by a pension would increase from \$5,438 under current law to \$6,340, an increase of \$902 annually. Above the 50th percentile, there is little or no effect of a mandated minimum contribution; in the aggregate, pension benefits are predicted to rise by less than 2 percent.

4 The lower estimate comes from the Survey of Income and Program Participation (SIPP), while the higher number comes from more recent data from the Current Population Survey (U.S. Department of Labor, 1994).

5 The President's Commission on Pension Policy (1981) was an exception.

Third, we show that mandating a minimum 50 percent rollover of pre-retirement lump-sum distributions will increase retirement income by roughly 10-25 percent for those in the bottom half of pension income distribution who switch jobs. The effects among workers with higher pension incomes (and those who remain with their employees for a long time) will be much smaller.⁶ These increased levels of pension benefits could be largely attenuated by behavioral responses of firms or workers. Suppose that a 50% minimum "rollover" provision is enacted that allows workers to withdraw only half of their 401(k) between jobs, and as a consequence there is a uniform 5% reduction in enrollees, either because workers or employers opt out of their 401(k) plans. Then the simulated gains in retirement income would be reduced by 30 percent on average and by over 50 percent in the lowest quartile of the distribution. In sum, mandated minimum pension rollover provisions can potentially enhance retirement income if behavioral responses by firms and employees are minimal.

In the sections below, we consider each policy question in turn. Section II addresses patterns of eligibility among 401(k) contributors. Section III examines how minimum contribution levels for 401(k)s would affect retirement annuities. Section IV estimates the effects of minimum rollover provisions. Section V concludes with additional discussion of pension policy and saving behavior.

⁶ Our estimates parallel earlier results by VanDerhei (1992).

II. Patterns of Eligibility and 401(k) Contributions Among U.S. Workers

Defined Contribution plans, and in particular 401(k) plans, have become an increasingly important component of pension coverage for American workers. Beller and Lawrence (1992) reported that the fraction of participants in private pensions who had a primary DC plan increased from 13 percent in 1975 to 32 percent in 1987. Samwick (1993b) used household data from the Pension Provider Survey supplements to the Surveys of Consumer Finances to show that covered workers with a DC plan as the primary or supplemental plan increased from 21.5 percent in 1983 to 39.3 percent in 1989. The fraction of covered workers relying solely on DC plans doubled from 9.5 percent to 19.6 percent during the same period.

A large fraction of this growth comes from the increase in coverage of 401(k) plans. Participants in such plans grew from 17 percent of the covered population in 1984 to 37 percent in 1988 (Silverman, 1993). Among private sector workers who were covered by pension plans in 1993, 35 percent were covered only by a 401(k) plan and another 19 percent were covered by a 401(k) plan in addition to another type of pension plan (U.S. Department of Labor, 1994).

Despite these dramatic changes in DC coverage, Kruse (1991) showed that little of the overall shift was due to actual terminations of DB plans with replacement by a new DC plan.⁷ Using more recent

⁷ Other studies that have analyzed the trend from DB to DC plans include Clark and McDermed (1990), Gustman

data, however, Papke (1995) found some offset of DB for DC plans among smaller employers who are most likely to find DB administrative costs onerous. Still, the majority of 401(k) plans were likely to have supplemented existing DB or DC plans rather than replace them, so workers who neglect to contribute to a 401(k) plan may well be covered under an alternative DB or DC plan.

William Gale of the Brookings Institution has kindly provided a breakdown of 401(k) eligibility and participation status using data from

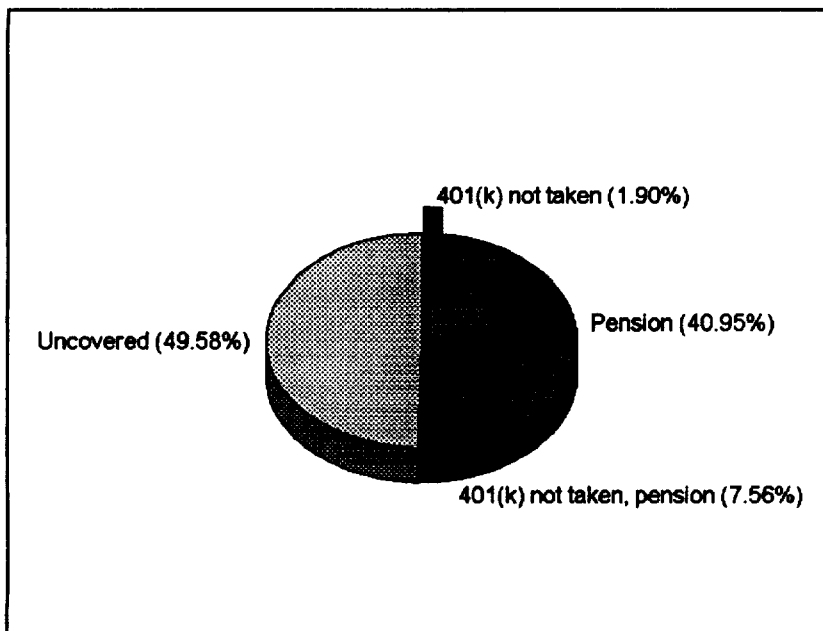


Figure 2: Pension Status of Workers, 1991. Source: SIPP, calculations by William Gale.

and Steinmeier (1992), and Ippolito (1990). Evidence cited in Silverman (1993) suggests a flattening of the trend towards DC plans.

the Survey of Income and Program Participation (SIPP) in early 1991. The SIPP data asks specifically about the existence of a 401(k) plan offered by employers, and then whether the worker participates in the plan.

Figure 1 provides a breakdown of pension status among workers who were full-time or part-time employees in 1991, weighted to be representative of the overall population. Nearly 50 percent of workers were not covered by any pension ("Uncovered"). Another 41 percent were active participants in pensions ("Pension"). This group either had no option of contributing to a 401(k), or if they were eligible, they contributed. The remaining category, comprising 9.5 percent of the working population, was eligible for a 401(k), but did not contribute. The majority of this latter group, 7.6 percent of the workforce, were participating in other DB or DC pension plans, even if they did not contribute to their 401(k) ("401(k) not taken, pension"). Most likely their 401(k) plans were supplemental to their primary (non-401(k)) plan.

The final group, comprising only 1.9 percent of the workforce, were eligible for a 401(k), chose not to contribute, and had no other pension plan available ("401(k) not taken"). Data from the Current Population Survey suggest a somewhat higher percentage, closer to 4 percent of the workforce.⁸ This group is the subject of concern because they are not accumulating pension resources. Note that this

⁸ The CPS data from 1993 is tabulated in U.S. Department of Labor (1994).

figure is a snapshot at a point in time; it is likely that of this group, some fraction will subsequently contribute to a pension fund as they change jobs or as retirement looms larger (just as some now contributing will likely discontinue in the future).

Consider the group of workers who are not active participants in any pension plan. Nearly 50 percent of the workforce cannot be active participants because they are ineligible for a pension, while an additional 2-4 percent are eligible but choose not to participate. Put another way (taking 3 percent as the midpoint estimate), for every 18 workers who are without pensions, only one is neglecting to contribute to his or her 401(k) plan. The other 17 workers simply have no pension plan available to them.

From these calculations, one might be tempted to conclude that concerns by leading financial regulators about 401(k) eligible workers raiding their nest eggs are overblown. There are two factors that could militate against such a conclusion. The first is that workers who are not covered by pension plans may have alternative sources of financial security at retirement, such as a greater amount of private wealth accumulation or generally higher income levels (and consequently higher Social Security payments). Hence, the small percentage of the population who are 401(k) eligible but who do not contribute could in fact be the most likely candidates for destitute retirements, justifying policy concerns about this group. We consider this hypothesis below. The second is that while the 7.6 percent of workers who neglect their 401(k) plans may have alternative pension

plans, those pensions might skimp in providing adequate retirement benefits, meaning that this group would still be at risk for inadequate retirement income. Examining this question requires a more detailed analytical framework that is introduced in the next section.

Returning to the first issue, we would like to examine income and wealth for workers conditional on their pension coverage. The SCF provides the most comprehensive data source for income, wealth, and pension entitlements. We would like to identify workers who are eligible for a 401(k), but who choose not to contribute. Unfortunately, the SCF identifies workers who respond that they are eligible for a pension, but do not participate, so we might expect this group to include more than just 401(k) nonparticipants.

The first row in Table 1 presents the proportion of workers who fall into each of the pension eligibility or participation categories according to the SCF. Of the total number of workers aged 25-64, 4.8 percent of workers are eligible for a pension plan but do not contribute. As noted above this number should (theoretically) be comparable to the 2 percent reported in the SIPP, or the 4 percent in the CPS. However, the SCF questionnaire is less specific in discerning whether the respondent misunderstands the question, or whether the worker is in fact eligible but chooses not to participate.

In Table 1, the third column of Row 1 shows that 38 percent of the workforce is not covered by any pension plan. This number from the SCF seems small relative to other tabulations of pension

coverage.⁹ We also report the fraction of workers covered by any pension plan (58%), the percent with a secondary 401(k) plan (6%), and the percentage with a primary 401(k) plan (6%).

The question remains, are people who neglect to contribute to their 401(k) plan worse off, in terms of wealth or income, than people not eligible for pension coverage? Row 4 of Table 1 reports median income for each of these worker groups after adjusting for differences in age. For those aged 25–44, median income of workers without pension eligibility is \$14,040, while median income for those covered by any pension plan is \$27,000; the highest median income is reported for people with a secondary 401(k) plan, \$35,000 (results are similar for the older workers). Workers who are eligible for pension plans but choose not to contribute have a somewhat lower median income than those who do contribute (\$20,000 versus \$27,000) but have higher median incomes than those who are not eligible for pensions at all (\$20,000 versus \$14,040). For older workers, median income of those eligible but who do not contribute, \$21,000, is closer to median income for pension participants (\$25,000) than for those who are ineligible for pensions (\$12,000). In short, median income for people who eschew pension participation is somewhat lower than those who participate, but it is substantially higher than those who are not eligible for coverage at

⁹ Beller and Lawrence (1992) and U.S. Department of Labor (1994) present more detailed tabulations of pension coverage. Samwick (1993b) discusses the comparability of the SCF data to other surveys. This discrepancy is dealt with explicitly in the simulation framework below.

all. People who neglect to contribute to a 401(k) are likely to experience higher income levels and hence social security benefits at retirement, compared to those not eligible at all for pension coverage.

A somewhat different story emerges for median household net worth, which is measured in the SCF as the sum of all real and financial assets less all household debt. Median net worth for people age 25–44 who are eligible for pensions but don't participate is \$17,300, compared to \$14,100 for those uncovered by pension plans. By contrast, among participants in pension plans, median wealth is \$50,850. It might appear that the decision to not participate in a pension (even when eligible) could reflect differences in saving propensities more generally.¹⁰

In sum, there is little evidence that the group of eligible workers who fail to participate in their pension plans are worse off than the group of workers who are ineligible for pensions. If anything, the group of eligible non-participants have earnings more closely related to those of workers who participate in pensions. On the other hand, the non-

¹⁰ Another comparison is between those eligible but who decline to participate and those with a 401(k) primary plan, the idea being that nearly all pension plans in which participants can decline to participate are 401(k)s. Median net worth is lower for those who do not participate; \$17,300 versus \$48,810 among ages 25–44, and \$72,630 versus \$188,700 among ages 45–64 (Table 1). Once again, it appears that there are systematic differences in wealth accumulation patterns between those who elect 401(k) participation and those who do not, even after controlling for the modest differences in income between the two groups.

participants show a much lower taste for wealth accumulation than their participating counterparts.¹¹

These simple tabulations may mask the possibility that some workers contribute only small fractions of their income to 401(k), so that they appear as pension participants, even though their retirement income prospects are dim. In the next section, we consider the impact of mandatory contributions on the magnitude and distribution of retirement income, using as an example a proposal to mandate a minimum 3 percent contribution rates for any self-directed 401(k) pension plan.

III. Mandating Minimum 401(k) Contributions: A Simulation

What is the impact of mandating that employers (or workers) contribute a specific minimum fraction of their salary to their 401(k)? The answer could depend on a number of factors that affect pension coverage, including age, earnings history, tenure, and the type of plan. We would like to abstract from such issues to isolate the impact of a contribution mandate, holding constant (or integrating over) the wide variety of earnings outcomes among workers, different ages and cohorts, and the composition of their pension. To do this, we use a methodology developed in Samwick (1993a) and extended in Samwick and Skinner (1996) that uses the detailed pension formulas in the PPS

11 Unfortunately, we cannot separately identify people who had a primary pension plan but neglected to contribute to 401(k)s because of the reporting convention of the SCF.

to simulate the distribution of pension entitlements for a representative sample of current workers. Our analysis examines the full distribution of pension entitlements, rather than just the mean, because much of the current policy debate concerns the impact of potential reforms on those workers with the least generous pension entitlements.

We simulate the distribution of pension incomes using the following strategy. Consider a representative individual with average earnings at age 42 in 1989 (\$32,863) and with continuous work experiences from age 31 to age 65. We simulate a total of 2,000 earnings histories assuming that the logarithm of earnings follows a random walk with a quartic drift with age and a 1 percent annual productivity growth.¹² The standard deviation of annual innovations to the logarithm of earnings is conservatively assumed to be 10 percent.¹³

12 The parameters of the drift component of the wage process were estimated from the March 1989 Current Population Survey by regressing the logarithm of annual earnings on age, age², age³, and age⁴ for full-time, white male workers. Murphy and Welch (1990) show that a quartic specification matches the empirical age pattern of earnings more accurately than a quadratic specification using just age and age². More specifically, the quadratic specification overstates the reduction or reversal of real wage growth near retirement. Using such a specification would bias downward DB benefits that are based on the last 3-5 years of nominal earnings.

13 Using a large sample of individual labor market histories taken from the Social Security earnings records of young men, Topel and Ward (1992) find that the evolution of wages within jobs closely approximates a random walk. They estimate the standard deviation of the permanent innovation in log earnings to be about 13

From this set, we randomly assign to each pension plan a number of earnings histories proportional to the population weight of all workers in the sample covered by that plan. In other words, if the weighted number of workers with pension plan A is ten times the number of workers covered by pension plan B, we assign 10 random earnings histories to pension plan A for every one earnings history for plan B.¹⁴

We then calculate the pension entitlements for each plan for all its assigned earnings histories. Because some of the concern over the growth of 401(k) plans is due to the greater responsibility employees must take for investing their pension funds, we also simulate the investment performance of DC plans using historical capital market data from Siegel (1992).¹⁵ For each year of each of the 2000 earnings histories, we randomly assign a year of real asset

percent. Using similar methods but earnings histories of workers of all ages from the *Panel Study of Income Dynamics*, Samwick (1993a) also obtains an estimate of 13 percent.

14 Because the SIPP provides a more accurate estimate of the groups of pension covered workers in Table 1 (No 401(k), Secondary 401(k), Primary 401(k)), we stratify the sample of plans in the PPS by these three categories, use the sample weights from the SCF to get a representative sample of the plans in each group, and then construct a population for each of the three groups in proportion to that groups prominence in the SIPP. The two groups that have 401(k)'s are further split into contributors and non-contributors, with the former contributing 6 percent (the SCF conditional mean rate of voluntary contributions).

15 See Samwick and Skinner (1996) for more detailed discussion of asset returns.

returns from 1900 to 1990 for investments in short term bonds, long term bonds, and stocks.¹⁶ Also associated with each earnings history is a randomly chosen portfolio share that is on average one-third in each asset but varies considerably across earnings histories.¹⁷ By imposing the same share of assets on the individual for the entire length of time, we ensure the greatest degree of variance across workers in their rates of return on their DC plans (i.e. workers do not learn to become better investors over time). The inflation rate is assumed to be 4 percent per year and the discount rate used for computing present values of real dollars is assumed to be 3 percent per year.

In calculating the fractions of people who are eligible for 401(k)s, the fractions who don't contribute, and the fraction who have no other pension plan besides the 401(k), we use the SIPP tabulations reported in Figure 1 above, because the questions in the SIPP pertain more directly to 401(k) plans. We must specify the characteristics of pension plans for those who do not participate because we need to simulate the counterfactual of what would happen in the event of a

16 In order to capture the persistence of shocks to asset returns (e.g. bull and bear markets), we assign the years from 1900 to 1990 to ages in the earnings history at five year intervals and randomize the initial duration at age 31. Assigning ten year intervals had little impact on the results below.

17 The shares are assigned by drawing three random numbers {a,b,c} from a uniform distribution and assigning the shares as: a/z , b/z , c/z , where $z = a+b+c$. For a further discussion of portfolio allocations of pension funds, see Papke (1992).

mandatory 3 percent or 5 percent contribution rate. Because the policy not taken is unobserved in the data, we randomly assign to noncontributors 401(k) plans from among those who do contribute. If the randomly chosen plan is more generous than the spurned 401(k) plan, it will tend to place mandatory contribution limits in a more favorable light.

Simulating the distribution of the resulting pension benefits for a large number of individual workers corresponds to taking the mathematical expectation over four variables: (i) realizations of earnings over the individual's working life, (ii) which of the 800 different types of pension plan he or she is enrolled, (iii) how much the worker contributes to the 401(k) plan, and (iv) the rate of return received by the individual on the DC plan investment. We abstract from any correlation (suggested in Table 1) between lifetime income and the type of plan, amount contributed, or manner in which DC balances are invested. This allows us to compare directly the effects of the mandatory contribution requirements on retirement income, albeit for a universe of "representative" workers with median earnings at age 42.¹⁸

18 See Samwick and Skinner (1996) for a more detailed description of our approach. In that paper, we compared DB and DC plans by simulation using both the "representative worker" approach discussed here, and a more complicated approach that allowed for different types of workers to hold different types of pension plans. In those simulations, there was little difference in our results for the two approaches, suggesting that the "sorting" effects may be of second order importance.

Table 2 shows the percentile distribution of the simulated annuitized pension benefits, for only those eligible for a 401(k). The first column shows the annual actuarially fair pension benefit (in 1989\$) that would result under current pension characteristics, contribution rates, and earnings patterns.¹⁹ The median benefits are \$19,569, reflecting both the real annual 1 percentage point productivity gains assumed in the earnings realizations and the fact that many of these 401(k) eligible workers are also receiving a defined benefit plan (or another defined contribution plan), so they tend to be among the workers with the best pension compensation packages. The top number in the first column, \$0, reflects the absence of *any* pension benefit for the worker whose pension is in the 5th percentile of those eligible for the 401(k). This is because roughly 6 percent of 401(k) eligible workers choose not to participate and have no other pension plan available.²⁰ The 10th percentile annuitized pension benefit, \$5,305, is roughly one quarter of the median pension. By contrast, for

19 All dollar amounts in the text are in constant 1989 dollars. The consumer price index increased by 27.3 percent between March 1989 (the date of the survey) and March 1996.

20 That is, 1.9 percent of all workers choose not to contribute to their 401(k) plan and are otherwise not covered by a pension plan, and one-third of all workers are 401(k) eligible, so of those eligible, roughly 6 percent are assumed to not receive any benefits at retirement. Note that this 6 percent figure is likely to be an overestimate of the true uncovered sector. While 6 percent may not contribute in a given year, it is likely that many will be covered in subsequent jobs.

the (fortunate) 90th percentile worker, the annuitized value of pension benefits is \$47,701. Despite the fact that each of these simulated workers earned \$32,863 at age 42, variations in subsequent (or previous) earnings draws, differences in investment returns and low pension contribution rates, and heterogeneity in the type of pension plan (or combination plan) leads to very large variation in pension income at retirement.

Suppose that a mandatory overall contribution rate equal to 3 percent of earnings were imposed for 401(k)s. For example, if previously the employer had contributed 1 percent and the worker 1 percent, now total contributions must rise to 3 percent.²¹ The impact of such a mandate is shown in Column 2 of Table 2. Not surprisingly, the largest impact of the reform is on those workers with the lowest pension benefits. For the 5th percentile workers, benefits rise from \$0 to \$4,570, a substantial increase in retirement resources. However, the dollar benefits of the 3 percent minimum contribution rule fade rapidly at higher points of the pension income distribution; workers are predicted to gain \$1,332 (25%) at the 10th percentile but only \$309 (2.9%) at the 25th percentile. The largest impact is clearly on those with the least adequate pension plans. Even so, outside of the bottom decile of those eligible for 401(k)s, the magnitude of the effect is not large, with the 5th percentile workers not even attaining the annuitized

21 For the purposes of calculating the retirement income annuity, it does not matter whether the employer or the employee increases the overall contribution rate to 3 percent.

pension income received by the 10th percentile worker under the current law (\$5,305). In the aggregate, mean pension benefits rise by only 1.7 percent.

Column 3 of Table 2 shows how annuitized pension income would be affected by a 5 percent minimum contribution. At the 5th percentile, pension income is increased substantially, from \$0 to \$6,374, while the 10th percentile worker receives pension income that is 56 percent higher than under current law. The increase in pension benefits is quite small for workers above the median pension benefit. But even with the 5 percent mandatory contribution rate, there is still a substantial degree of variation in pension benefits, with the annuitized annual pension income at the 90th percentile more than 5 times the pension income at the 10th percentile. Again, this variation is caused not by inadequate contribution rates, but by differences in earnings realizations, rates of returns on investment, and the type and generosity of 401(k) and other (DB or DC) pension plans held by those who are 401(k) eligible.

To this point, we have not considered possible behavioral responses to the mandatory contribution requirements. One potential response would be for firms to drop their 401(k) plans, either because employers don't want to absorb the additional contribution costs, or because employees don't want to incur a decline in after-tax wages, either through mandatory employee contributions or lower gross wages. Theoretically, it is possible that mandates could *increase* overall pension income inequality if enough firms (or employees) drop

their 401(k) plans in response to the mandate. While little is known about the elasticity of demand (or supply) for such plans, we can measure the magnitude of the behavioral responses under the assumption that total contributions to pension plans remains unaffected. In other words, we hold constant total pension saving by assuming that the probability that firms drop their defined contribution plans is proportional to the increased expense of providing the 3 percent mandated contributions.²² Of course, some workers who no longer are eligible for 401(k) pensions have other pensions available, so they are not left bereft of any pension coverage.

Column 4 of Table 2 shows the impact of these behavioral effects following the imposition of a 3 percent minimum contribution rate. Most of the decline in pension income occurs among those with the least adequate pension coverage (since those are the plans most affected by the mandate). The assumed behavioral effects reduce the estimated gains at the 5th percentile by 10 percent, but at the 10th percentile by roughly 40 percent. Allowing for pension coverage to fall in order to maintain a steady mean pension income under a 5 percent minimum contribution yields a pension income at the 5th percentile equal to \$4,660 (compared to \$4,110 for a 3 percent minimum), implying that increasing the minimum contribution much beyond 3 percent will generate little added security for the bottom of the

22 As noted above, whether the firm drops the plan or whether workers request dropping the plan is irrelevant in this case, although for ease of exposition we refer to firms as the ones dropping coverage.

distribution, given a sufficiently large behavioral response. Note also that the behavioral response assumed here entails reductions in coverage uniformly at all pension income levels; if firms are able to discriminate between high and low income workers, the impact of the minimum contribution would be curtailed among lower income workers even further, leading to a possibly unchanged degree of pension inequality.

The impact of a 3 percent or 5 percent mandated minimum 401(k) pension contribution is similar for the entire sample of all pension-eligible workers, with results shown in Table 3. However, because of the larger universe of workers, the 5th percentile pension benefit under current law is \$2,570 rather than zero. (Four percent of this larger group is not participating in any pension plan.) At higher percentiles of the pension distribution, there is little effect of the mandates. Under the 3 percent mandated contribution, for example, the 25th percentile pension benefits rise from \$9,942 to \$10,166, an increase of only 2.3 percent.

In sum, the mandated pension contribution rules is successful at raising pension income among those at or below the 10th percentile of the pension distribution, but behavioral responses by employers and employees could attenuate or even eliminate these improvements in the distribution of pension income. In the next section, we consider whether a different approach—mandating minimum rollover limits—might have a larger overall impact on pension benefits at retirement.

IV. Mandated Rollover Provisions

In 1990, nearly \$50 billion in pension assets were distributed prematurely, prior to age 59 1/2 (Yakoboski, et. al., 1994a). In the same year, aggregate personal saving was \$175 billion, so the disposition of these pension distributions (whether saved or spent) can have a potentially large impact on aggregate saving. Of these annual distributions, only half are estimated to have been rolled over into qualified retirement accounts such as IRAs; the rest were spent or invested in household durables (such as houses).²³ What would be the

23 The EBRI estimate is that about half of all lump-sum distributions are transferred to a tax-deferred saving account such as an IRA. However, premature distributions are more likely to be small, and smaller lump-sum payments are less likely to be rolled over and more likely to be spent. Hence the fraction of premature distributions rolled over may be smaller than 50 percent, as is also suggested by the EBRI tabulations of the CPS (see Yakoboski, et. al., 1994a). On the other hand, IRS data on tax penalties paid on premature pension distributions in 1991 suggest that \$14.4 billion was distributed prematurely and not rolled into a qualified account (Statistics of Income, Individual Returns, 1991). For further discussion of premature pension distributions, see Chang (1992).

More recent data compiled by EBRI from the April 1993 CPS sheds more light on this issue (Yakoboski, et. al., 1994b). They report that the fraction of people reporting that the lump-sum distribution was used for at least some tax-qualified saving rose from 34 percent at age 31-40 to 62 percent at age 51-60. (Forty-three percent of the older age group contributed *all* of their distribution to tax-qualified saving, with an additional 9 percent placing all of their distributions in non-tax qualified saving.) The fraction reporting that they used some of the distribution for consumption declined from 43 percent at age 31-40 to 23 percent at age 51-60. Also see Hewitt Associates (1992).

impact of a mandated minimum rollover, which for simplicity we will assume to be 50 percent of the lump-sum distribution? This section uses the same large sample of pension plans to examine how such a mandate would affect retirement income.

We assume that the worker changes jobs at age 41 and 51 and holds the third job until age 65, at which point the worker retires. To focus just on the impact of job interruption on pension benefits, and to exclude complicating effects of possible lower wage rates following job separation, we assume that earnings and the type of pension plan are unaffected by the job "switch." In other words, it is as if the worker's pension plan is stopped at age 41 (and 51) and restarted again.

Among all pension-eligible workers, median annual retirement income is \$12,720 when the worker rolls over 100 percent of pension assets into a qualified account, compared to only \$8,530 when the worker consumes all of the lump-sum distributions, or a difference of 49 percent.²⁴ Column 1 of Table 4 presents the distribution of annual pension income under the assumption that half of the (simulated) individuals roll over their entire lump sum distribution into a qualified IRA, which is then accumulated forward using the worker's assigned portfolio allocation and market returns. The other half of workers spend all their lump-sum distributions. Not surprisingly, such

24 This figure is comparable to the 55 percent calculation by VanDerhei (1992), who assumed four jobs rather than the three assumed above.

differences in saving behavior leads to substantially wider variation in pension income; at the 10th percentile of workers (presumably many of whom have spent their lump-sum distributions at age 41 and 51), annual retirement income is only \$2,405.²⁵

Column 2 reports the distribution of annual pension income under the assumption that the half of the population who had previously rolled over nothing now deposit 50 percent of their lump-sum distributions to a qualified IRA account (those who had previously rolled over all their distributions are unaffected by the mandate). The effects are substantial through the entire pension distribution. At the 10th percentile, pension income rises by \$571, or 24 percent, while at the 75th percentile, pension income rises by \$1,480, or 8 percent of initial pension income. The aggregate effects of this policy on average benefits are roughly 5.5 times larger than the impact of a 3 percent minimum contribution rate. Of course, these results are specific to workers who move twice after age 40. More mobility would strengthen the results, less mobility would weaken the results.

25 The 5th percentile of this distribution is zero because, in addition to the 4 percent that do not contribute to their 401(k) (and only) pension plan, there are some defined benefit plans that yield no entitlement if the worker changes jobs several times. Additionally, comparing median benefits of \$12,720 (i.e. complete rollover), with median benefits from Table 3 of \$17,969 for uninterrupted tenure shows the partial impact of job switching on pension benefits from defined benefit plans. Both of these topics are discussed in greater detail in Samwick and Skinner (1996).

Introducing behavioral effects can attenuate the impact of the mandate substantially. Because we have little information on how such a mandate would affect the provision (and enrollment in) 401(k) plans, we assume a 5 percent reduction in DC coverage in response to the mandate. A mandatory rollover of 50 percent attenuates the gains in pension income by 30 percent on average and over 50 percent in the bottom quartile. A 10 percent reduction in DC coverage would leave the lowest 5 percent of the distribution *worse off* than under the status quo. Once again, knowing the magnitude of this behavioral effect is critical in evaluating how such a mandate might affect overall saving behavior.²⁶

V. Conclusion and Discussion

There has been increasing concern over the possibility of workers covered just by 401(k) pension plans neglecting to save for retirement, and finding, too late, that they have insufficient economic resources to fund their retirement. This paper attempted to gauge the importance of this potential problem, and evaluated two possible policy solutions to the problems inherent in 401(k) and other pension plans.

²⁶ We also performed these simulations for just the 401(k) eligible workers, with similar (and more magnified) effects. One potential problem with the simulations as presented above is that we may have insufficient information about lump-sum distributions for DB plans. Yakoboski, et. al. (1994a) suggests that roughly two-ninths of DB plans offer lump-sum distributions for vested workers.

In particular, we considered how mandated contribution rates for 401(k) plans and mandated 50% rollovers of premature lump-sum distributions would affect both the level and distribution of pension benefits in the working population. We found first that the number of people who eschew contributing to a 401(k) plan and who have no other pension coverage is between 2 and 4 percent of the work-force. Second, mandated minimum contribution rates of 3 percent and 5 percent had relatively little impact on retirement income, except among the bottom 5th or 10th percentile of the pension distribution. By contrast, the rollover mandate had a much larger impact on the entire distribution of pension recipients, raising average pensions by more than 5 times the (dollar) impact of the 3 percent mandate. In both cases, behavioral effects—firms or workers may decide to drop 401(k) plans because of mandated contribution or rollover limits—can sharply reduce the impact of these mandates, although we know little about the correct elasticity of demand or supply for pension plans such as 401(k)s.

This paper has focused solely on the level and distribution of retirement income, as if that source of income is the only determinant of financial well-being for the worker. Focusing just on pension income, however, is sure to be too restrictive, since a higher pension income at retirement is likely to be matched by lower disposable income while younger. The problem is that the “counterfactual” is not well-defined: what happens when the dollar not contributed to the

pension fund is instead spent by the worker? As one report conjectured about lump-sum distributions that are spent;

Some consumption, such as home purchase or increased education, may enhance retirement income security. Some consumption may be necessitated by current economic hardship, i.e., a worker is laid off and needs the money to cover his or her family's current living expenses. Other consumption may result from a desire for current gratification combined with a lack of foresight... (Yakoboski, et. al., 1994a, page 3)

If the lump-sum distributions are used to purchase a house or increase education, it is not clear that forcing workers to roll over their accumulated distributions enhances welfare. Even if the objective of the worker is to simply spend the money on a vacation rather than save for retirement, one must still take the position that policy makers in Washington D.C. are in a better position to judge what is the optimal tradeoff between current consumption and retirement income. Alternatively, policymakers must provide a convincing rationale for subsidizing the accumulation of assets for retirement but not for other purposes that might be more valued by the workers themselves. By the same token, a mandate to contribute 3 percent or 5 percent of earnings to a 401(k) will likely be reflected in at least a partial reduction of take-home earnings, and it is not entirely clear what should be the "best" level of saving for retirement given that such saving entails a

reduction in current income.²⁷ We present estimates of the impact of various pension reforms on a narrowly defined measure of pension inequality that is explicitly not a measure of economic well-being over the entire lifetime but is nonetheless informative about the financial security of future retirees.

The calculations presented above have focused on how policy mandates for pension contributions might affect the pension income among the roughly 50 percent of the workforce who are eligible for pensions. Neither mandates of minimum pension contributions, or rollover restrictions, will enhance the pension benefits of the 50 percent of the workforce without any coverage at all, leading to something of a paradox: why the intense concern about 401(k) eligible workers who don't contribute, when many more workers cannot contribute simply because they have no access to a pension plan.²⁸ In other words, the policy proposals evaluated in this paper can, at best, improve pension income for less than 5 percent of workers, but leave the remaining

²⁷ Bernheim (1994), for example, has suggested that most families save only one-third the amount necessary to maintain retirement income.

²⁸ Recent proposals by the Clinton Administration such as the Retirement Savings and Security Act (April 11, 1996) have included new provisions to encourage small businesses to sponsor 401(k) plans.

uncovered workers, comprising half the workforce, entirely unaffected (or even worse off if the incidence of the pension reform affects non-pension workers' income adversely). If the objective of pension policy is to improve retirement income for those with the least generous retirement income prospects, then expanding the base of workers eligible for pensions may be more effective than encouraging eligible workers to contribute more to their pension plans.

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Table 1: Other Financial Resources of Workers by Pension Coverage and 401(k) Enrollment
All Employed Workers 25-64 in 1989

	All Workers	Not Covered by Pension Plan: Eligible	Not Covered by Pension Plan: Not Eligible	Covered by Any Pension Plan	Has Secondary 401(k) Plan	Has Primary 401(k) Plan
% of Workers Age 25-64	100.00	4.74	37.71	57.55	6.25	5.73
% of Workers Age 25-44	100.00	5.17	39.96	54.87	5.87	6.05
% of Workers Age 44-65	100.00	3.89	33.24	62.87	6.99	5.09
Median Income Age 25-44	23,000	20,000	14,040	27,000	35,000	30,000
Median Income Age 45-64	21,000	21,000	12,000	25,000	44,720	24,960
Median Net Worth Age 25-44	34,800	17,300	14,100	50,850	99,850	48,810
Median Net Worth Age 45-64	98,170	72,630	75,140	108,970	149,000	188,700
<p>Notes: 1) Authors' calculations using the 1989 Survey of Consumer Finances 2) Top row is the percentage of the 73.25 million employed workers aged 25-64 described in each column. Other rows are dollars values in 1989.</p>						

**Table 2: Annuitized Pension Income Under 3% and 5% Minimum Contribution Rule to 401(k):
401(k) Eligible Only**

<i>Percentile of Pension Benefits</i>	Current Law	3% Minimum Contribution	5% Minimum Contribution	3% Minimum Contribution, Unit Elastic Pension Demand
5th	0	4,570	6,374	4,110
10th	5,305	6,637	8,272	6,087
25th	10,693	11,002	11,860	10,558
50th (median)	19,569	19,569	19,788	19,442
75th	31,819	31,819	31,861	31,534
90th	47,701	47,701	47,701	47,411
Mean	23,896	24,294	24,768	23,941

Notes:

- 1) Unit Elastic Demand requires that pension coverage is randomly reduced in order to keep mean benefits over all workers (not just those eligible for 401k plans) constant after the minimum contribution is imposed.
- 2) Minimum contribution limits relate to 3% or 5% of gross earnings in each year.

**Table 3: Annuitized Pension Income Under 3% Minimum Contribution Rule to 401(k):
All Pension-Eligible Workers**

<i>Percentile of Pension Benefits</i>	Current Law	3% Minimum Contribution	5% Minimum Contribution	3% Minimum Contribution, Unit Elastic Pension Demand
5th	2,570	4,618	6,035	4,253
10th	5,438	6,340	7,706	5,896
25th	9,942	10,166	11,113	9,941
50th (median)	17,969	17,988	18,341	17,813
75th	30,963	30,963	30,989	30,704
90th	49,076	49,076	49,076	48,862
Mean	23,461	23,775	24,291	23,491

Notes:

- 1) Unit Elastic Demand requires that pension coverage is randomly reduced in order to keep mean benefits over all workers (not just those eligible for 401k plans) constant after the minimum contribution is imposed.
- 2) Minimum contribution limits relate to 3% or 5% of gross earnings in each year.

**Table 4: Restricting DC Rollover Spending:
All Pension Covered Workers Switch Jobs at 41 and 51**

<i>Percentile of Pension Benefits</i>	Current Law: Half of Pre-Retirement Distributions Rolled Over, Half Consumed	50% Minimum Rollover on All Pre-Retirement Distributions	50% Minimum Rollover, 5% Reduction in DC Coverage	50% Minimum Rollover, 10% Reduction in DC Coverage
5th	0	0	0	0
10th	2,405	2,976	2,548	1,980
25th	5,575	6,253	5,915	5,701
50th (median)	10,383	11,817	11,460	11,025
75th	19,044	20,524	20,247	19,799
90th	31,750	33,465	33,175	32,799
Mean	14,531	15,621	15,287	14,930

Notes:

1) In Column 1, half of the simulated individuals spend all their pre-retirement lump sum distributions, while the other half of the simulated individuals roll their distributions into tax-qualified accounts with the same asset portfolio and (random) returns. In Columns 2-4, simulated individuals who previously had rolled over all of their distribution continue to do so, while simulated individuals who once spent their distributions now save half in tax-qualified accounts and spend the other half .