

VI. Our Children’s Burden: Generational Conflict and Solidarity in 21st-Century Employment and Retirement

The Challenge of Providing Retirement Security through Defined Contribution Plans: Evidence from Simulated Lifetime Projections

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Introduction

Employer-sponsored pensions represent an important component of retirement income. Since the early 1980s, while the percentage of workers participating in a pension plan has remained flat across the private sector work force, pension coverage has seen a noticeable shift away from “traditional” defined benefit (DB) plans, in which workers typically accrue benefits based on years of service and earnings, toward defined contribution (DC) plans, in which participants accumulate balances in personal accounts. DC plans provide participants tax-preferred savings vehicles, portability, and the transparency of known account balances. However, they shift many key responsibilities and risks of saving for retirement from employers to employees. Under such plans, workers may receive limited or no contributions from their employers, spend accumulated savings prior to retirement, or choose not to participate in a pension plan at all. Workers typically manage the investment of plan assets throughout their lives, a risk that was brought into stark focus by the stock market decline from late 2007 to early 2009. DC plans present the possibility that participants, even those lucky enough to be offered a plan through most of their working career, may arrive at retirement with low retirement savings, plus the additional responsibility and risk of managing those savings to make them last throughout retirement. Potential reforms to Social Security to address that program’s long-term solvency could reduce benefits for future retirees, possibly increasing the future role of DC plans, as well as other personal savings, in providing retirement income.¹

This paper examines recent levels of savings in DC plans and projects balances for younger workers likely to retire in the 2050s.² Part of our original analysis used the 2004 Survey of Consumer Finances (SCF). The stock market and the economy have since undergone tremendous upheavals; while stock market indexes are trading at similar levels today as in late 2003, balances for DC participants may have changed sharply depending on how much workers had saved prior to the 2007–2009 crash, with different implications for retirement for workers of different ages. Even using the 2004 survey, we found that, regardless of the age of the individual, and at most income levels, DC account participation was low, and the account balances of workers participating in DC plans were modest. Because DC plans have become prominent retirement savings vehicles for only a portion of the careers of today’s retirees or workers near retirement, we also perform simulations of DC-plan account accumulation for a generated sample of young workers over their careers. Our projections indicate that DC plans could replace, on average, about 22 percent of annualized career earnings at retirement, but with projected replacement rates varying widely across income groups and with changes in certain assumptions.

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Background on Employer-Sponsored Pensions

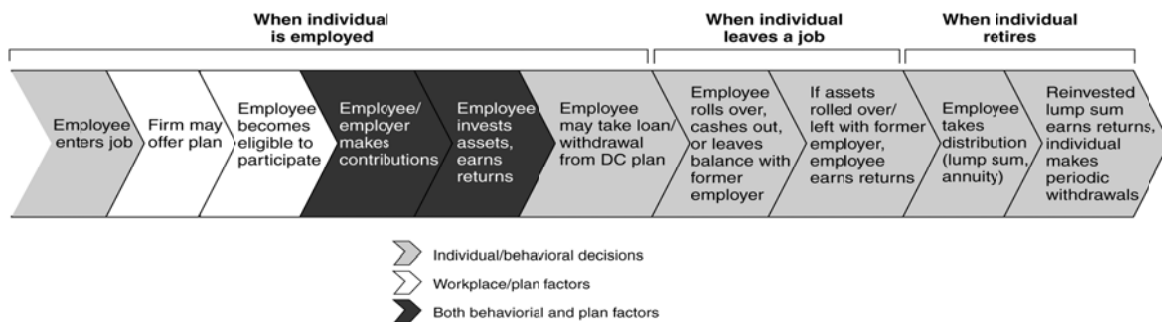
Employer-sponsored pensions fall into two major categories: DB and DC plans. DB plans pay benefits that are typically set by formula, with workers receiving benefits upon retirement based on the number of years worked for a firm and earnings in years prior to retirement.³ In DC plans, workers accumulate savings through contributions to an individual account. (Hence the distinction between the plans, with one defined by the benefit at retirement and one defined by the contributions while working.) These accounts are tax-advantaged in that contributions are typically excluded from current income, and earnings on balances grow tax-deferred until they are withdrawn.⁴ An employer may also make contributions, either by matching employee's contributions up to plan or legal limits, or on a noncontingent basis.

Like DB plans, DC plans operate in a voluntary system, with tax incentives for employers to offer a plan and for employees to participate. Contributions to and earnings on DC plan accounts are not taxed until the participant withdraws the money, although participants making withdrawals prior to age 59½ may incur an additional 10 percent tax.⁵ According to White House estimates, the projected tax expenditure from the exclusion of contributions to certain DC plans will amount to \$65.7 billion in 2009 and rise to \$100 billion by 2013.⁶ In addition, the government offers a nonrefundable tax credit to qualifying low-and middle-income workers who make contributions, the saver's credit.⁷

Most DC plans are types of cash or deferred arrangements (CODA), in which employees can direct pretax dollars into an account, along with any employer contributions, with contributions and returns growing tax deferred until withdrawal. The 401(k) plan is the most common feature, covering over 85 percent of active DC participants. DC plans offer workers a degree of control over their retirement asset management, in that workers can often decide on their contribution amounts, how the money is invested, and how much to withdraw.⁸ Savings in DC plans are portable in the sense that a participant may keep plan balances in a tax-advantaged account upon leaving a job, either by rolling over plan balances into a new plan or an IRA, or in some cases by leaving money in an old plan.⁹ Workers may have access to plan savings prior to retirement, through either loans or withdrawals; participants may find such features desirable.

Each of the potential benefits of DC plans carries a flipside risk. Control over participation and contributions means that many workers do not participate, or they contribute very little. Investment choice also carries investment risk, particularly for those that overinvest in risky stocks close to retirement. Hidden fees may erode savings accumulated in DC plans.¹⁰ Access to preretirement savings in DC plans for withdrawals or loans may lead to lower retirement savings and possible tax penalties. DC plans also present risks for retirees in decisions they make about how to receive and manage the decumulation of their plan assets. Annuitization among workers with DC plans is rare, meaning that almost all retirees depending on savings in DC plans must manage account withdrawals to last throughout retirement.¹¹ Figure 1 illustrates the major factors and decision points that can affect the benefits ultimately provided by a DC plan.

FIGURE 1
Mechanics of Accumulating Retirement Savings in DC Plans



Source: GAO

DB plans, which offer benefits set by formula and place funding and investment responsibility on the employer, have their own unique risks. Participants in DB plans, including retirees, may see their expected benefit drop from plan freezes or the termination of underfunded plans.¹² While DB plans offer longevity insurance by paying benefits as an annuity, private sector benefits are rarely indexed to inflation, and hence the value of the benefit declines over time. While DB benefits typically are insured by the Pension Benefit Guaranty Corporation (PBGC), events of this decade, and particularly in the last year, have brought into question PBGC’s long-term solvency. The agency recently announced a net financial condition, roughly its assets less the current value of future benefit obligations it owes to participants of terminated plans, of -\$21.9 billion for its insurance programs as of September 30, 2009. Table 1 summarizes some of the primary differences between DC and DB plans.

TABLE 1
Key Characteristics of Defined Contribution and Defined Benefit Plans

	Defined contribution plans	Defined benefit plans
What determines the level of benefits?	Contributions into a personal account and the return on assets.	A formula, typically based on years of service and salary history.
What does the employee have to do to participate and earn benefits in the plan?	May require waiting for eligibility and sign-up by employee. Participants may need to work up to 6 years to fully vest in employer matching contributions	Eligibility and participation are typically automatic. Those working at least 1,000 hours a year earn years of service toward benefits. Participants may need to work for up to 7 years to fully vest in benefits.
How are contributions made?	Typically, employee decides how much to contribute from current wages; employer may also contribute.	Typically by employer only, except in some public sector plans.
Who manages assets and assumes risks of investing?	The employee, in most plans.	Plan sponsor; private benefits are PBGC-insured up to certain limits. ¹³
What happens to benefits when employee leaves the job?	Can be left in plan, rolled over to an IRA, or cashed out (often with a penalty if done before age 59½)	Sometimes unavailable until beneficiary reaches specified retirement age.
Are benefits insured?	No	Yes, subject to guarantee limits offered by the PBGC.

Over the past three decades, by most measures DC plans have become the dominant type of private sector employee pension. According to Department of Labor statistics, in 1980, private DB plans had 38 million participants and DC plans had 20 million. DC participation in private plans first exceeded that of DB plans in 1992, and as of 2006 DC plans had 79.8 million participants, with 42.1 million in DB plans. Further, over 82 percent of private sector DC participants in 2006 were active participants (in a plan with their current employer), while over half of DB participants had separated from their sponsoring employer or retired. According to the Employee Benefit Research Institute (EBRI), among families with an employer pension, from 1992 to 2007, coverage in an employer-sponsored pension plan remained almost completely flat in around 40 percent of households, yet the type of plan coverage shifted markedly toward DC plans and away from DB plans. In 1992, 37.5 percent of households covered by a plan had only a DC plan in 1992; by 2007, this figure grew to 60.3 percent, while over this same period, coverage in a DB plan among those with any plan fell from 62.5 percent to 39.7 percent of households.¹⁴ DB plans had more assets than DC’s as recently as 1995, but as of the second quarter of 2009, DC plans had \$2.8 trillion in assets while DB plans had \$1.9 trillion. In addition, assets in IRAs, accounts that are also tax protected and include assets from rolled-over balances from employer-sponsored plans, measured over \$3.7 trillion.

Retirement Savings Adequacy

There is little consensus about how much constitutes “enough” savings to have going into retirement. We may define retirement income adequacy relative to a standard of minimum needs, such as the poverty rate, or to the consumption spending that households experienced during working years.¹⁵ Some economists and financial advisors consider retirement income adequate if the ratio of retirement income to preretirement income—the replacement rate—is between 65 and 85 percent. Retirees may not need 100 percent of preretirement income to maintain living standards, for several reasons. Retirees will no longer need to save for retirement, retirees’ payroll and income tax liability will likely fall, work expenses will no longer be required, and mortgages and children’s education and other costs may have been paid off. However, some researchers cite uncertainties about future health care costs and future Social Security benefit levels as reasons to suggest that a higher replacement rate, perhaps above 100 percent or higher, would be considered adequate.¹⁶

To achieve adequate replacement rate levels, retirees depend on different sources of income to support themselves in retirement. Social Security benefits provide the bulk of retirement benefits for most households. As of 2006, annuitized pension benefits provided 17.9 percent of total income to households with someone age 65 or older, while asset income provided 14.9 percent.¹⁷ Social Security benefits remain the dominant form of income for those 65 and over, accounting for 36.7 percent of total household income and for over 50 percent of total income for 63 percent of households. Table 2 shows estimated replacement rates from Social Security benefits for low and high earners retiring in 2007 and 2055, as well as the remaining amount of preretirement income necessary to achieve a 75 percent replacement rate.¹⁸ These figures give rough guidelines for how much retirement income workers might need from other sources, such as employer-sponsored pensions, as well as earnings and income from other savings or assets.

TABLE 2
Estimated Social Security Replacement Rates for Workers Turning 65
in 2007 and in 2055 (Percent of Career-Average Earnings)

Source of replacement rate income	Year in which a 65-year-old retires			
	2009		2055	
	Low earner	High earner	Low earner	High earner
Social Security	54.0	33.2	49.0	30.1
Replacement from other sources to achieve 75 percent replacement rate	21.0	41.8	26.0	44.9

Source: 2009 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds, Table VI.F10.

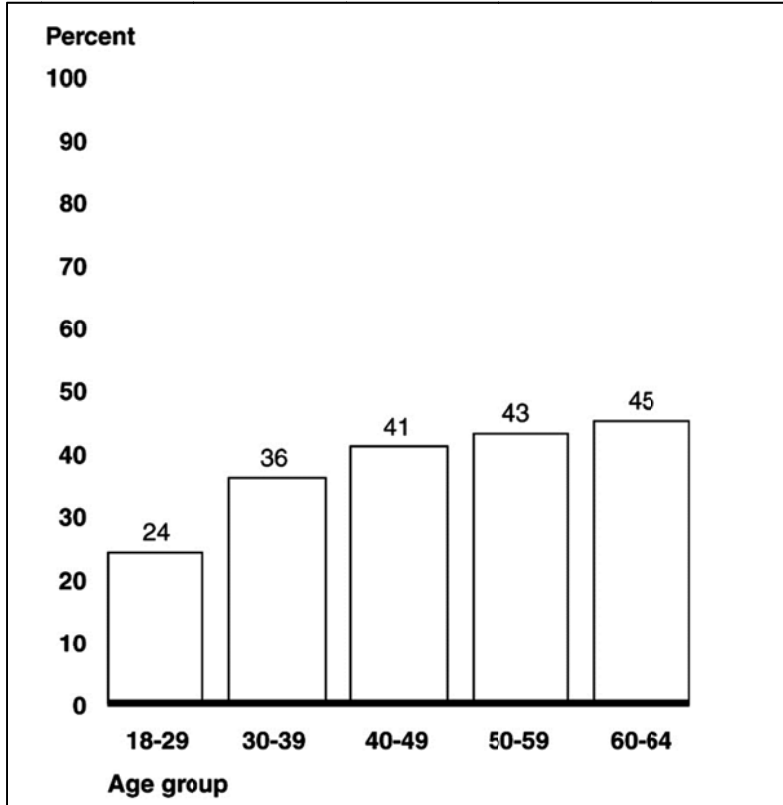
Note: Based on scheduled benefits under intermediate assumptions of Social Security projections. Replacement rates represent benefits as a percentage of career-average earnings for low and high earners.

It is important to keep certain economic principles in mind when evaluating the effectiveness of retirement accounts, or any pensions, in providing retirement income security. First, balances accumulated in a DC plan may not represent new saving; individuals may have saved in another type of account in the absence of a DC plan or its tax preferences. Second, evaluating worker income security should consider total compensation, not just employer contributions to DC plans. All else equal, we should generally expect more generous employer-sponsored pension benefits to lower cash wages and that the split between current wages and deferred compensation is largely a reflection of labor market conditions, tax provisions, and worker and employer preferences.

Analysis of 2004 Survey of Consumer Finances

An analysis of DC plan coverage and account balances using the 2004 Survey of Consumer Finances illustrates starkly some of the fundamental insufficiencies of DC plans in helping workers save for retirement. According to the 2004 SCF, only 36 percent of working individuals were actively participating in a DC plan (Figure 2). Data indicated similar participation rates for working households, as 42 percent of households had at least one member with a current DC plan.

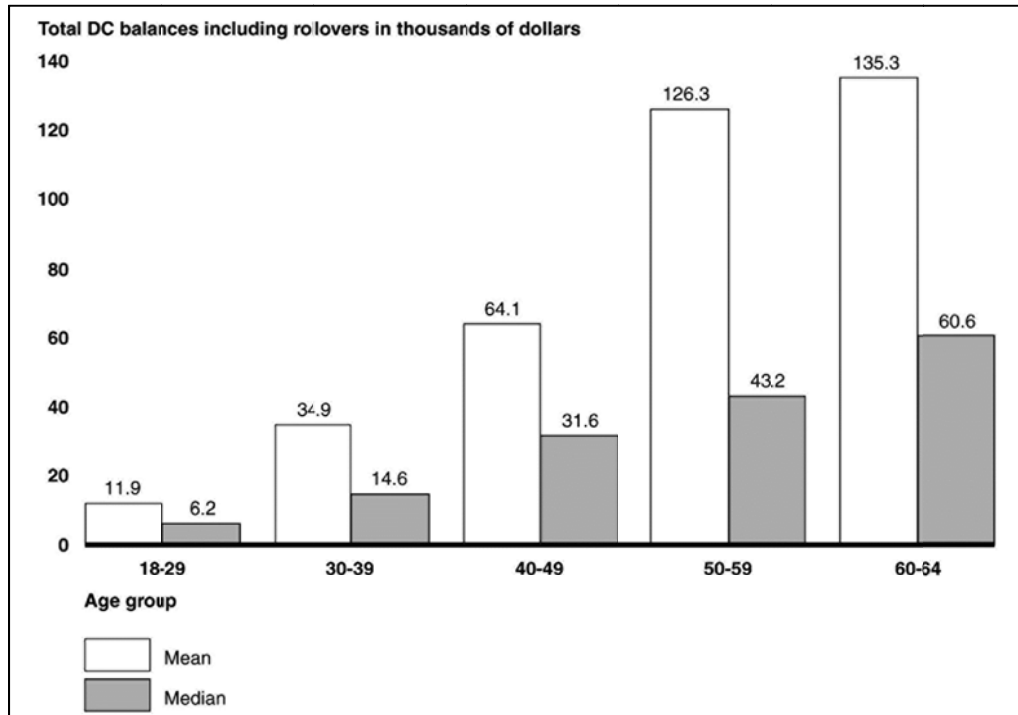
FIGURE 2
 Percentage of Working Individuals Participating in Current DC Plans by Age Group, 2004



Source: GAO analysis of 2004 Survey of Consumer Finances

Even for workers who participated in a plan, overall balances in DC plans were modest, suggesting a potentially small contribution toward retirement security for most plan participants and their households. However, since DC plans were less common before the 1980s, older workers would not have had access to these plans their whole careers. In order to approximate lifetime DC balances when discussing mean and median DC balances in this report, our analysis of the 2004 SCF aggregates the “total balances” of DC plans with a current employer, DC plans with former employers that have been left with the former employer, and any retirement plans with former employers that have been rolled over into a new plan or an IRA.¹⁹ For all workers with a current or former DC plan, the median total balance was \$22,800 (Figure 3). For all households with a current or former DC plan, the median total balance was \$27,940.

FIGURE 3
Total DC Balances for Working Individuals with a Current or Former DC Plan, by Age Group, 2004



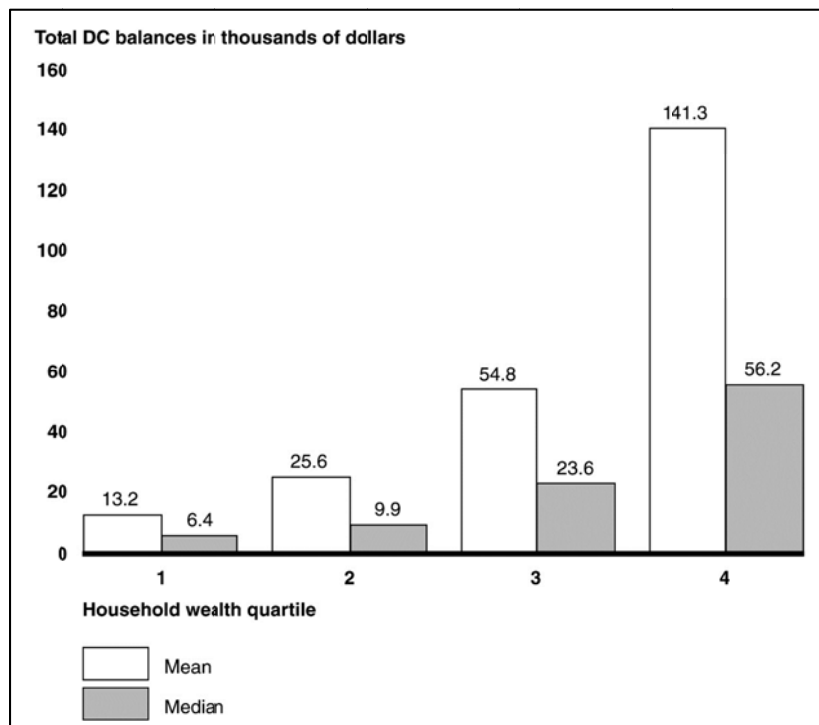
Source: GAO analysis of 2004 Survey of Consumer Finances

The 2004 SCF data also showed very low participation and savings in DC plans among lower-wage workers. Only 25 percent of workers in the lowest income quartile were offered any type of retirement plan by their employer, and among those offered a retirement plan, 60 percent elected to participate, compared with 84 percent among workers of all income levels. Workers in the lower half of the income distribution with either current or former DC plans had total median balances of \$9,420 (Figure 4).

Older workers who were less wealthy also had limited retirement savings. Workers with a current or former DC plan aged 50 to 59 and at or below the median level of wealth had median total savings of only \$13,800.²¹ Workers with a current or former DC plan, aged 60 to 64 and at or below the median level of wealth, had median total savings of \$18,000, a level that could provide at best only a limited supplement to retirement income. If converted into a single life annuity at age 65, this balance would provide only \$132 per month—about \$1,600 per year.

Notably, workers with low DC balances were actually less likely to have a DB pension to fall back on than workers with higher DC balances. Among all workers participating in current or former DC plans, only 17 percent of those in the bottom quartile for total plan savings also were covered by a current DB plan. In contrast, 32 percent of those in the top quartile for total DC savings also had DB coverage. Among all workers with a current or former DC plan, the plan balances for those with DB coverage were higher than for those without DB coverage. The median DC balance for workers with a DB account was \$31,560, while the median DC balance for someone without a DB account was \$20,820.

FIGURE 4
Total DC Plan Balances for Working Individuals with a Current or Former DC Plan, by Household Wealth Quartiles, 2004



Source: GAO analysis of 2004 Survey of Consumer Finances

Leakage

Evidence on leakage, or cashing out accumulated retirement savings for nonretirement purposes, is relatively spotty, but some data show that it adversely affects account accumulation for a small percentage of DC participants, particularly for lower-income workers with small account balances. Participants who withdraw money from a DC plan before age 59½ generally pay ordinary income taxes on the distributions, plus an additional 10 percent tax in most circumstances. Similarly, participants who do not roll their DC plan balances into another tax-preferred account when they leave a job also face potential early withdrawal penalties. As of 2004, 21 percent of households in which the head of household was under 59 had ever received lump-sum distributions from previous jobs' retirement plans. Among these households that received lump-sum distributions, 47 percent had cashed out all the funds, 4 percent cashed out some of the funds, and 50 percent preserved all the funds by rolling them over into another retirement account.²² Workers were more likely to roll over funds when the balances were greater. Among households that had cashed out all retirement plans with former employers, the median total value of those funds was \$6,800. For households that had rolled over all retirement plans with former employers, the median total value of rolled-over funds was \$24,200.²³

Impact of 2007–2009 Financial and Economic Crises on Retirement Security

Of course, the financial and economic world has changed drastically since the 2004 SCF, and even more so from the 2007 survey. The experience of both the stock market and the labor market over the last two years has illustrated in stark terms the downside of this risk. Since the U.S. economy went into recession in December 2007, major stock indexes fell over 50 percent from their peaks late that year until March 2009, and with these contractions DC plan balances fell substantially. According to estimates by the Center for Retirement Research at Boston College (CRR), retirement account losses (including IRAs and the federal

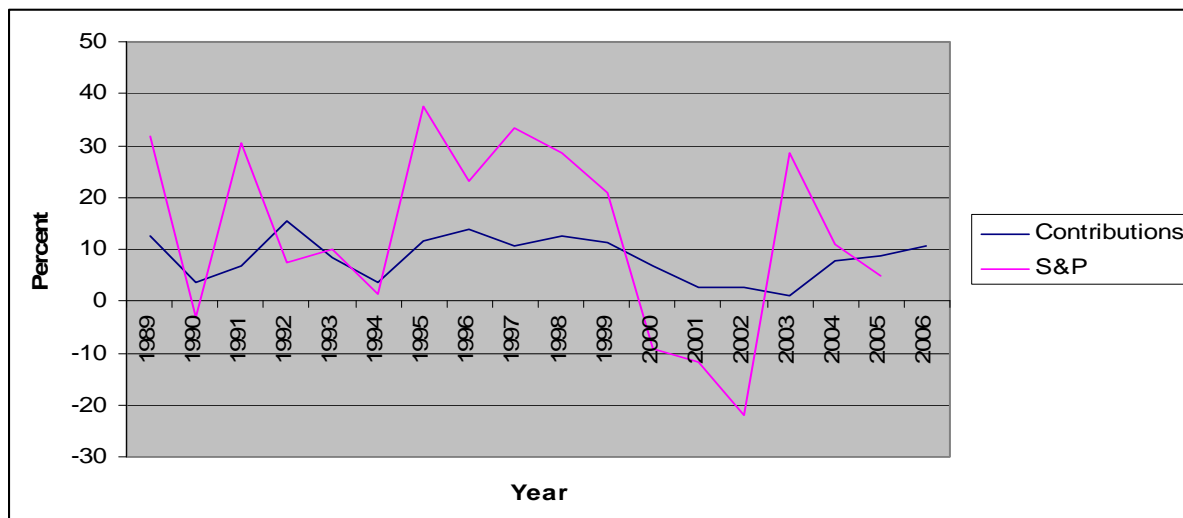
government's Thrift Savings Plan) totaled \$2 trillion in the year following the market's peak in October 2007. Stock markets have since done a remarkable turnaround, regaining over 60 percent of losses, even while the rest of the economy barely creeps out of the recession's trough.

Even though stock market levels are around those of late 2003, about the time the 2004 SCF was conducted, this does not imply that all DC participants' account balances are roughly where they were then (which would be harmful enough, with workers with six fewer years to save before retirement). The impact of the financial crisis depends on many factors, such as precrash account balances, age, and job tenure—in general, older workers and those at their current job longer had higher account balances and therefore have endured higher losses. Still, while lower-income workers may have suffered lower absolute losses, their losses may take longer to recover, especially considering the increased chances of losing a job or losing DC coverage. EBRI estimates that median DC balances for participants with household annual income of at least \$100,000 lost 22 percent, approximately \$22,000 from the time of the 2007 SCF until June 2009. Over that same period, median balances among DC participants for those earning \$10,000 to \$25,000 fell 33 percent, or \$1,300. Similarly, losses for older DC participants were not only larger, but they may be harder to make up given their closer proximity to normal retirement age.²⁴ The CRR estimated a sharp rise in their national retirement risk index, which seeks to measure the share of Americans at risk of falling short of their preretirement standard of living in retirement. By their estimations this index, which has risen steadily since 1983, rose from 44 percent in 2007 to 51 percent in 2009 (compared with 31 percent in 1983, at the onset of the 401[k] era).²⁵

The decline in the stock markets has reduced participant account balances so much because stocks remain the major investment of DC plans. According to EBRI, participants in 2007 held 48 percent of 401(k) assets in equity funds, but also 11 percent in their own company's stock, and another 15 percent in balanced funds, which mix stocks and fixed-income assets.²⁶ Holding company stock in a retirement account carries unique risk since if employee contributions in both plans are largely in employer stock, employees risk losing not only their jobs should the company go out of business, but also a significant portion of their retirement savings; 10 percent of retirement assets in company stock is generally considered to be the maximum any person should hold. About 60 percent of participants offered company stock in their 401(k) held no more than 10 percent of their balances in company stock, but for almost one-fourth of participants, company stock represented 30 percent of the 401(k) balance. However, EBRI reported that, while the relative share of 401(k) money invested in equities has remained stable, the percentage of plan assets invested in company stock has declined steadily since 1999.

In addition to investment losses, reduced contributions over the last two years have reduced workers' DC balances and potential retirement security. According to the CRR, many sponsors of DC plans have reduced or suspended their matching employer contributions in response to the current crisis.²⁷ Plans with over 100,000 participants whose sponsors have suspended or reduced contributions include FedEx, Sears, UPS, and Starbucks, and it is uncertain when or if they will resume. Of course, workers who have lost their jobs face not only suspended employer contributions, but also cannot contribute to their own plans. Further, past declines in asset markets have led to slower growth in DC contributions (see Figure 5). While this result is at least partially driven by lost income and employer contributions, it may also reflect fear among participants of investing when stock prices are falling, despite the common advice to consider retirement saving a long-term endeavor and to pay little attention to short-term market fluctuations. Removing or reducing employer matched contributions may also reduce the incentive for participants to maintain their own contribution levels.

FIGURE 5
Annual Changes in DC Plan Contributions and S&P 500 Index



Sources: Department of Labor; Standard and Poor's.

Despite the severity of losses to existing savings, assuming the economy and markets recover in the near future, we could expect many workers' retirement savings to have suffered little lasting damage to their retirement security. Younger workers, who are less likely to have accumulated large plan balances prior to the market decline, may not need very much time to make up losses. EBRI estimates that, for example, workers age 25 to 34 with a DC plan as of the end of 2007 experienced an *increase* in average account balances over 2008, because for many of these workers' ongoing contributions were more than able to make up for investment losses.²⁸ Further, these workers have many years to make contributions to their DC accounts; the decline in asset prices makes these ongoing contributions cheaper, raising the prospect that younger workers that stick to regular, long-term plan contributions may benefit from the recent financial turmoil. In addition, measures in the Pension Protection Act of 2006 (PPA) may facilitate more widespread use of automatic enrollment, contribution escalation, and default investments that may increase participation, contributions, and investment efficiency in the future.

Simulations of Lifetime Savings in DC Plans

Admittedly, a key reason why we might see low balances in DC plans is the relatively short period of time that workers have been able to save in 401(k) plans. Since the 401(k) did not become widespread until the late 1980s, very few retirees or workers near retirement have participated in these plans for their entire careers. To see how much workers might be expected to save in DC plans over an entire working career, we ran simulations on a hypothetical cohort of workers born in 1990. Simulations of projected retirement savings in DC plans suggest that a large percentage of workers may accumulate enough over their careers to replace only a small fraction of their working income, although results vary widely by income levels and depend on model assumptions. Projected savings allow us to analyze how much workers might save over a full working career under a variety of conditions in a way that analyzing current plan balances cannot, since DC plans have become primary employer-sponsored plans only relatively recently. Baseline simulations of projected retirement savings for a hypothetical 1990 birth cohort indicate that DC plan savings would on average replace about 22 percent of annualized career earnings but provide no savings to almost 37 percent of the working population, perhaps because of different factors—working for employers who do not offer a plan, choosing not to participate, or withdrawing any accumulated plan savings prior to retirement.²⁹ Further, projected DC account balances vary widely by income quartile, with workers in the lowest-income quartile saving enough for about a 10 percent replacement rate, while those in the highest quartile save enough for a

34 percent replacement rate, on average. Assuming changes in certain plan features, individual behavior, or market assumptions, such as increased participation or account rollover rates, increased projected average savings and increased the number of workers who had some DC plan savings at retirement, especially for low-income workers. Other scenarios, such as assuming higher contribution limits or delaying retirement, raised average replacement rates, but with more of the positive impact on higher-income workers and with little effect on reducing the number of workers with no savings at retirement.³⁰ We should note that we would expect the performance of the stock market of the last two years to have little impact on these projections, since they focus on workers who would just be entering the labor force now and would thus have accumulated little in savings. Unless one thinks that stock market returns of 2007 to 2009 change the long-term trajectory of future returns, we would expect little impact on our simulations.

Baseline Projections for DC Balances at Retirement

Our projections show that 1990-cohort workers would save enough in their DC plans over their careers to produce, when converted to a lifetime annuity at the time of retirement, an average of \$18,784 per year in 2007 dollars (see Table 3).³¹ The projections assume that all workers fully annuitize all accumulated DC plans balances at retirement, which occurs sometime between age 62 and 70. Participants always invest all plan assets in life cycle funds, and stocks earn an average real annual return of 6.4 percent. This \$18,784 annuity would replace, on average, 22.2 percent of annualized career earnings for workers in the cohort. Savings and replacement rates vary widely across income groups. Almost 37 percent of workers in this cohort have no projected DC plan savings at retirement, which brings down overall average replacement rates. Workers in the lowest income quartile accumulate DC plan savings equivalent to an annuity of about \$1,850 per year, or a 10.3 percent replacement rate, and 63 percent of this group have no plan savings by the time they retire. In contrast, highest income quartile workers save enough to receive about \$50,000 per year in annuity income, enough for a 33.8 percent replacement rate. Even in this highest-income group, over 16 percent of workers have zero plan savings at retirement. In all cases, our replacement rates include projected savings only in DC plans. Retirees may also receive benefits from DB plans, as well as from Social Security, which typically replaces a higher percentage of earnings for lower-income workers.

Projected household-level plan savings show a higher average replacement rate of 33.8 percent, with about 29 percent of households having no plan savings at retirement. When we assume that plan assets earn a lower average real annual return of 2.9 percent, average replacement rates from DC plan savings fall to about 16 percent for the sample. Under this assumption, workers in the lowest-income quartile receive 7.1 percent replacement income from DC plans, while highest-income quartile workers receive an average 25 percent replacement rate. Lower rates of return affect the percentage of workers with no accumulated DC plan savings only slightly, perhaps because on the margins some participants might choose (or have their employers choose) to cash out lower balances.

Table 3 also shows savings statistics for subsamples of the cohort who have a better chance of accumulating significant DC plan savings, such as those workers who have long-term eligibility to participate in a plan or who work for many years. As expected, these groups have higher projected savings; replacement rates also show more even distribution across income groups, compared to those in the full sample. However, we still see a significant portion of the workers with no DC savings at retirement. First, we limit the sample only to those workers who are eligible to participate in a plan for at least 15 years over their careers. Average replacement rates for this group measure 33.5 percent, with rates ranging from 21.7 percent for lowest-income-quartile workers to 42.3 percent for the highest quartile.³² Even with such long-term eligibility for plan coverage, however, 15.6 percent of these workers, and almost one-third of lowest-income workers, have nothing saved in DC plans at the time they retire. This could result from workers choosing not to participate or from cashing out plan balances prior to retirement.

TABLE 3
 Projected Average Annuity Equivalents and Replacement Rates from DC
 Plan Balances at Retirement, by Income, under Baseline Assumptions

	Overall	By income quartile			
		1	2	3	4
<i>Individual-level results</i>					
Annuity equivalent (per year, 2007 dollars)	18,784	1,850	6,554	16,635	50,098
Replacement rate (percent)	22.2	10.3	18.2	26.3	33.8
Workers with no DC savings (percent)	36.8	63.0	39.8	27.9	16.4
<i>Household-level results</i>					
Annuity equivalent (per year, 2007 dollars)	24,664	4,176	11,918	25,560	57,000
Replacement rate (percent)	33.8	18.7	30.3	40.9	45.5
Workers with no DC savings (percent)	28.8	48.1	30.7	21.8	14.5
<i>Only workers eligible for a DC plan for 15+ years</i>					
Annuity equivalent (per year, 2007 dollars)	29,844	5,133	13,629	30,178	70,437
Replacement rate (percent)	33.5	21.7	30.2	39.7	42.3
Workers with no DC savings (percent)	15.6	32.6	16.6	9.1	4.1
<i>Only those working 25+ years full-time</i>					
Annuity equivalent (per year, 2007 dollars)	25,533	4,447	11,407	25,610	60,668
Replacement rate (percent)	26.5	16.3	23.3	31.7	34.9
Workers with no DC savings (percent)	28.8	46.7	31.8	22.8	14.5
<i>Assuming 2.9 percent real annual return on stocks</i>					
Annuity equivalent (per year, 2007 dollars)	13,803	1,277	4,687	12,145	37,100
Replacement rate (percent)	16.1	7.1	13.0	19.2	25.1
Workers with no DC savings (percent)	37.2	63.3	40.3	28.3	16.7

Source: GAO projections using PENSIM model.

Note: All results are individual level, except as indicated. Model assumptions include the following: 1) workers fully annuitize all accumulated DC plan balances at retirement, between age 62 and 70; 2) participants invest all plan assets in life cycle funds; 3) stocks earn an average annual 6.4 percent real return, except where specified. Replacement rates equal annuitized income from lifetime DC plan savings divided by annualized career earnings. See the appendix for more details.

We also analyze the prospects of workers with long-term attachment to the labor market, for which we use people who work full-time for at least 25 years, without regard to plan coverage or participation. Among these workers, average DC plan savings at retirement account for a 26.5 percent replacement rate. Still, almost 29 percent of these workers have no projected savings. This suggests that while DC plans have the potential to provide significant retirement income, saving may be difficult for some workers who work for many years, even among those whose employers offer a plan.

Effects of Universal Participation and Account Rollovers

Our simulations indicate that increasing participation and reducing leakage out of DC plans may have a particularly significant impact on overall savings, especially for lower-income workers. Of the changes in the model assumptions that we simulated, these had the broadest effect on savings because they not only raised average savings for the entire sample but had a relatively strong impact on workers in the lowest income

quartile and on the number of workers with no DC plan savings at retirement. While these assumptions represent stylized scenarios, they illustrate the potential effect of such changes on savings.

We project DC plan savings assuming that all employees of a firm that sponsors a DC plan participate immediately, rather than having to wait for eligibility or choosing not to participate.³³ In our baseline projections, 6 percent of workers whose employers sponsor a plan are ineligible to participate, and 33 percent of those eligible do not choose to participate; therefore, this assumption significantly raises plan participation rates among workers. Accordingly, average DC savings rise by almost 40 percent, raising average replacement rates to 35 percent, and the percentage of the population with no savings at retirement drops by half, down to 17.7 percent (see Table 4).

TABLE 4
Projected Average Annuity Equivalents and Replacement Rates from DC Plan
Balances at Retirement, by Income, under Different Model Assumptions

	Overall	By income quartile			
		1	2	3	4
<i>Baseline results, individual-level</i>					
Annuity equivalent (per year, 2007 dollars)	18,784	1,850	6,554	16,635	50,098
Replacement rate (percent)	22.2	10.3	18.2	26.3	33.8
Workers with no DC savings (percent)	36.8	63.0	39.8	27.9	16.4
<i>Instant eligibility/participation</i>					
Annuity equivalent (per year, 2007 dollars)	26,265	4,243	11,142	24,370	65,305
Replacement rate (percent)	35.0	25.4	31.3	38.8	44.7
Workers with no DC savings (percent)	17.7	30.0	18.4	13.7	8.6
<i>Participants always roll over balances upon job separation</i>					
Annuity equivalent (per year, 2007 dollars)	20,797	2,428	7,892	18,949	53,918
Replacement rate (percent)	25.6	13.8	22.0	30.1	36.6
Workers with no DC savings (percent)	27.0	48.8	28.1	19.3	11.6

Source: GAO projections using PENSIM model.

Note: See note under Table 3 and the appendix for more details.

Assuming automatic eligibility and participation raises projected plan savings significantly for lower-wage workers, more than doubling the annuity equivalent of retirement savings for the lowest-income quartile. Workers in the highest income group also increase savings under this scenario, with plan savings rising by 30 percent. This change in projected savings suggests that automatically enrolling new employees in plans as a default could have a significant positive impact on DC balances, especially for low-income workers whose jobs offer a plan—although this stylized scenario likely describes a more extreme change in eligibility and participation than plans are likely to implement under automatic enrollment—and that higher participation and savings would raise employer's pension costs, perhaps leading to a reduction in benefits or coverage.

Another stylized scenario we model assumes that all workers who have a DC plan balance always keep the money in a tax-preferred account upon leaving a job, either by keeping the money in the plan, transferring it to a new employer plan, or rolling it into an IRA, rather than cashing out any accumulated savings.³⁴ Eliminating this source of leakage raises average annuity income from DC plans by almost 11 percent and average replacement rates from 22.2 percent in the baseline to 25.6 percent; it also reduces the

percentage of the cohort with no DC savings at retirement by over 25 percent. As with the instant participation scenario, “universal rollover” raises annuity savings and reduces the number of retirees with zero plan savings by the biggest percentages among lower-income workers, suggesting that cashing out accumulated plan savings prior to retirement may be a more significant drain on retirement savings for these groups. These results indicate that policies to encourage participants to keep DC plan balances in tax-preferred retirement accounts, perhaps by making rollover of plan assets a default action in plans, may have a broad positive impact on retirement savings.

Effects of Changing Retirement Decisions or Contribution Limits

Other changes we make in our projections related to plan features or individual behavior affect average replacement rates overall, but with less impact on lower-income workers’ replacement rates and on the number of workers with zero plan savings at retirement. These scenarios include assumed changes in annual contribution limits and retirement decisions (see Table 5).

TABLE 5
Projected Average Annuity Equivalents and Replacement Rates from DC Plan
Balances at Retirement, by Income, Under Different Model Assumptions

	Overall	By income quartile			
		1	2	3	4
<i>Baseline results, individual-level</i>					
Annuity equivalent (per year, 2007 dollars)	18,784	1,850	6,554	16,635	50,098
Replacement rate (percent)	22.2	10.3	18.2	26.3	33.8
Workers with no DC savings (percent)	36.8	63.0	39.8	27.9	16.4
<i>Raise annual contribution limits</i>					
Annuity equivalent (per year, 2007 dollars)	21,056	1,879	6,583	16,999	58,763
Replacement rate (percent)	23.6	10.5	18.3	26.9	38.5
Workers with no DC savings (percent)	36.7	63.0	39.9	27.9	16.2
<i>Workers delay retirement 1 year</i>					
Annuity equivalent (per year, 2007 dollars)	19,873	1,876	6,895	17,826	52,895
Replacement rate (percent)	23.3	10.5	19.0	28.0	35.6
Workers with no DC savings (percent)	36.9	63.5	40.3	27.2	16.3
<i>Workers delay retirement 3 years</i>					
Annuity equivalent (per year, 2007 dollars)	22,710	2,151	7,623	19,897	61,170
Replacement rate (percent)	25.7	12.1	20.7	30.5	39.4
Workers with no DC savings (percent)	36.8	63.1	39.9	28.5	15.7

Source: GAO calculations using projected savings from PENSIM model.

Note: See note under Table 3 and the appendix for more details.

We model projected retirement savings assuming that annual DC contribution limits for employees rise from \$15,500 to \$25,000, and the combined employer–employee maximum contribution level rises from \$45,000 to \$60,000, starting in 2007.³⁵ Higher annual maximum contributions affect projected savings almost exclusively among the highest-income group, indicating that few workers earning less are likely to contribute at existing maximum levels. The highest income quartile replacement rises from 33.8 to 38.5 percent, while replacement rates hardly change in the lower income groups. Similarly, this scenario has almost no impact on the percentage of workers with DC plan savings at retirement.

Finally, we model retirement savings in two scenarios in which workers delay retirement by 1 or 3 years. Encouraging workers to retire later has been suggested as a key element in improving retirement income security, by increasing earnings, allowing more time to save for retirement, and reducing the length of retirement. In our projections, delaying retirement not only provides more years to contribute to and earn returns on plan balances but also might raise annual retirement income because older retirees receive more annuity income for any given level of savings, holding all else equal. In our projections, working longer modestly raises retirement savings in our projections. Working one extra year changes projected annuity income by 5.8 percent, but it has little effect on the percentage of people with no DC savings in our projections. Delaying retirement by 3 years raises annuity income from DC plans by 20.9 percent on average, with replacement rates rising from 22.2 percent in the baseline to 25.7 percent overall.³⁶ The 3-year delay increases annuity levels somewhat evenly across income groups, with higher-income workers showing slightly higher increases. Overall, working an extra 3 years raises average replacement rates about as much as universal account rollover would, but with little reduction in workers with no retirement savings. Thus, while working longer would likely raise workers' incomes, and in most cases retirement benefits from other sources such as Social Security, our projections show that this change alone would have a modest impact on retirement income from DC plans, particularly regarding lower-income workers and those not already saving in DC plans in the baseline.

Conclusions

The DC plan has clearly overtaken the DB plan as the principal retirement plan for the nation's private sector workforce, and its growing dominance suggests its increasingly crucial role in the retirement security of current and future generations of workers. The current DC-based system faces major challenges, like its DB-based predecessor, in terms of coverage, participation, and lifetime distributions. Achieving retirement security through DC plans carries particular challenges for workers, since accumulating benefits in an account-based plan requires more active commitment and management from individuals than it does for DB participants. Since workers must typically sign up and voluntarily reduce their take home pay to contribute to their DC plans, invest this money wisely over their working years, and resist withdrawing from balances prior to retirement, it is perhaps to be expected that even those who have the opportunity to participate save little. While our results on both current and projected plan balances suggest that while some workers save significant amounts toward their retirement in DC plans, a large proportion of workers will likely not save enough in DC plans for a secure retirement.

The current financial and economic crisis undoubtedly lays bare many of the weaknesses of a retirement system that places the responsibility and risk of saving on individuals. The decline in asset values is, at the very least, unsettling to workers who have watched their retirement account balances drop precipitously in the last year and a half and wonder how long it will take them to make up the deficit, never mind get back on track toward meeting their retirement savings goals. It is important, however, in assessing the effect of the market downturns on retirement security to put observed drops in account balances in the context of the long-term goal of saving for retirement during a worker's career. While losses and the anxiety they cause all workers are serious, for many, especially younger ones with many years left until retirement age, even steep declines in account balances from investment losses can probably be overcome through future continued steady participation and contributions.

Of particular concern are the retirement income challenges faced by lower earners. Many of these workers face competing income demands for basic necessities that may make contributions to their retirement plans difficult. Further, the tax preferences that may entice higher-income workers to contribute to their DC plans may not entice low-income workers who have plan coverage, since these workers face relatively low marginal tax rates. Our projection results suggest that other measures, such as automatic enrollment and rollover of funds may make a difference for some lower income workers. Should pension policy, as embodied by recently legislated automatic enrollment provisions in the Pension Protection Act of 2006, continue to move in this direction, it should focus on those workers most in need of enhanced retirement income prospects.

Appendix: Methodology³⁷

Survey of Consumer Finances

The 2004 Survey of Consumer Finances (SCF) surveyed 4,522 households about their pensions, incomes, labor force participation, asset holdings and debts, use of financial services, and demographic information. The SCF is conducted using a dual-frame sample design. One part of the design is a standard multistage area-probability design, while the second part is a special oversample of relatively wealthy households. This is done in order to accurately capture financial information about the population at large as well as characteristics specific to the relatively wealthy. The two parts of the sample are adjusted for sample nonresponse and combined using weights to provide a representation of households overall. In addition, the SCF excludes people included in the *Forbes Magazine* list of the 400 wealthiest people in the United States. Furthermore, the 2004 SCF dropped three observations from the public data set that had net worth at least equal to the minimum level needed to qualify for the Forbes list.

The SCF collects detailed information about an economically dominant single individual or couple in a household (what the SCF calls a primary economic unit) where the individuals are at least 18 years old. We created an additional sample containing information on 7,471 individuals by separating information about respondents and their spouses or partners and considering them separately. When we discuss individuals in this document, we are referring to this sample. When we refer to all workers, we are referring to the subpopulation of workers within this individual sample. In households where there are additional adult workers, beyond the respondent and the spouse or partner, who may also have earnings and a retirement plan, information about these additional workers is not captured by the SCF and therefore is not part of our analysis. It is also important to note that the SCF was designed to be used as a household survey, and some information could not be broken into individual-level information. Where that was the case, we presented only household-level information.

We defined “worker” relatively broadly and opted to begin with the set of all those who reported that they were both working and some other activity, including, for example, “worker plus disabled” and “worker plus retired.” We then excluded from our analysis those workers who reported that they were self-employed. Our definition of DC plans includes the following plans: 401(k); 403(b); 457; thrift/savings plan; profit-sharing plan; portable cash option plan; deferred compensation plan, n.e.c.; SEP/SIMPLE; money purchase plan; stock purchase plan; and employee stock ownership plan (ESOP).

Our analysis of the 2004 SCF yielded slightly lower participation rates than other data sets that consider pensions. For example, 2004 Bureau of Labor Statistics (BLS) data indicate a somewhat higher rate of active participation in DC accounts, 42 percent, compared with our finding of 36 percent. One possible factor contributing to this difference is that BLS surveys establishments about their employees, while the SCF surveys individuals who report on themselves and their households; it is possible that the SCF respondents may be failing to report all retirement accounts, while BLS is capturing a greater proportion of them. Also, the SCF considered both public and private sector workers, while the BLS statistic is only for private sector workers. Differences may also be explained by different definitions of workers and participation, question wording, or lines of questioning. The SCF appears to provide a lower boundary on the estimation of pension coverage among four major data sets.³⁸

PENSIM Microsimulation Model

To project lifetime savings in DC pensions and related retirement plans with personal accounts and to identify the effects of changes in policies, market assumptions, or individual behavior, we used the Policy Simulation Group's (PSG) Pension Simulator (PENSIM) microsimulation models.³⁹ PENSIM is a dynamic microsimulation model that produces life histories for a sample of individuals born in the same year.⁴⁰ The life history for a sample individual includes different life events, such as birth, schooling events, marriage and divorce, childbirth, immigration and emigration, disability onset and recovery, and death. In addition, a simulated life history includes a complete employment record for each individual, including each job's starting date, job characteristics, pension coverage and plan characteristics, and ending date. The model has been developed by PSG since 1997 with funding and input by the Office of Policy and Research at the Employee

Benefits Security Administration (EBSA) of the U.S. Department of Labor, with the recommendations of the National Research Council panel on retirement income modeling.

PENSIM sets the timing for each life event by using data from various longitudinal data sets to estimate a waiting-time model (often called a hazard function model) using standard survival analysis methods. PENSIM incorporates many such estimated waiting-time models into a single dynamic simulation model. This model can be used to simulate a synthetic sample of complete life histories. PENSIM employs continuous-time, discrete-event simulation techniques, such that life events do not have to occur at discrete intervals, such as annually on a person's birthday. PENSIM also uses simulated data generated by another PSG simulation model, SSASIM, which produces simulated macrodemographic and macroeconomic variables.

PENSIM imputes pension characteristics using a model estimated with 1996–1998 establishment data from the BLS Employee Benefits Survey (now known as the National Compensation Survey [NCS]). Pension offerings are calibrated to historical trends in pension offerings from 1975 to 2005, including plan mix, types of plans, and employer matching. Further, PENSIM incorporates data from the 1996–1998 Employee Benefits Survey (EBS) to impute access to and participation rates in DC plans in which the employer makes no contribution, which BLS does not report as pension plans in the NCS. The inclusion of these “zero-matching” plans enhances PENSIM's ability to accurately reflect the universe of pension plans offered by employers. PENSIM assumes that 2005 pension offerings, including the imputed zero-matching plans, are projected forward in time.

PSG has conducted validation checks of PENSIM's simulated life histories against both historical life history statistics and other projections. Different life history statistics have been validated against data from the Survey of Income and Program Participation (SIPP), the Current Population Survey (CPS), Modeling Income in the Near Term (MINT3), the Panel Study of Income Dynamics (PSID), and the Social Security Administration's Trustees Report. PSG reports that PENSIM life histories have produced similar annual population, taxable earnings, and disability benefits for the years 2000 to 2080 as those produced by the Congressional Budget Office's long-term Social Security model (CBOLT) and as shown in the Social Security Administration's 2004 Trustees Report. According to PSG, PENSIM generates simulated DC plan participation rates and account balances that are similar to those observed in a variety of data sets. For example, measures of central tendency in the simulated distribution of DC account balances among employed individuals is similar to those produced by an analysis of the Employee Benefit Research Institute (EBRI)-Investment Company Institute (ICI) 401(k) database and of the 2004 SCF. GAO performed no independent validation checks of PENSIM's life histories or pension characteristics.

In 2006, EBSA submitted PENSIM to a peer review by three economists. The economists' overall reviews ranged from highly favorable to highly critical. While the economist who gave PENSIM a favorable review expressed a “high degree of confidence” in the model, the one who criticized it focused on PENSIM's reduced-form modeling. This means that the model is grounded in previously observed statistical relationships among individuals' characteristics, circumstances, and behaviors, rather than on any underlying theory of the determinants of behaviors, such as the common economic theory that individuals make rational choices as their preferences dictate and thereby maximize their own welfare. The third reviewer raised questions about specific modeling assumptions and possible overlooked indirect effects.

Assumptions Used in Projecting DC Plan Balances at Retirement

PENSIM allows the user to alter one or more inputs to represent changes in government policy, market assumptions, or personal behavioral choices and analyze the subsequent impact on pension benefits. Starting with a 2 percent sample of a 1990 cohort, totaling 104,435 people at birth, our baseline simulation includes some of the following key assumptions and features. For our report, we focus exclusively on accumulated balances in DC plans and ignore any benefits an individual might receive from DB plans or from Social Security. Our reported benefits and replacement rates therefore capture just one source of potential income available to a retiree.

- Workers accumulate DC pension benefits from past jobs in one rollover account, which continues to receive investment returns, along with any benefits from a current job. At retirement, these are combined into one account. Because we focus on DC plan balances only, we assume all workers are ineligible to participate in DB plans and do not track Social Security benefits.

- Plan participants invest all assets in their account in life cycle funds, which adjust the mix of assets between stocks and government bonds as the individual ages. Stocks return an annual nonstochastic real rate of return of 6.4 percent, and government bonds have a real return of 2.9 percent per year. In one simulation, we use the government bond rate on all plan assets.⁴¹ Using different rates of return reflects assumptions used by OCACT in some of its analyses of trust fund investment.
- Workers purchase a single, nominal life annuity, typically at retirement, which occurs between the ages of 62 and 70. Anyone who becomes permanently disabled at age 45 or older also purchases an immediate annuity at their disability age.⁴² We eliminate from the sample cohort members who 1) die before they retire, at whatever age, 2) die prior to age 55, 3) immigrate into the cohort at an age older than 25, or 4) become permanently disabled prior to age 45.⁴³ We assume that the annuity provider charges an administrative load on the annuity such that in all scenarios the provider's revenues balance the annuity costs (i.e., zero profit).
- Replacement rates equal the annuity value of DC plan balances divided by a "steady earnings" index. This index reflects career earnings, calibrated to the Social Security Administration's age-65 average wage index (AWI). PENSIM computes steady earnings by first computing the present value of lifetime wages. Then it calculates a scaling factor that, when multiplied by the present value of lifetime earnings for a 1990 cohort member earning the AWI from ages 21 to 65, produces the individual's present value of lifetime earnings. This scaling factor is multiplied by AWI at age 65, then adjusted to 2007 dollars. Using this measure as opposed to average pay for an individual's final 3 or 5 years of working minimizes the problems presented by a worker who has irregular earnings near the end of his or her career, perhaps because of reduced hours.⁴⁴
- For household replacement rates, we use a combined annuity value of worker-spouse lifetime DC plan savings and a combined measure of steady family earnings.
- Starting from this baseline model, we vary key inputs and assumptions to see how these variations affect pension benefits and replacement rates at retirement. Scenarios we ran include the following:
 1. **Universal rollover of DC plan balances.** All workers with a DC balance roll it over into an Individual Retirement Account or another qualified plan upon job separation, as opposed to cashing out the balance, in which case the money is assumed lost for retirement purposes.
 2. **Immediate eligibility and participation in a plan.** A worker who would be offered a plan has no eligibility waiting period and immediately enrolls. This does not necessarily mean that the participant makes immediate or regular contributions; contribution levels are determined stochastically by PENSIM based on worker characteristics.
 3. **Delayed retirement.** Workers work beyond the retirement age determined by PENSIM in the baseline run. In one scenario, workers work up to one extra year; in another, they delay retirement for up to three years, although 70 remains the maximum retirement age.
 4. **Raised contribution limits.** We set annual contribution limits starting in 2007 at \$25,000 per individual, up from \$15,500 under current law, and \$60,000 for combined employer-employee contributions, up from \$45,000 under current law. These limits rise with cost-of-living changes in subsequent years, as is the case in our baseline model.

PENSIM Cohort Summary and Cross-Sectional Statistics

Lifetime summary statistics of the simulated 1990 cohort's workforce and demographic variables give some insight into the model's projected DC savings at retirement that we report (Tables 6 and 7). The 78,045 people in the sample who have some earnings, do not immigrate into the cohort after age 25, live to age 55, and retire (or become disabled at age 45 or older) work a median 29.4 years full-time and 2.1 part-time, with median "steady" earnings of \$46,122 (in 2007 dollars). Those whose earnings fall in the lowest quartile work full-time for only a median 14.1 years, while working part-time for 9.1 years, and 13.4 years for their longest-tenured job; this group's median annual steady earnings measure \$16,820. In contrast, those in the highest-quartile of earnings work for a median 34.8 years, including 19.5 years for their longest job, and have median

steady earnings of \$126,380 per year. The results also show that pension coverage varies somewhat across income groups. About 83 percent of workers in the lowest income quartile have at least one job in which they are covered by a DC plan throughout their working careers, and they are eligible for DC plan coverage for a median 9.4 years. In contrast, at least 90 percent of workers in the highest three income quartiles have some DC coverage during their careers. Those in the highest income quartile are eligible for DC participation for a median 25.2 years throughout their career.

TABLE 6
Summary Statistics, PENSIM 1990 Cohort

Demographic variables, full sample	Full sample	By income quartile			
		1	2	3	4
N, full sample	104,435				
N for replacement rate calculations ^a	78,045	19,511	19,511	19,512	19,511
Percent female	49.5	73.8	55.6	44.8	28.2
Education (median)	Some college	High school graduate	High school graduate	Some college	College graduate
% who work for at least one DC sponsor during career	90.4	83.2	90.8	92.7	95.1
% whose longest-held job offered DC pension	73.3	56.3	71.7	79.2	86.2

Source: GAO calculations of PENSIM simulation of 1990 cohort.

Note: Percentage female and education medians are for entire sample; all other statistics are for only those used in the replacement rate calculations.

^aExcludes cohort members who have no lifetime earnings, immigrate after age 25, die prior to retiring or becoming disabled, or become disabled prior to age 45.

TABLE 7
Sample Summary Statistics, PENSIM 1990 Cohort, Medians

Workforce variables	Full sample	By income quartile			
		1	2	3	4
Years working full-time	29.4	14.1	27.9	31.8	34.8
Years working part-time	2.1	9.1	2.2	1.1	0.5
Steady earnings (annual, 2007 dollars)	46,122	16,820	34,950	60,777	126,380
Number of jobs over lifetime	5.0	5.0	5.0	5.0	5.0
Duration of longest job (years)	17.2	13.4	16.9	18.3	19.5
Retirement age	63.0	62.0	63.0	63.0	64.0
Years eligible for DC pension	18.5	9.4	17.6	21.2	25.2

Source: GAO calculations of PENSIM simulation of 1990 cohort.

Cross-sectional results of the sample cohort also provide some insights into the model's assumptions, as well as some further insights into the relatively low projected sample replacement rates (Table 8). These statistics describe the working characteristics for each employed individual at a randomly determined age sometime between 22 and 62 in order to provide a snapshot of a "current" job for most of the sample. Among those employed at the time of the survey, 61.8 percent had an employer who sponsors a DC plan. Of these workers with a plan offered, 94 percent were eligible to participate, and among those eligible 67 percent

participated. Taking all of these percentages together, this means that at any one time only 38.9 percent of the working population actively participated in a DC plan in our projections. Even among these participants, only 56.9 percent reported making a contribution to the plan in the previous year, while 45.7 percent had an employer contribution. Median combined employer–employee contributions in the previous year were 6.2 percent of earnings in our simulation.

TABLE 8
Cross-Sectional Pension Characteristics of Sample

	Average	Median
Age at survey	42.1	42.1
Percent of sample employed	71.5	
Current job duration (years)	8.0	5.9
Job offers DC plan	61.8	
Among offered, percent eligible to participate	93.9	
Among those eligible, percent participating	67.0	
Past year's employee contribution (percent of earnings)	4.3	3.9
Past year's employer contribution (percent of earnings)	3.1	0
Total contribution (percent of earnings)	7.4	6.2
Cumulative returns per year in plan (2007 dollars)	1,303	383
Cumulative returns in current plan (2007 dollars)	22,318	180
Among those eligible, percent contributing in past year	56.9	
Among those eligible, percent with employer contribution in past year	45.7	

Source: GAO calculations of PENSIM simulation of 1990 cohort.

Note: Results reflect one time snapshot of each member of the sample at a randomly determined age between 22 and 62.

Notes

¹ Further, the Social Security normal retirement age for receiving full benefits has begun rising from age 65 until reaching age 67 starting in 2027, which will reduce benefits, relative to current rules, for those retiring at a given age.

² This paper derives from the GAO report *Private Pensions: Low Defined Contribution Plan Savings May Pose Challenges to Retirement Security, Especially for Many Low-Income Workers* (GAO-08-8, Nov. 2007), available at <http://www.gao.gov/new.items/d088.pdf>.

³ A typical “final average pay” plan might set annual benefits equal to 1.5 percent of the average of the employee’s final 5 years of earnings multiplied by the employee’s tenure at the firm in years.

⁴ Beginning in 2006, plans were permitted to allow employees to designate some contributions to Roth 401(k) plans, which are not excluded from current income but allow for tax-free withdrawals in retirement.

⁵ The Internal Revenue Code (IRC) sets limits on annual contributions to DC plans by both employees and employers. In 2007, an employee may make up to \$15,500 in tax-deductible contributions into a DC plan, and employee and employer combined contributions cannot exceed \$45,000. A worker age 50 or older may contribute an additional \$5,000 in annual “catch-up” contributions. The IRC exempts distributions from DC plans from an additional 10 percent tax if taken for certain purposes. For example, if the employee becomes disabled or needs funds for medical purposes, or if the distribution is taken upon separation of service at age 55, the additional tax does not apply.

⁶ This tax expenditure includes 401(k) plans, Keogh plans, and special employee-stock-ownership plan rules. Summing these figures does not take into account any interactions. In addition, the projected tax expenditure in 2009 for DB plans is \$46 billion and \$11.7 billion for IRAs (\$41.6 billion and \$15.2 billion in 2013).

⁷ The saver’s credit is a credit against federal income tax available to low-and middle-income taxpayers based on their qualified contributions to 401(k) and other retirement savings plans and to IRAs.

The Pension Protection Act of 2006 (PPA; Pub. L. No. 109-280) made the saver's credit permanent and indexed qualifying taxable income levels for inflation.

⁸ About 87 percent of all 401(k) plans generally allow participants to choose how much to invest, within federal limits, and to select from a menu of diversified investment options selected by the employer sponsoring the plan, such as an assortment of mutual funds that include a mix of stocks, bonds, and money market investments.

⁹ A DC plan sponsor may make an automatic distribution of a participant's account balance when the participant leaves a job if the balance does not exceed \$5,000. However, if the balance exceeds \$1,000, the sponsor must automatically roll this money over into a default IRA or keep the balances in the plan, unless the participant explicitly chooses otherwise.

¹⁰ For more discussion of plan fees, see GAO *Private Pensions: Changes Needed to Provide 401(k) Plan Participants and the Department of Labor Better Information on Fees* (GAO-07-21, November 16, 2006).

¹¹ A 2003 GAO report found that among DC participants retiring from 1992 to 2000 with a choice of how to receive benefits, only 7.5 percent chose to annuitize benefits. See GAO, *Private Pensions: Participants Need Information on Risks They Face in Managing Pension Assets at and during Retirement* (GAO-03-810, July 2003).

¹² For more analysis of recent DB plan freezes, see GAO, *Defined Benefit Pensions: Plan Freezes Affect Millions of Participants and May Pose Retirement Income Challenges* (GAO-08-817, July 2008).

¹³ For plans that terminate in 2009 and 2010, PBGC guarantees benefits up to \$4,500 per month for a 65-year-old worker. This guarantee is higher for those retiring older than age 65 and lower for those retiring younger. For example, the 2010 guarantee is \$2,025 per month for someone retiring at age 55, and \$13,680 per month for a 75-year-old.

¹⁴ Craig Copeland, "Individual Account Retirement Plans: An Analysis of the 2007 Survey of Consumer Finances, With Market Adjustments to June 2009" (*EBRI Issue Brief* #333, August 2009).

¹⁵ Many factors affect how much a person will need: age at retirement, life expectancy, living expenses, health expenses, investment returns, inflation, and personal tolerance for risk. For summaries of this research through 2002 and 2003, see GAO, *Private Pensions: Improving Worker Coverage and Benefits*, GAO-02-225 (Washington, DC: April 9, 2002, pp. 41-4); and Congressional Budget Office, *Baby Boomers' Retirement Prospects: An Overview* (November 2003).

¹⁶ Data reported by the Social Security Administration (SSA) do not consider lump-sum withdrawals from retirement accounts, such as DC plans or IRAs, as income, and hence these statistics do not include nonannuitized savings.

¹⁷ Because data reported by the SSA do not consider lump-sum withdrawals from retirement accounts, such as DC plans or IRAs, as income, these statistics do not include nonannuitized savings.

¹⁸ The SSA defines a low earner as someone whose career average earnings are about 45 percent of the national average wage index (AWI), while a high earner has career average earnings of about 160 percent of AWI.

¹⁹ Retirement plans rolled over from a former employer could have originally been either DC or DB plans. Also, any retirement plans from a former employer that were converted into an annuity would not be captured in these "total balance" statistics.

²⁰ We calculated this yearly income, as an annuity equivalent using the Thrift Savings Plan calculator (<http://calc.tsp.gov>), assuming an interest rate of 5.25 percent, single life benefits beginning at age 65, no joint survivor benefits, and level payments.

²¹ Since some older workers may have reduced their hours or are both retired and working, they may be earning less than they had been through most of their working life. Household wealth can more accurately reflect their financial situation than income can.

²² Households included in this analysis of lump-sum distributions are restricted to those where the head of household is under age 59 in order to approximate those that would be subject to penalties for cashing out the retirement funds. Percentages do not add up to 100 percent because of rounding.

²³ These rollover and cash-out figures look at all cash settlements from past jobs. The SCF does not specify the original account type, so the analysis includes all retirement plans or pensions that were converted into a lump-sum distribution or settlement.

²⁴ Craig Copeland, "Individual Account Retirement Plans: An Analysis of the 2007 Survey of Consumer Finances, With Market Adjustments to June 2009" (*EBRI Issue Brief* No. 333, August 2009).

²⁵ Alicia H. Munnell, Anthony Webb, and Francesca Golub-Sass, *The National Retirement Risk Index: After the Crash* (Center for Retirement Research at Boston College, Number 9-22, October 2009).

²⁶ Jack VanDerhei, Sarah Holden, Luis Alonso, and Craig Copeland, "401(k) Plan Asset Allocation, Account Balances, and Loan Activity in 2007" (*EBRI Issue Brief*, no. 324, December 2008).

²⁷ Alicia H. Munnell, Francesca Golub-Sass, and Dan Muldoon, *An Update on 401(k) Plans: Insights from the 2007 SCF* (Center for Retirement Research at Boston College, Number 9-5, March 2009).

²⁸ Jack Vanderhei, "The Impact of the Financial Crisis on 401(k) Account Balances" (*EBRI Issue Brief*, no. 326, February 2009).

²⁹ See the appendix for further details about details and assumptions in our PENSIM analysis and calculations. For comparisons of our projections to those of other studies, see Appendix II in GAO-08-8.

³⁰ Other studies that do similar balance projections for DC plans that focus primarily on workers with continuous plan coverage generally find higher savings levels and replacement rates than we report in this section. For more discussion of these studies and how they compare with our projections, see GAO-08-8 Appendix II.

³¹ For various summary statistics describing our sample, see the appendix.

³² We recalculate income quartiles for the subsamples, and thus the income cut-offs for each quartile differ from those in the full-sample baseline.

³³ While this scenario eliminates waiting periods for eligibility and participation among workers of firms that sponsor plans, it does not necessarily imply that workers are making a contribution to a plan each period, nor does it affect the likelihood that a firm will offer a DC plan. PENSIM determines periodic contribution levels among participants based on plan features and worker characteristics. See the appendix.

³⁴ In our baseline scenario, workers cash out account balances 36 percent of the time when leaving a job.

³⁵ The baseline projections assume that annual contribution limits continue to rise in the future from 2007 limits of \$15,500 for employee contributions and \$45,000 for combined employer–employee contributions.

³⁶ We would expect the effect on annuity income to exceed that on replacement rates because working longer may also raise the measure of career earnings that we use in the denominator of the replacement rate calculation.

³⁷ For more details about the methodologies for our analysis using the SCF and PENSIM, see Appendix I in GAO-08-8.

³⁸ Comparison data sets are the Survey of Income and Program Participation, the Current Population Survey, and the Department of Labor Form 5500 series. See Geoffrey Sanzenbacher, "Estimating Pension Coverage Using Different Data Sets" (Center for Retirement Research, August 2006) for additional discussion on this topic.

³⁹ For more information on PSG microsimulation models, see <http://www.polsim.com>. For more details on PENSIM, see Martin Holmer, Asa Janney, and Bob Cohen, *PENSIM Overview*, available from <http://www.polsim.com/overview.pdf>.

⁴⁰ While these models use sample data, our report, like others using these models, does not address the issue of sampling errors. The results of the analysis reflect outcomes for individuals in the simulated populations and do not attempt to estimate outcomes for an actual population.

⁴¹ Since our projections do not stochastically model stock returns, assuming a rate of return on assets equal to the historical return on stocks does not capture the risks associated with stock returns; we therefore also model DC savings under a scenario in which all assets return the government bond rate of return. For more discussion of the appropriate rate to use in projections, see *Analysis of H.R. 3304: Growing Real Ownership for Workers Act of 2005* (Congressional Budget Office, September 13, 2005, pp. 63–5).

⁴² We classify as retired those workers who become disabled after age 62. We do not classify as disabled those workers who recover from a disability prior to age 62.

⁴³ We drop cohort members who die before retiring because we assume annuitization at retirement, but someone who dies before retiring would never annuitize DC savings. We apply the other conditions because such cohort members are likely to have fewer years in the workforce to accumulate DC plan savings.

⁴⁴ The income quartile subsamples used in this report are based on “steady earnings.”