

**AN UPDATE ON 401(K) PLANS: INSIGHTS FROM THE 2007 SURVEY OF
CONSUMER FINANCES**

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Abstract

The maturation of the 401(k) system and the enactment of the Pension Protection Act of 2006, which made 401(k) plans easier and more automatic, were expected to enhance the role that 401(k)s played in the provision of retirement income. So, originally, the release of the Federal Reserve's 2007 *Survey of Consumer Finances* (SCF) seemed like a great opportunity to reassess 401(k)s. But the 2007 SCF reflects a world that no longer exists. Interviews were conducted between May and December, when the Dow Jones was at 14,000 (the peak was October 9, 2007) and housing prices were only slightly off their peak.

Given the collapse of the financial markets and the economy, this paper uses the 2007 SCF data as a starting point in evaluating the condition of 401(k)s and the factors that affect participation and contributions, and relies on more recent data and estimates to paint a full and current picture. The analysis proceeds as follows. The first section describes the evolution of 401(k) plans and how the Pension Protection Act of 2006 would be expected to improve the performance of these plans. The second section uses data from the 2007 SCF and other sources to update previous findings on participation, contribution levels, investments, and withdrawals. The third section explores in more depth how individual characteristics and plan design affect participation and contributions in 401(k) plans. The fourth section then projects how the events of 2008 have affected various aspects of 401(k) plans. The final section concludes that whereas 401(k) plans were showing some improvement in 2007 and the analysis of participation and contribution decisions confirmed the trend toward auto-enrollment and the maturation of the system, the events of 2008 highlight the limitations of 401(k) plans in serving as the only supplement to Social Security.

Introduction

The maturation of the 401(k) system and the enactment of the Pension Protection Act of 2006, which made 401(k) plans easier and more automatic, were expected to enhance the role that 401(k)s played in the provision of retirement income. So, originally, the release of the Federal Reserve's 2007 *Survey of Consumer Finances* (SCF) seemed like a great opportunity to reassess 401(k)s. The SCF is a triennial survey of a nationally representative sample of U.S. households, which collects detailed information on households' assets, liabilities, and demographic characteristics.¹

Of course, the 2007 SCF reflects a world that no longer exists. Interviews were conducted between May and December, when the Dow Jones was at 14,000 (the peak was October 9, 2007) and housing prices were only slightly off their peak. While the economic crisis had already begun, its effects were not yet visible.² Since the time of the interviews, the stock market imploded, reducing the value of equities in 401(k) and IRAs by about \$2 trillion. Housing prices fell by 20 percent. And the crisis has spread to the real economy, throwing millions out of work.³

Given the collapse of the financial markets and the economy, this paper uses the 2007 SCF data as a starting point in evaluating the condition of 401(k)s and the factors that affect participation and contributions and relies on more recent data and estimates to paint a full and current picture. The analysis proceeds as follows. The first section describes the evolution of 401(k) plans and how the Pension Protection Act of 2006 would be expected to improve the performance of these plans. The second section uses data from the 2007 SCF and other sources to update previous findings on participation, contribution levels, investments, and withdrawals. The third section explores in more depth how individual characteristics and plan design affect participation and contributions in 401(k) plans. The fourth section then projects how the events of 2008 have affected various aspects of 401(k) plans. The final section concludes that whereas 401(k) plans were showing some improvement in 2007 and the analysis of participation and contribution decisions confirmed the trend toward auto-enrollment and the

¹ Kennickell, Starr-McCluer, and Surette (2000) describe the *Survey of Consumer Finances* in detail.

² For a useful discussion of the evolution of the economic crisis, see Taylor (2009).

³ U.S. Bureau of Labor Statistics (2009).

maturity of the system, the events of 2008 highlight the limitations of 401(k) plans in serving as the only supplement to Social Security.

The Evolution of 401(k) Plans

The advent of 401(k) plans is still relatively recent. Twenty-five years ago, defined benefit plans (together with certain types of traditional defined contribution pension plans, such as employer-funded profit-sharing plans and money purchase plans) were workers' primary source of private pension coverage. These plans require workers to make almost no important financial choices before retirement. The firm enrolls all eligible workers, makes contributions, makes investment decisions (or retains professional investment managers), and generally provides a lifetime benefit at retirement. The worker's only real choice is when to collect benefits.

When 401(k) plans began to spread rapidly in the early 1980s, they were viewed mainly as supplements to employer-funded pension and profit-sharing plans. Since 401(k) participants were presumed to have their basic retirement income security needs covered by an employer-funded plan and Social Security, they were given substantial discretion over 401(k) choices, including whether to participate, how much to contribute, how to invest, and when and in what form to withdraw the funds.

Over the past 25 years, the pension landscape has remained remarkably unchanged in one respect: less than half of private sector workers – at any moment in time – are participating in any form of employer-sponsored plan (see Figure 1). Since median job tenure for Americans 25 years and older is only five years, many workers will move in and out of coverage.⁴ As a result, more than half of the workforce will end up with some pension accumulations at retirement, but many will find it difficult to ensure continuous coverage.

In terms of the nature of coverage, the landscape has changed dramatically. Whereas, in the early 1980s, most workers lucky enough to work for an employer providing a pension were covered by a defined benefit plan, today most workers have a 401(k) as their primary or only plan (see Figure 2 and Table 1). Yet 401(k)s still operate

⁴ U.S. Bureau of Labor Statistics (2008).

under the old rules. Workers continue to have almost complete discretion over whether and how much to contribute, how to invest, and how and when to withdraw the funds.

Two changes have occurred since pension experts and policymakers first began assessing the effectiveness of 401(k)s as a mechanism for retirement saving. First, time has passed, so an increasing proportion of workers have spent most of their work lives covered by a 401(k) plan. Second, Congress has enacted legislation and the U.S. Department of Labor has issued regulations to make 401(k) plans more effective.

The Passage of Time

Because 401(k) plans were introduced relatively recently, the passage of time is an important consideration when evaluating their success in terms of balances.⁵ Figure 3 shows the relationship between the length of time in a plan and accumulations for a hypothetical male worker who contributes 6 percent per year and enjoys an employer match of 3 percent.⁶ Participants need to be in plans for a substantial period of time to accumulate meaningful balances. The passage of time alone would be expected to produce a more favorable picture of 401(k) performance in 2007 than in 1995.

The Pension Protection Act of 2006

Over the past 10 years, policymakers and business leaders came to recognize the challenges inherent in 401(k) plans and began to take steps to make the plans easier and more automatic. Many of these efforts built on a series of studies by behavioral economists who demonstrated that inertia plays a major role in how workers participate and invest in 401(k)s.⁷ The lessons learned by individual employers were reflected in the provisions of the Pension Protection Act of 2006 (PPA).⁸ The PPA encouraged

⁵ The Revenue Act of 1978, which contained a provision that became Section 401(k) of the Internal Revenue Code, went into effect on January 1, 1980. But employers did not begin to adopt 401(k) provisions until the regulations were issued in November 1981.

⁶ The salary at age 50 is about \$46,000 for the median worker with a pension, according to the 2007 SCF. The real rate of return on a portfolio invested half in equities and half in bonds is assumed to be 4.1 percent (after fees).

⁷ Madrian and Shea (2001); Choi, Laibson, and Madrian (2004).

⁸ Even before the Pension Protection Act, policymakers had attempted to reduce the cashing out of small balances in 401(k) plans through changes in Department of Labor regulations.

automatic enrollment, fostered automatic increases in deferral rates, and broadened default investment options.

Encouraged automatic enrollment. The major innovation to encourage participation has been automatic enrollment.⁹ Studies show that this simple change in the default increases participation by as much as 41 percentage points.¹⁰ Even after three or four years, the vast majority of those automatically enrolled were still participating.¹¹ The Pension Protection Act removed obstacles that had kept some employers from adopting these arrangements and established a safe harbor whereby employers that adopt automatic enrollment are deemed to have met the “top heavy” and discrimination rules.¹² In 2007, about 36 percent of plans had automatic enrollment provisions, a substantial increase over previous years (see Figure 4).¹³

Sanctioned increases in default contribution rates. One problem with automatic enrollment is that the inertia that makes the approach effective for participation can lock people into low levels of contributions. That is, the typical default contribution rate is 3 percent,¹⁴ and, left on their own, people would tend to stay at this level. Thus, to combat this problem, the PPA, under the safe harbor provisions, encouraged sponsors to increase the deferral percentage by at least 1 percentage point annually up to 6 percent of compensation – or until the employee stops the increases. Sponsors can continue the increases up to 10 percent of compensation.¹⁵

⁹ The government changed the rules in 1998 to allow firms to require workers to “opt out” of a plan, instead of the traditional requirement to “opt in.”

¹⁰ Nessmith, Utkus, and Young (2007); Fidelity Investments (2007); Madrian and Shea (2001).

¹¹ Choi, et al. (2001).

¹² One obstacle for employers was state laws that required employers to obtain an employee’s permission before making payroll deductions. The PPA amended ERISA to preempt state laws that conflict with automatic enrollment provisions. To qualify for the safe harbor, the plan sponsor must enroll employees at a deferral rate of at least 3 percent of compensation, increase the employee’s deferral percentage by at least 1 percentage point annually up to 6 percent of compensation, and provide matching or non-elective contributions for the non-highly compensated of 100 percent on the first 1 percent of contribution and 50 percent on the next 5 percent, for a total match of 3.5 percent.

¹³ The Profit Sharing/401(k) Council of America shows a higher percentage of plans with automatic enrollment than Fidelity Investments (2007) and Vanguard (2008), which report 17 percent and 15 percent, respectively, because its survey contains several large corporations that were leaders in automatic enrollment. All three sources show an increasing trend in automatic enrollment over the past few years.

¹⁴ Profit Sharing /401(k) Council of America (2008).

¹⁵ In addition to addressing the problem of low saving rates due to inertia, auto-escalation also helps increase future saving among individuals who may find it difficult to save more out of their current incomes. For example, see Benartzi and Thaler (2004).

Broadened investment options. The third problem that the PPA addressed was the use of stable value funds or money market funds as the default investment option for automatic deferrals. These funds are safe investments, but, as such, they produce low returns. Given inertia, most individuals remained in these conservative investments. The PPA directed the Department of Labor to issue regulations governing the default investment of assets. In October 2007, the department secretary released a list of “qualified default investment alternatives” that included target date funds (funds that change asset allocation based on a participant’s age), balanced funds (funds with a target risk level appropriate for the plan’s participants as a whole), and managed accounts (accounts managed by an investment service that determines allocations based on age and target retirement date). Plans that place a participant’s defaulted contributions in these investments avoid fiduciary liability; the liability shifts to the participant.

With the passage of the PPA, hopes were high that many of the problems associated with the accumulation phase in 401(k) plans had been addressed. And, indeed, the 2007 *Survey of Consumer Finances* provides some evidence that things were improving.

Participants Making Better 401(k) Decisions in 2007

As noted above, participants have to make decisions at every step in the 401(k) process. They have to decide whether or not to join the plan, how much to contribute, how to invest those contributions, and whether to cash out when changing jobs. Historically, poor decisions have led to low 401(k) balances. The 2007 SCF suggests, however, the steps taken to make 401(k)s easier and more automatic have led to somewhat better outcomes.

Participation

If 401(k) plans are ever to be a reasonable way to save for retirement, individuals with access to a plan need to participate. Levels of non-participation were extremely high in the early days of 401(k)s, but declined to about 25 percent in the late 1990s. The 2007 SCF suggests that the movement to auto-enrollment has begun to improve the

picture somewhat, driving the non-participation rate down slightly, to 20 percent (see Figure 5).¹⁶

Not surprisingly, low-income and younger workers are much less likely to participate than their older and higher-paid counterparts (see Table 2). Unfortunately, delay reduces the likelihood that these workers will be adequately prepared for retirement.¹⁷

Contributions

In 2007, most employees were entitled to contribute \$15,500 on a tax-deductible basis to their 401(k) plan.¹⁸ Workers approaching retirement could contribute another \$5,000 under “catch-up” provisions introduced in 2002. One question is how many workers contribute the maximum. Maximum has to be defined because it is not reasonable to think that a person earning \$20,000 could contribute \$15,500. Defining the maximum as the lower of \$15,500 (\$20,500 if over 50) or 25 percent of salary,¹⁹ the 2007 data indicate that only 8 percent contributed the most they could to their 401(k) plans.²⁰ Not surprisingly, maximum contributions are closely related to income. Less than 2 percent of those earning \$40,000-\$60,000 contribute the maximum, compared with 30 percent for those earning \$100,000 or more (see Figure 6).

It would also be nice to know the percent of participants who contribute at least up to the employer match. Those who do not are essentially leaving money on the table. Unfortunately, such data are not available in the SCF. A study by Hewitt Associates

¹⁶ The SCF data portray a more favorable participation picture than Vanguard (2008), which shows 34 to 35 percent of eligible workers not participating in the plan over the period 2000-2007, and Fidelity Investments (2007), which shows 35 to 37 percent of eligible workers not participating from 2004-2006.

¹⁷ Some critics contend that the lack of participation is not a serious problem because many are covered by their employer’s defined benefit plan. In fact, the 2007 SCF shows that only 22 percent of non-participants are covered by a defined benefit plan, and the majority of these workers are high earners. This means that most low-income and younger workers who choose not to participate are without pension coverage.

¹⁸ The Economic Growth and Tax Relief Reconciliation Act of 2001 increased the contribution rate to \$15,000 in 2006, with the limit indexed for inflation thereafter in \$500 increments.

¹⁹ In 2007, total contributions to the plan (employee and employer) were limited to the lesser of 25 percent of compensation or \$45,000.

²⁰ Most analyses of contribution levels overlook the opportunity to make catch-up contributions, yet these contributions can be an important savings vehicle for plan participants over the age of 50. Excluding the catch-up contribution from the calculation and maintaining a maximum of \$15,500 for all workers, the data show that 8.9%, rather than 7.7%, of all workers contribute the maximum.

finds that 78 percent of 401(k) participants in 2005 contributed enough to maximize their employer match.²¹

Investment Decisions

In addition to participation and contribution decisions, employees have to decide how to invest their money. The investment process requires determining the initial allocation of contributions between stocks and bonds, deciding about investing in company stock, and changing allocations over time with age and market fluctuations.

Diversification. Modern portfolio theory demonstrates that by building a portfolio of securities with differing risk characteristics, an investor can create a more efficient portfolio, one expected to achieve a given level of expected return while minimizing risk. Therefore, a natural concern with 401(k) plans is the extent to which participants hold a mix of stocks and bonds. According to the 2007 SCF, 14 percent of participants held no equity and 28 percent held all their balances in equity; only 58 percent held a mix of stocks and bonds (see Figure 7). Thus, even though new employees are increasingly in target-date and balanced funds, diversification remains a challenge.²²

Investment in company stock. Company stock creates another investment challenge. Concentrating 401(k) investments in company stock means that employees hold a large share of their portfolio in a single stock, which is more risky than a diversified portfolio. Moreover, they concentrate their financial bets on a security directly correlated with their own human capital and earnings. In short, participants with large holdings of company stock expose themselves to unnecessary risk. In 2007, about 11 percent of all assets were invested in company stock (see Figure 8).²³

An aggregate number does not tell the full story, however, since most 401(k) plans do not offer company stock as an investment option. The practice is concentrated

²¹ Hewitt Associates (2006).

²² Both Fidelity Investments (2007) and Vanguard (2008) show that in the wake of the PPA, more participants are using target-date funds, balanced funds, and other life-cycle options today than in the past.

²³ The Vanguard data reported in Figure 8 are consistent with data from Fidelity Investments (2007) and VanDerhei, et al. (2008). Both sources show similar levels and trends in ownership of company stock. In contrast, the Profit Sharing/401(k) Council of America (2008) reports that the percent of retirement assets invested in company stock still remains above 20 percent. The Profit Sharing/401(k) Council of America tends to focus on large companies, where company stock ownership is more prevalent.

among large plans – those with 5,000 or more participants – where company stock accounted for 26 percent of the total.²⁴

Rebalancing. In most instances, it makes sense for individuals to reduce their equity holdings as they age. At first glance, the data suggest that individuals are following this advice, since most data sets show lower equity holdings for older people than younger ones (see Figure 9).²⁵ But it appears that this pattern reflects the fact that people born more recently have chosen to hold more equity than those born in earlier years. Studies that follow people over time reveal very little portfolio adjustment either in response to increasing age or returns.²⁶

Cashing Out

The only way to end up at retirement with significant accumulations is to put the money into the 401(k) account and leave it there until retirement. Cashing out even small amounts – that is, taking money out instead of rolling it over into an IRA or into an employer’s 401(k) – can have a detrimental effect on ultimate accumulations. To discourage cashing out, the federal government has imposed a 10 percent penalty in addition to regular income taxes on any withdrawal before age 59 ½. Employers are also required to withhold 20 percent of any distributions paid directly to recipients. To specifically discourage the cashing out of small amounts, a 2005 Department of Labor regulation requires that employers roll over any 401(k) plan with a value between \$1,000 and \$5,000 into an IRA – unless the separating worker elects to have it cashed out or rolled over into a new 401(k) at his new company.²⁷

The SCF asks participants if they have ever received a lump-sum distribution from a retirement plan and, if so, how much they received and what they did with the

²⁴ Profit Sharing/401(k) Council of America (2008).

²⁵ Fidelity Investments (2007) looks at different age groups, but finds a similar pattern.

²⁶ Ameriks and Zeldes (2004).

²⁷ One problem is that the rollover amounts are placed in money market funds or similar low-risk/low-return investments. Since most of those with low balances are probably young people, many, as a result of inertia, could pass up higher returns on these early accumulations for an extended period of time. Nevertheless, this change should reduce the extent to which people cash out.

money.²⁸ This analysis looks only at the two-thirds of 401(k) participants who took lump-sum distributions when switching jobs and ignores the one-third who kept assets in their former employer's plan.²⁹ Figure 10 shows that 40 percent of participants who received a lump sum did not roll the money over into another tax-deferred savings vehicle.³⁰ Since most of the people cashing out were younger workers with relatively small amounts, the dollar volume of the cash-outs equaled only 16 percent of the assets distributed. The extent of cashing out has shown a downward trend since 2001 (see Figure 10).

Accumulations in 401(k) Plans

Despite the recent improvements, the cumulative effect of earlier 401(k) missteps by individuals has had a major impact on accumulations in their plans. In theory, a typical worker who ends up at retirement with earnings of slightly more than \$50,000 and who contributed 6 percent steadily with an employer match of 3 percent should have about \$320,000. The bottom bar in Figure 11 shows the amounts that the typical worker would have at each age along this path of accumulation.

The SCF reports the actual amount that the typical worker has in his account at each age. In 2004, the typical individual approaching retirement had only \$73,000, far short of the simulated amount. (Note that the reported amounts include holdings in IRAs because these balances consist mostly of rollovers from 401(k) plans.) By 2007, the picture had improved somewhat, most likely because of the strong stock market and the fact that the new cohort of those 55-64 had spent more of their working life covered by a 401(k). Still, actual holdings of \$78,000 for those 55-64 are dramatically lower than

²⁸ The SCF combines lump-sum distributions from defined benefit and defined contribution plans. However, we assume that 90 percent of these distributions come from defined contribution plans because defined benefit lump-sum distributions occur only when the expected value of the benefit is less than \$5,000.

²⁹ Hewitt Associates (2005 and 2009); Hurd and Panis (2006).

³⁰ Two recent studies show a higher percentage of people "cashing out." Copeland (2009) analyzes the *Survey of Income and Program Participation* and finds that approximately 60 percent of those who receive a lump-sum payment cash out at least some of the distribution. Analyzing the same data, Purcell (2009) finds that 54 percent of those who received lump-sum distributions between 2000 and 2006 did not roll over the entire amount.

those simulated for the hypothetical worker. Moreover, those at younger ages do not appear to be on track in their accumulations either (see Figure 11).

In terms of wealth, 401(k) accumulations accounted for only 7 percent of total holdings for the typical household age 55-64 (see Table 3).³¹ Thus, even after nearly 30 years, 401(k) plans account for only a small portion of the wealth of households approaching retirement.

Determinants of Participation and Contributions

This section updates a 2002 study that used the 1998 SCF to explain variations in participation and contributions among households (Munnell, Sundén, and Taylor, 2002). Prior to that analysis, researchers had used either the 1988 and 1993 Employee Benefit Supplements to the Current Population (CPS) or individual plan data to identify factors important to the participation and contribution decisions. The CPS studies confirmed that participation and contributions were positively related to income, education, and job tenure. The evidence also suggested that participation and contributions were negatively related to the presence and generosity of a defined benefit plan. None of the studies, however, had a comprehensive measure of household wealth or any measure of the taste for saving. All the early studies suggested that employees responded positively to the presence of an employer match, but differed on whether the size of the match mattered.³²

Analyses based on the SCF differ from earlier studies in that much more information is available on individuals' pension and non-pension wealth and taste for saving. Although most information is collected at the household level in the SCF, data on pension coverage, employment, and other demographic characteristics are available

³¹ Note the difference between the amounts in Figure 11 and Table 2 arises because the former looks only at individuals with a 401(k) plan, while the latter calculates average wealth for households in the middle 10 percent of the sample of households both with and without a 401(k).

³² Kusko, Poterba, and Wilcox (1998) found little change in either participation or contributions in response to large changes over time in matching provisions. Bassett, Fleming, and Rodriguez (1998) found no evidence that participation rises with the match rate. Papke (1995) showed that participation increases with the level of the match rate, with smaller marginal effects at higher match rates, and that contributions increase markedly as the employer moves from a zero to a positive match rate, with a negative effect at very high match rates. Papke and Poterba (1995) concluded that participation increases with the match rate but found no significant effect on contributions. Clark and Schieber (1998) found a positive effect of the match rate on both participation and contributions, but it is important to remember that their sample contained no firms without a match rate.

for both the head of the household and the spouse/partner. Variables collected at the household level, such as financial wealth, are attributed to both individuals, since each member of a married couple can draw on shared finances.

While the SCF covers about 4,500 households, limiting the focus to those eligible to participate in a 401(k)-type plan reduces the sample to 1,421 non-self-employed individuals in 1998 and 1,780 in 2007. The means of the variables used in the analysis are shown in Table 4. Individuals eligible to participate in 401(k) plans in the SCF are a relatively well-off group, with an average income of \$110,000 and a (non-pension) net worth of \$401,000 in 2007. Still, 20 percent of those eligible chose not to participate in the 401(k) offered by their employer. The following analysis attempts to identify the factors that affect the participation and contribution decisions of individual workers.

The Participation Equations

The first set of equations examines the decision to participate in a 401(k) plan given that the individual is eligible to join, using the 1998 and 2007 SCF. The dependent variable has a value of one if a worker participates in the 401(k) plan and zero if the worker elects not to participate. The explanatory variables include age, income, education, job tenure, household non-pension net worth, the present discounted value of future benefits in the individual's defined benefit plan, and the individual's planning horizon. A short planning horizon is likely to be associated with a lower taste for saving and a smaller probability of participating in a pension plan. The net worth variable could also reflect a taste for saving and be positively related to participation, or in the case of workers who are target savers, it could have a negative sign. In contrast, earlier work, which shows a negative relationship between participation and the presence of a defined benefit plan, suggests that wealth in the form of a defined benefit pension would discourage participation. That is, workers who anticipate that their defined benefit plan will provide adequate retirement income will be less likely to participate in a second plan.

The model is estimated using a probit; the results are presented in Table 5. The values reported in the table are the change in the probability of participation of a one-unit change in a continuous variable or the shift in a dichotomous variable from zero to one. For example, if job tenure in 1998 increases by one year from the mean (9.9 years), the

probability of participating increases by 0.9 percentage points. Alternatively, if the employee has a short planning horizon, the probability of participation decreases by 8.5 percentage points.

Overall, the results confirm earlier findings. In both 1998 and 2007, age, income, tenure, and education are associated with an increase in the probability of participating in a 401(k) plan. The importance of other variables, however, has shifted between the two surveys. Variables that reflect a taste for saving – non-pension wealth and a short time horizon – were important explanatory factors in 1998 but not in 2007.³³ This shift is not surprising; in the wake of auto-enrollment, individuals' taste for saving would be expected to be much less important, as everyone is automatically signed up for the plan. The other shift is the individual's response to coverage under a defined benefit plan. In 1998, both coverage under a defined benefit plan and defined benefit wealth had a large and statistically significant negative impact on the probability of joining a 401(k) plan. In 2007, the effect of defined benefit wealth remains negative, but coverage under a defined benefit plan is positive and statistically significant. The most likely explanation is that sponsors had frozen many defined benefit plans and replaced them with 401(k)s, automatically rolling over employees from one plan to another. The question is whether one sees the same shifts in the importance of saving preferences and defined benefit coverage when examining contribution rates.

The Contribution Equations

The contribution equations attempt to identify the factors that influence the percent of income that those who choose to participate contribute to a plan. This equation, which is estimated on those eligible individuals who choose to participate, includes the variables described above plus three plan characteristics: the existence of an employer match, the level of match, and the ability of workers to borrow against the plan.³⁴ Access to funds before retirement would clearly be expected to have a positive effect on the contribution rate.³⁵ The existence of an employer match in a 401(k) plan

³³ A planning horizon of four years or less is considered short in this context.

³⁴ We do not attempt to correct for selection bias arising from the fact that individuals who choose to participate are a non-random sub-sample of those who are eligible to contribute.

³⁵ Of course, if employees borrow and fail to repay the loan, they will lose retirement protection.

would be expected to encourage contributions, because it produces a large initial return on the employees' contribution that supplements the advantages of tax deferral. Given some match, the size of the match could have a positive or negative effect on the employee contribution depending on whether the substitution or income effect dominates.³⁶

The results of the contribution equations are presented in Table 6, and they are straightforward to interpret, since the equations are estimated using ordinary least squares (OLS). Moreover, since the equations include both plan information as well as individual characteristics, the variables explain a substantial amount of the variation in contribution rates across employees.³⁷

The plan variables are critical to the contribution decision. The ability to borrow increases the contribution rate by about 1 to 1.5 percentage points. The employer match also has a significant impact, although the complexity does not become apparent until the match rate is broken down by level of match. The pattern is extremely interesting. In both 1998 and 2007, a match rate of up to 50 cents on the dollar increases the contribution rate significantly – 4.6 percentage points in 1998 and 2.5 percentage points in 2007. As the match rate per dollar rises to the \$.50 - \$1 range, the impact appears to have shifted over time. In 1998, the higher match was associated with a higher employee contribution rate; in 2007, the relationship was negative. Match rates in excess of dollar-for-dollar reduced contribution rates in both years, but the effect was far larger in 2007. It is difficult to interpret these results. On the one hand, they may mean that participants act like target savers; if the employer contributes more, employees contribute less. Alternatively, the shift in the relationship over time may be the result of the spread of auto-enrollment. If the most progressive companies – those with the most generous

³⁶ At a higher match rate, the household is able to enjoy greater consumption in all periods. This will reduce current period savings. But it will also decrease the cost of future consumption in terms of current consumption foregone, which will lead the household to substitute current for future consumption.

³⁷ While the SCF provides information on wealth and tastes not available elsewhere, it suffers from lack of information about 401(k) plan characteristics *for those who do not choose to participate in their employer's 401(k) plan*. Thus, it is not possible to include information about the availability and level of employer match and the potential for access to funds in the participation equation. As a result, the equation explains somewhat less of the variation in participation than other studies. The SCF does provide plan information for those who do participate in a 401(k), and therefore the contribution equation can include plan data as well as individual characteristics.

matches – are the most likely to automatically enroll, which brings in new participants at low contribution rates, then relationship between the employer contribution and the employee rate would be negative.

In terms of the non-plan variables, age and education now appear to have a positive effect on the contribution rate. This finding may reflect the maturation of the system – that is, early on, mainly young people were participating; now all ages participate, and contribution rates reflect the increasing interest in saving as one ages and understands the reality of retirement. Having a defined benefit pension does not affect the contribution rate in either 1998 or 2007. It appears that once an employee decides to participate, the wealth in a defined benefit plan does not have a significant impact on the contribution rate.

In summary, the results from the participation and contribution regressions are consistent with earlier studies. At the same time, the shift in the importance of some variables between 1998 and 2007 reflects a weakening of the link between individual characteristics and action in the wake of automatic enrollment. The results also confirm that plan design is important. Offering the ability to borrow and providing a lower match rate – perhaps to a higher base – would likely increase the contribution rate. The final section of this paper moves from the 2007 SCF to 2009 to examine the impact of the financial crisis on 401(k) plans.

The Effect of the Financial Crisis

If this update focused solely on data through 2007, it would have concluded that 401(k) plans were functioning somewhat better – slightly more people were participating, participants were investing less in company stock, and cashing out was becoming less of a problem. These favorable developments were reflected in an increase in 401(k) balances.

Unfortunately, in 2008, financial markets collapsed, highlighting the risk associated with 401(k) plans. The decline in equity values cut 401(k) balances by about 30 percent. Moreover, the collapse in financial markets has spread to the real economy. Millions of people lost their jobs, putting enormous financial pressure on families. This pressure led to an increase in hardship withdrawals, although they remained at relatively

low levels. At the same time, the retrenchment of consumers forced many corporations – faced with the alternative of laying off workers – to cut back on their 401(k) match.

Decline in Equity Values

Over the year following the peak of the stock market (October 9, 2007-October 9, 2008), all major stock indices plunged by about 40 percent.³⁸ During this period, the value of equities in retirement accounts declined by almost \$4.0 trillion (see Table 7). Individuals were sheltered from the immediate impact of the \$1.7 trillion of losses in defined benefit plans. But they did experience a direct hit on the \$2 trillion in losses that occurred in 401(k)s and IRAs.

As noted earlier, participants in 401(k) plans approaching retirement held about two-thirds of their balances in equities. As a result, the market value of assets in 401(k)s/IRAs tumbled by about 30 percent. That decline means that the median 401(k)/IRA holdings were \$56,000 at the end of 2008, compared with the reported figure of \$78,000 from the 2007 SCF (see Figure 12).

Employer Match

A second way the financial crisis impacted 401(k) plans is through its effect on the real economy and employers' inability to make matching payments. Although employers are not obligated to make contributions to 401(k) plans, the vast majority of participants – 91 percent – belong to plans that offer a match.³⁹ The probability of a company match increases with plan size, but a match is fairly prevalent across the board. The most common employer match is 50 cents for each dollar contributed by the employee, with the match ending when employee contributions equal 6 percent of

³⁸ The Dow Jones Industrial Average fell 39 percent, Standard and Poor's fell 42 percent, and the broadest gauge of market activity – the Wilshire 5000 – fell 42 percent.

³⁹ Matching contributions are a common feature of 401(k) plans because plan participation and contributions are voluntary. Workers must decide whether or not to participate and how much to contribute, which is very different from traditional pensions where eligible workers are covered automatically and the employer makes contributions on their behalf. Because the plan's tax benefits are especially valuable to high-paid employees with high marginal tax rates, the government was concerned that only high-paid employees would join. Thus, the Internal Revenue Code requires that 401(k) plans meet a special non-discrimination test to ensure that lower-paid as well as higher-paid workers join the plan. The employer's matching contribution is an important tool to ensure broad participation and ample contributions.

earnings. The employer match encourages both participation in the plan and a higher level of employee contributions.

As the recession gained momentum in 2008 and companies came under severe earnings pressure, they began to announce suspensions of their 401(k) matches. This response mirrored what happened in the wake of the 2001 recession, when about 15 large companies stopped matching employee contributions. Once again, the automobile companies led the way, with Ford, General Motors, and Chrysler suspending the match for their salaried employees. But suspensions at Sears, FedEx, UPS, Sprint, and about 45 other companies so far have affected large numbers of employees (see Table 8 and the CRR website for a complete list to date).

The question is the impact that these suspensions will have on participation and contributions. Inertia suggests that the vast majority of people enrolled in 401(k) plans will not leave. Fewer new employees might join, but with little hiring, the impact is likely to be small. On the contribution side, inertia is also likely to result in unchanged employee contributions. Thus, without the employer match, employees will see less going into their 401(k) accounts.

The seriousness of the current suspensions of employer matches will depend on whether more firms follow suit and whether the suspensions are a temporary or permanent phenomenon. If, as was the case in the wake of the 2001 recession, the suspensions are temporary, the effects will probably be modest and must be compared with the impact of the other ways firms could have responded. For example, cutting the employer match may have been an alternative to cutting payrolls by 3 percent. On the other hand, if these suspensions lead to a permanent decline of the employer match, significantly fewer people will participate – especially among the lower paid – and many of those affected will end up with an inadequate retirement income.

Loans and Hardship Withdrawals

In most 401(k) plans, participants can borrow up to 50 percent of their balances (up to a maximum of \$50,000), and they can take money out (with a penalty before age

59 ½) in the event of a hardship. Reasons for hardship withdrawals include purchasing a primary residence, educational expenses, medical expenses, or general financial pressures. The percent of participants with loans has remained remarkably constant over time at about 15-20 percent (see Figure 13).⁴⁰

In contrast to loans, hardship withdrawals have increased somewhat. By the end of 2008, about 1.7 percent of participants had withdrawn funds because of financial pressure (see Figure 14). If the current recession continues for an extended period of time, many more individuals may be forced to use their retirement savings to cover current expenditures. Such a trend would further erode the retirement security of many employees who have already seen their 401(k) balances reduced substantially by the financial collapse.

Conclusion

The 2007 SCF suggests that 401(k) plans were starting to function better. With the spread of automatic enrollment, a slightly higher percentage of workers were joining the plans, and with the automatic default into qualified investments, more participants were diversified. Balances were up due to the passage of time, steady contribution rates, and less leakage from the system.

An analysis of participation and contribution decisions using the 1998 and 2007 SCF confirm the changing 401(k) environment. Savings taste variables – such as a long planning horizon and amount of non-pension wealth – were important in 1998 when the participation decision was left up to the individual; by 2007, given the spread of auto-enrollment, these variables no longer had a statistically significant effect on the probability of an individual participating in a plan. Moreover, with the upsurge in plan freezes, coverage under a defined benefit plan, which had a significantly negative effect on participation in 1998, had no effect on participation in 2007.

On the contribution side, the maturation of the 401(k) system is reflected by the growing importance of age and education. When coverage applied primarily to new

⁴⁰ The Vanguard data are consistent with analysis from the SCF that shows in 2001, 14 percent of participants in defined contribution plans offering loans had one or more. This percentage rose to almost 16 percent in 2004 before falling back to 14 percent in 2007. For participants with an outstanding loan in 2007, the mean balance was \$8,571, according to Vanguard. According to the SCF, the mean balance was \$6,607 and the median balance was \$4,700.

employees, participant contribution rates were relatively homogeneous. But as participants spent more time in the plans, contribution rates appear to increase with awareness about and proximity to retirement. The contribution equations also show an interesting pattern with respect to the employer match. Low match rates encouraged contributions in both 1998 and 2007. By 2007, however, the relationship between high match rates and the employee contribution was negative and large. It is not clear whether this relationship reflects individuals acting as target savers or merely is the result of progressive (high match rate) companies adopting automatic enrollment, which extends coverage at low match rates (at least initially).

Despite the maturation of the 401(k) system and improved participation and investment decisions, the typical individual approaching retirement had only \$78,000 in 401(k)/IRA holdings. Then the financial markets collapsed, and the collapse spread to the real economy. Balances in 401(k) plans lost 30 percent of their value, reducing the median for those approaching retirement from \$78,000 to \$56,000. In addition, companies started cutting back on the employer match, and hardship withdrawals, while still at low levels, ticked upward. These events occurred just as the baby boom began approaching retirement, with an increasing number reliant on 401(k) balances as their only supplement to Social Security – a role for which 401(k)s were never intended.

The question arises whether the time may have come to consider returning 401(k) plans to their original position as a third tier on top of Social Security and employer-sponsored pensions. Given the demise of traditional employer pensions, such a rearrangement would require a new tier of retirement accounts. This additional protection would be helpful to those reliant solely on Social Security and to those with 401(k) plans where – for one reason or another – balances end up being very modest.

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Table 1. *Percent of Workers with Pension Coverage by Type of Plan, 1983-2007*

	Defined Benefit only	Defined Contribution only	Both
1983	62%	12%	26%
1989	46%	32%	21%
1992	44%	40%	16%
1995	29%	56%	15%
1998	23%	60%	16%
2001	23%	61%	16%
2004	20%	63%	17%
2007	17%	63%	19%

Source: Authors' calculations based on the 1983-2007 SCF.

Table 2. *Participation of Eligible Workers in 401(k) Plans by Income and Age, 2007*

Age	Thousands of dollars					
	<\$20	\$20-40	\$40-60	\$60-80	\$80-100	>\$100
20-29	31.1%	58.4%	81.3%	90.4%	55.0%	*
30-39	53.9%	73.2%	79.6%	93.0%	83.1%	97.9%
40-49	57.0%	73.7%	83.0%	84.0%	84.0%	93.7%
50-59	60.7%	79.6%	92.6%	90.1%	80.9%	93.6%
60-64	*	71.4%	92.1%	*	89.2%	85.4%

* Fewer than 100 observations.

Source: Authors' calculation based on the 2007 SCF.

Table 3. *Wealth of a Typical Household Approaching Retirement, 2007*

Source of wealth	Amount in dollars	Percent of total
Primary house	\$138,580	20%
Business assets	15,901	2
Financial assets	29,578	4
401(k)/IRAs ^a	50,451	7
Defined benefit	122,137	18
Social Security	298,917	44
Other nonfinancial assets	20,971	3
Total	676,535	100

^a Includes thrift savings plans and other defined contribution plans.

Note: The "typical household approaching retirement" refers to the mean of the middle 10 percent of the sample of households headed by an individual aged 55-64.

Source: Authors' calculations based on the 2007 SCF.

Table 4. *Weighted Means of the Variables, 1998 and 2007*

Variable	Weighted means			
	1998		2007	
	Eligible for savings plan (N=1421)	Participates in savings plan (N=1057)	Eligible for savings plan (N=1780)	Participates in savings plan (N=1299)
Age	41.88	42.16	44.20	44.85
Years of education	13.95	14.05	14.18	14.39
Job tenure (years)	9.91	10.40	10.09	11.26
Short planning horizon ^a	0.51	0.47	0.50	0.46
Income	\$67,424	\$72,212	\$109,624	\$117,449
Non-pension net worth	\$184,065	\$198,141	\$401,192	\$435,311
Has DB pension	0.30	0.24	0.23	0.26
DB pension wealth ^b	\$105,121	\$104,677	\$221,656	\$235,212
Employer has match rate		0.73		0.79
Employer match rate (average)	...	0.65	...	0.69
0 to .49	...	0.20	...	0.19
0.5 to 1.0	...	0.40	...	0.50
More than 1.0	...	0.13	...	0.11
Can borrow	...	0.71	...	0.70
Participant's contribution rate	...	6.60	...	7.07
Participation in 401(k) plan	0.72	1.00	0.80	1.00

^aShort planning horizon is a dummy variable that takes the value of one if the individual's planning horizon is less than four years.

^bFor those with defined benefit plan.

Source: Authors' calculations based on SCF (1998 and 2007).

Table 5. *Probit Estimates of the Probability of Participating in a 401(k) Plan*

Variable	Equation 1		Equation 2	
	1998	2007	1998	2007
Age				
25-34	0.136 (2.08)	0.082 (1.91)	0.131 (2.03)	0.089 (2.08)
35-44	0.174 (2.67)	0.099 (2.21)	0.171 (2.65)	0.108 (2.42)
45 or older	0.129 (1.85)	0.084 (1.69)	0.130 (1.90)	0.096 (1.90)
Log of income	0.072 (3.05)	0.084 (4.64)	0.072 (3.13)	0.081 (4.48)
Job tenure	0.009 (5.07)	0.012 (5.96)	0.010 (5.20)	0.012 (5.92)
Years of education	0.010 (1.57)	0.011 (2.31)	0.010 (1.51)	0.010 (2.14)
Log of non-pension net worth	0.022 (2.53)	-0.007 (-1.15)	0.021 (2.42)	-0.007 (-1.20)
Has DB pension	-0.130 (-3.06)	0.066 (2.11)	-0.129 (-3.04)	0.063 (2.02)
Log of DB pension wealth	-0.018 (-4.88)	-0.010 (-3.39)	-0.018 (-4.95)	-0.010 (-3.33)
Short planning horizon	-0.085 (-3.13)	-0.036 (-1.72)	...	...
Planning horizon				
Next few months	...	...	-0.021 (-0.49)	-0.053 (-1.59)
Next year	...	...	-0.061 (-1.29)	0.031 (0.91)
Next few years	...	...	Omitted	Omitted
5 to 10 years	...	...	0.046 (1.37)	0.01 (0.50)
Longer than 10 years	...	...	0.093 (2.48)	0.049 (1.61)
Pseudo-R squared	0.126	0.125	0.128	0.130

Note: T-statistics are in parenthesis below each variable's marginal effect.

Source: Authors' calculations based on SCF (1998 and 2007).

Table 6. *Ordinary Least Squares Estimates of the Percentage of Earnings that Employees Contribute to a 401(k) Plan*

Variable	Equation 1		Equation 2	
	1998	2007	1998	2007
Age				
25-34	-0.439 (-0.47)	0.375 (0.60)	-0.660 (-0.73)	0.712 (1.24)
35-44	-0.829 (-0.88)	1.294 (1.98)	-1.052 (-1.17)	1.458 (2.49)
45 or older	-0.486 (-0.50)	1.413 (2.02)	-0.765 (-0.84)	1.558 (2.44)
Log of income	0.284 (1.38)	0.289 (0.95)	0.120 (0.57)	0.135 (0.47)
Job tenure	0.03 (1.73)	0.0187 (0.86)	0.0282 (1.63)	0.0196 (0.96)
Years of education	0.010 (0.16)	0.278 (3.60)	0.010 (0.16)	0.222 (3.00)
Log of non-pension net worth	0.385 (4.07)	0.301 (3.32)	0.429 (4.83)	0.269 (3.21)
Has DB pension	-0.481 (-0.83)	0.260 (0.32)	-0.862 (-1.65)	0.681 (0.87)
Log of DB pension wealth	0.048 (0.91)	0.059 (0.80)	0.060 (1.27)	0.025 (0.35)
Employer has match rate	1.899 (5.80)	-1.262 (-2.81)	...	...
Match rate				
0 to .49	...	...	4.631 (10.85)	2.451 (3.77)
0.5-1.0	...	...	1.397 (4.15)	-1.988 (-4.69)
More than 1.0	...	...	-0.743 (-2.05)	-4.209 (-9.30)
Can borrow	1.32 (4.14)	1.434 (4.93)	1.158 (3.88)	1.224 (4.59)
Short planning horizon	-0.791 (-2.68)	-0.167 (-0.47)	-0.816 (-2.97)	-0.0838 (-0.26)
Constant	-2.648 (-1.240)	-5.260 (-2.06)	-0.844 (-0.40)	-2.439 (-1.06)
R squared	0.122	0.103	0.245	0.234

Note: T-statistics are in parenthesis below each variable's coefficient.

Source: Authors' calculations based on SCF (1998 and 2007).

Table 7. *Equity Declines in Retirement Plans, from October 9, 2007 to October 9, 2008, in Trillions of Dollars*

Type of Plan	10/9/2007	10/9/2008	Decline
Defined contribution plans	\$4.7	\$2.7	\$2.0
IRAs	2.0	1.1	0.8
Private defined contribution plans	2.6	1.5	1.1
Federal government plan ^a	0.2	0.1	0.1
Defined benefit plans	4.2	2.4	1.7
Private defined benefit plans	1.8	1.0	0.7
State and local plans	2.4	1.4	1.0
Total	8.8	5.1	3.7

^aThe federal government holdings are those in the Thrift Savings Plan.

Note: Figures may not add to totals due to rounding. Also, this figure varies slightly from that in Munnell and Muldoon (2008) due to changes in the way the Flow of Funds estimates equity holdings and the valuations of firms' market value. Further details can be found in U.S. Board of Governors of the Federal Reserve System (2008).

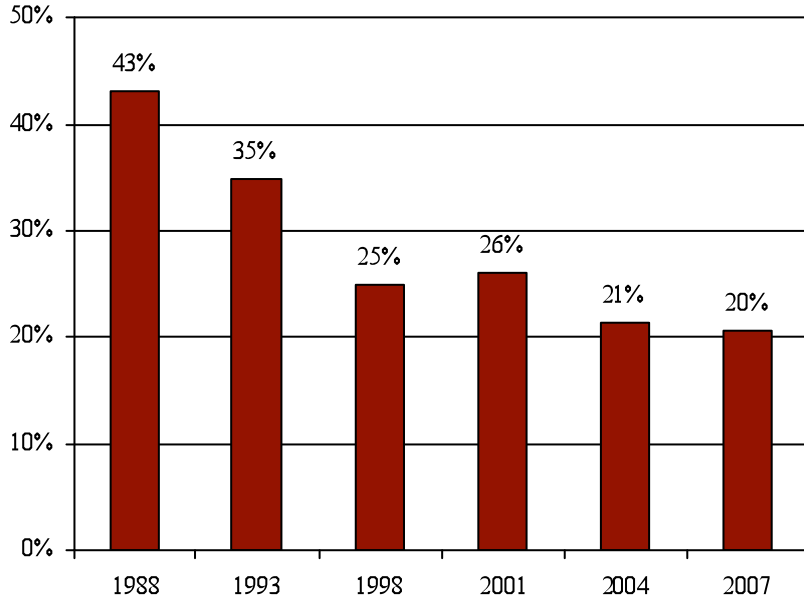
Source: Authors' updates based on Munnell and Muldoon (2008); and U.S. Board of Governors of the Federal Reserve System (2008).

Table 8. *Sample of Companies Suspending Employer Match, 2008-2009*

Company	Announcement date	Employees affected	Comments
Sears Holding Corp.	December 2008	305,081	Suspended February 2009; will review when financial performance improves.
FedEx	December 2008	115,330	Suspended February 2009; will review when business environment improves.
UPS	February 2009	100,368	Suspended February 2009, will review.
Sprint	January 2009	79,321	Suspended for a minimum of one year starting March 2009; will review.
Chrysler LLC	February 2009	32,900	Suspended February 2009; will review.
General Motors	October 2008	32,000	Suspended November 2008; will review when return to profitability.
Motorola	December 2008	30,076	Suspended January 2009; will review when business environment improves.
Ford Motor Companies	November 2008	22,600	Suspended for 2009; no decision made about reinstatement.

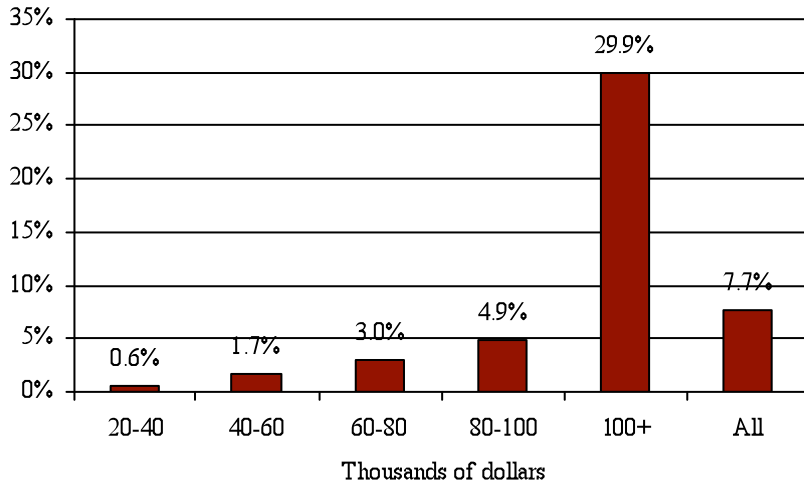
Source: Newspaper reports; conversations with companies; and Form 5500 filings. For full citations, please contact authors.

Figure 5. *Percent of Eligible Workers Not Participating in 401(k) Plans*



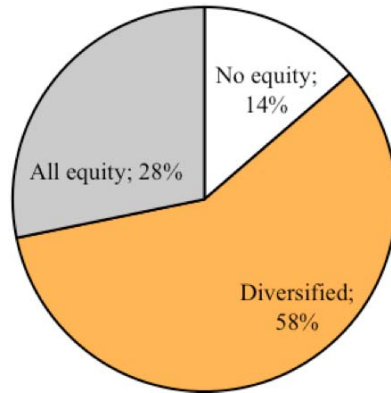
Source: U.S. Bureau of Labor Statistics, *Labor Force Statistics from the Current Population Survey* (2003); and authors' calculations based on 1998-2007 SCF.

Figure 6. *Percent of Participants Making Maximum Contributions, by Earnings, 2007*



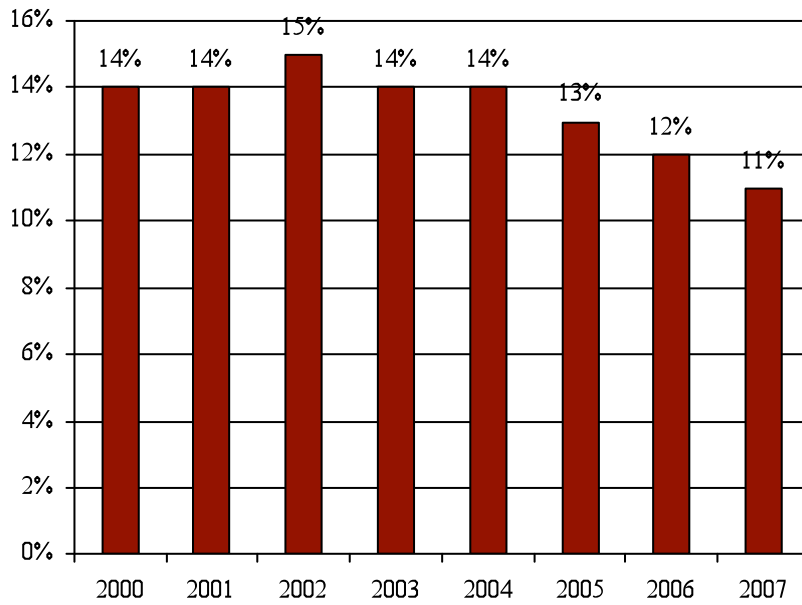
Source: Authors' calculations based on the 2007 SCF.

Figure 7. *Participants by Equity Holdings, 2007*



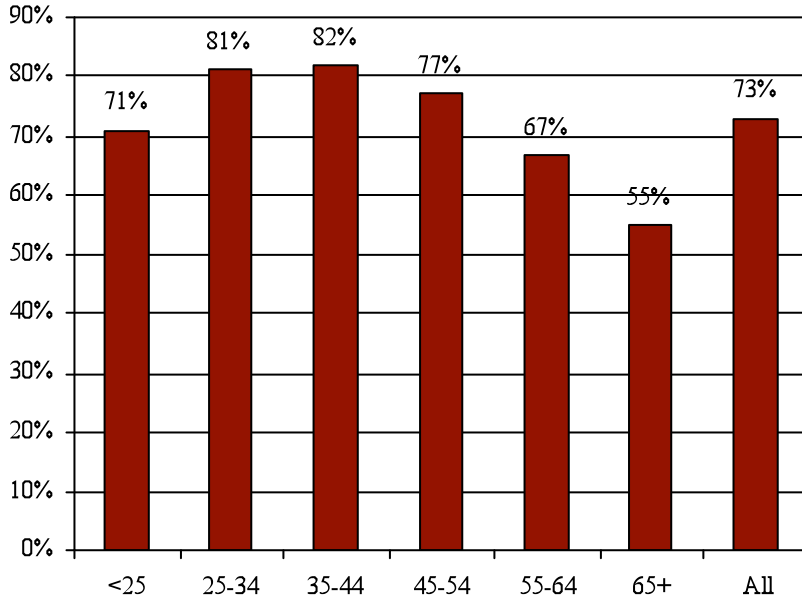
Source: Authors' calculations based on the 2007 SCF.

Figure 8. *Company Stock as a Percentage of 401(k) Assets, 2000-2007*



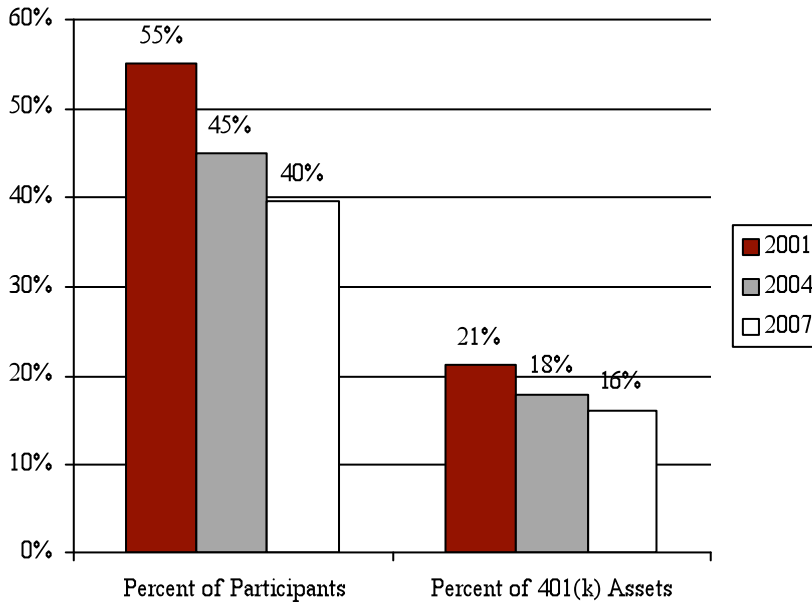
Source: Vanguard (2008).

Figure 9. *Percent of 401(k) Balances in Equities by Age, 2007*



Source: Vanguard (2008).

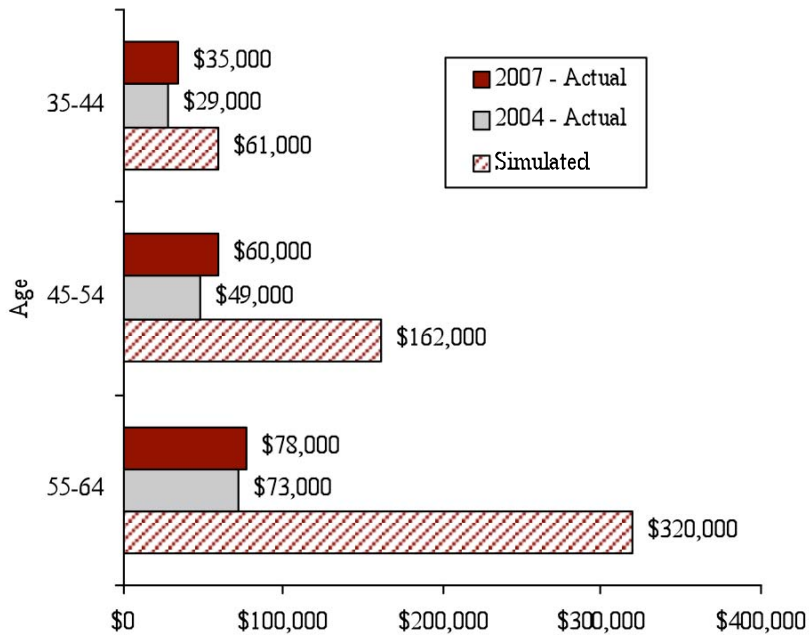
Figure 10. *Percent of Participants with Lump-Sum Distributions Who “Cash Out” and Percent of Distributed Assets “Cashed Out,” 2001, 2004 and 2007*



Note: This figure looks at only those who took a lump-sum distribution when switching employers and does not factor in those who switched jobs but left assets in their former employer’s retirement plan.

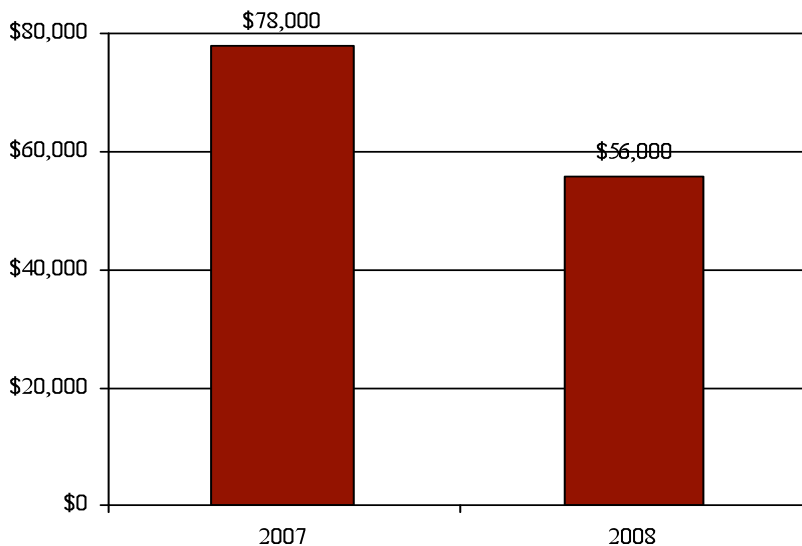
Source: Authors’ calculations based on the 2001, 2004, and 2007 SCF.

Figure 11. *401(k)/IRA Actual and Simulated Accumulations of Individuals with 401(k) Plans, by Age Group, 2004 and 2007*



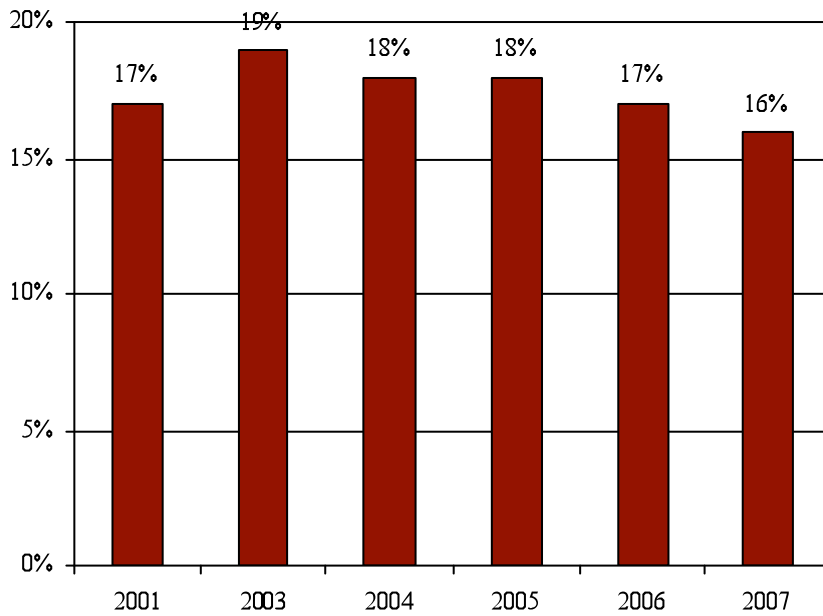
Note: Sample excludes individuals who only have IRA wealth. 401(k) holdings alone would have been \$25,000 for 35-44 year olds, \$45,000 for 45-54 year olds, and \$60,000 for 55-64 year olds.
 Sources: Munnell and Sundén (2004 and 2006); and authors' calculations from the 2007 SCF.

Figure 12. *401(k)/IRA Balances of Household Heads Approaching Retirement Before and After the Stock Market Decline*



Note: Figure assumes that 55-64 year olds have 67 percent of their assets in equities (Vanguard 2008) and shows the hypothetical change in the balance based on the 42 percent drop in the Dow Jones Wilshire 5000 from October 9, 2007 – the peak of the stock market – to October 9, 2008.
 Source: Authors' calculations from the 2007 SCF; Vanguard (2008); and Wilshire Associates (2008).

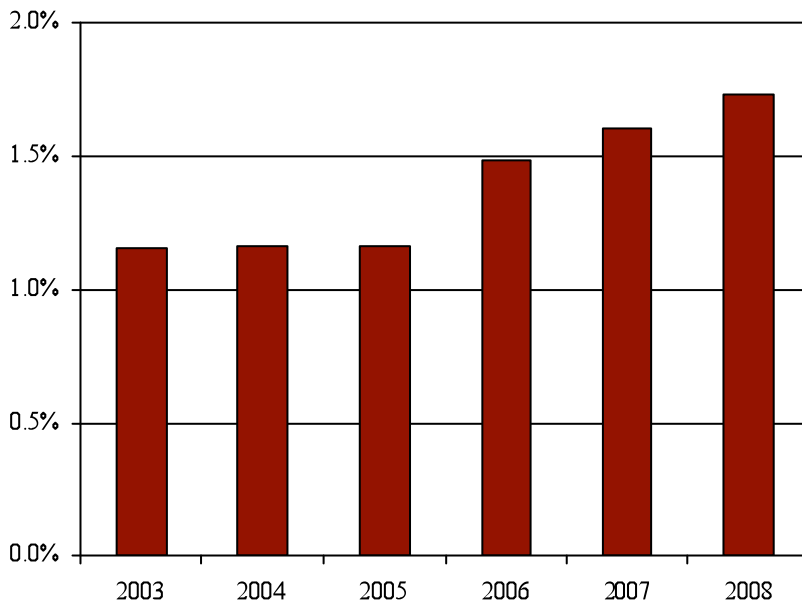
Figure 13. *Percentage of Defined Contribution Plan Participants with Loans, 2001-2007*



Note: Includes only participants in plans that offer loans.

Source: Vanguard (2002-2008).

Figure 14. *Percentage of Participants Taking a Hardship Withdrawal, 2003-2008*



Source: Authors' calculations; and Vanguard Center for Retirement Research (2009 forthcoming)

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