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THE CHANGING LANDSCAPE OF PENSIONS IN THE UNITED STATES

James Poterba
Steven Venti
David A. Wise

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ABSTRACT

The pension landscape in the U.S. has changed dramatically over the past 25 years. Saving through personal retirement accounts has become the principal form of retirement saving. We document the transition from a defined benefit system to a personal account system and show the effect it has had on wealth at retirement. We summarize results from other research we have done to project the growth of retirement assets over the next three decades. Our projections suggest that the advent of personal account saving will increase wealth at retirement for future retirees across the lifetime earnings spectrum.

James Poterba
Department of Economics
MIT, E52-373A
50 Memorial Drive
Cambridge, MA 02142-1347
and NBER
poterba@mit.edu

David A. Wise
Harvard University and NBER
1050 Massachusetts Avenue
Cambridge, MA 02138-5398
and NBER
dwise@nber.org

Steven Venti
Department of Economics
6106 Rockefeller Center
Dartmouth College
Hanover, NH 03755
and NBER
steven.f.venti@dartmouth.edu

The leading edge of the baby boom generation will reach retirement age in the next few years. Younger members of this generation will continue to retire through about 2030. These retirees will face a very different pension landscape than their parents. Persons retiring before the early 1980s relied heavily on Social Security and employer sponsored defined benefit (DB) pension plans for support in retirement. Those retiring since then have accumulated a mix of wealth in Social Security, DB plans, and various personal retirement accounts, including 401(k)s, IRAs, and similar plans. Balances in these personal account plans for recent retirees are often modest because the retirees were only able to avail themselves of these plans late in their careers.

Future retirees will reach retirement with a very different mix of assets, as DB plan coverage continues to decline and personal account plan coverage continues to grow. This paper considers the effect of the changing pension landscape on the wealth of future retirees. The paper is divided into six sections. The first describes the changing pattern of contributions to pension plans over the past 25 years. Section 2 tracks the enormous increase in pension assets over this time period. The third section considers changing participation behavior in pension plans. We emphasize in these three sections the growth of personal retirement accounts and the decline in DB plans. In section four we discuss the evolving features of 401(k)-like plans and how they compare with DB plans. We also consider some of the more subtle changes within the 401(k) sector that have occurred since the inception of 401(k) plans in the early 1980s. The fifth section summarizes our recent work on projecting the wealth of future retirees. We

project the 401(k) assets of future retirees and consider how the evolution of the 401(k) system is likely to affect the retirement wealth of future retirees with different levels of lifetime earnings. There is a brief conclusion.

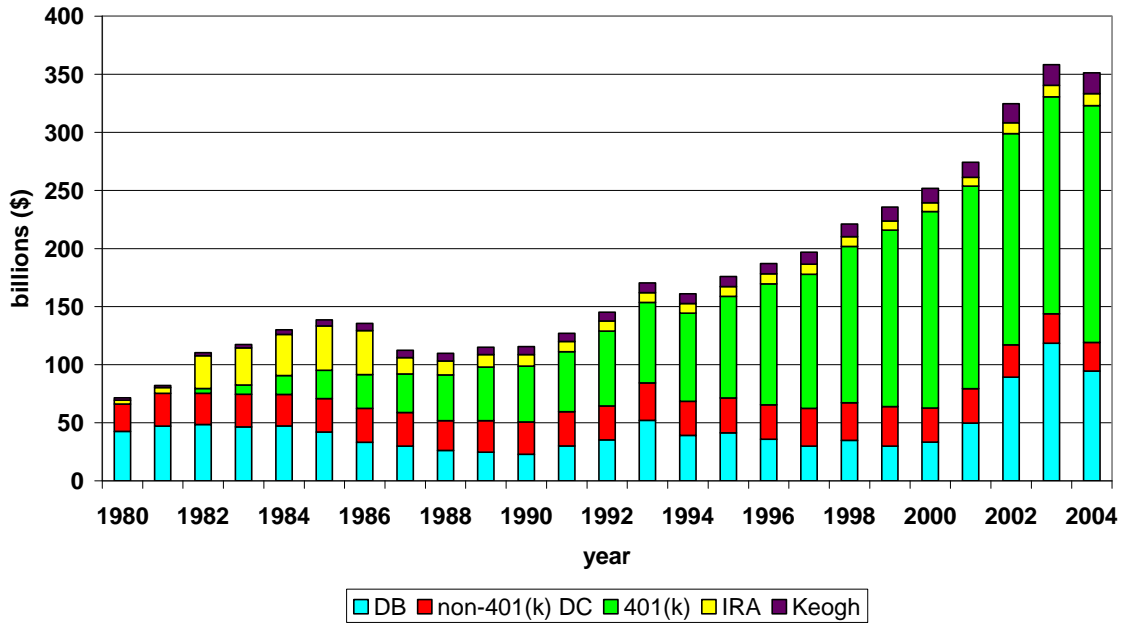
1. The Growth and Changing Mix of Pension Contributions

We show first the growth and changing mix of dollar contributions to pension plans and then consider contributions as a percent of wage and salary earnings. We also distinguish contributions to private plans, to federal government plans, and to state and local government plans. Contributions to private sector plans between 1980 and 2004, measured in nominal dollars, are shown in Figure 1-1. The appendix describes the data sources used to construct this figure and all subsequent figures and tables. The figure distinguishes contributions to DB plans and to personal account savings plans including traditional DC plans, 401(k) plans, Individual Retirement Accounts (IRAs) and Keogh plans. The most noticeable feature of the figure is the increase in contributions to 401(k) plans, which now account for the bulk of contributions to all personal retirement plans. In 1980 only 40 percent of private contributions were to personal accounts and most of these contributions were accounted for by traditional employer-provided defined contribution plans. Contributions to IRA and 401(k) plans began in 1982. By 2000, about 87 percent of contributions were to personal accounts, primarily to 401(k) plans. Contributions to 401(k) plans have grown since 2000, attaining \$204 billion in 2004, but the proportion of total contributions accounted for by personal accounts has declined from 87

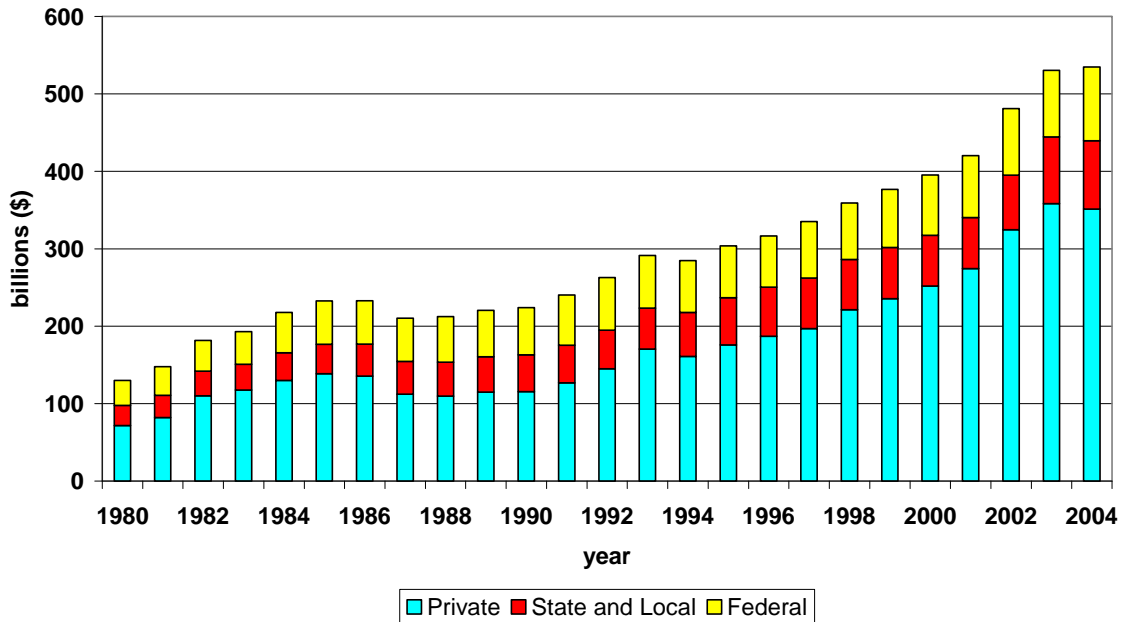
percent in 2000 to 73 percent in 2004. This decline is attributable to an increase in contributions to DB plans, largely driven by “catch-up” contributions following the fall in the stock market in 2000.

Figure 1-2 shows total contributions to all pension plans including private, federal government, and state and local government plans. The nominal dollar amount of contributions increased from about \$130 billion in 1980 to about \$535 billion in 2004. Between 1980 and 2004 total contributions increased by 488 percent in the private sector, 337 percent in the state and local sector, and 295 percent in the federal sector. In real dollars, converting 1980 dollars to 2004 using the Consumer Price Index, total contributions rose from \$298 billion to \$535 billion, or by 80 percent. In both Figures 1-1 and 1-2, there is a clear rise in total contributions between 1982 and 1986 – the years when the fully-deductible IRA was available.

1-1. Growth of private sector pension contributions, 1980-2004, by type



1-2. Growth of pension contributions, 1980-2004, by sector

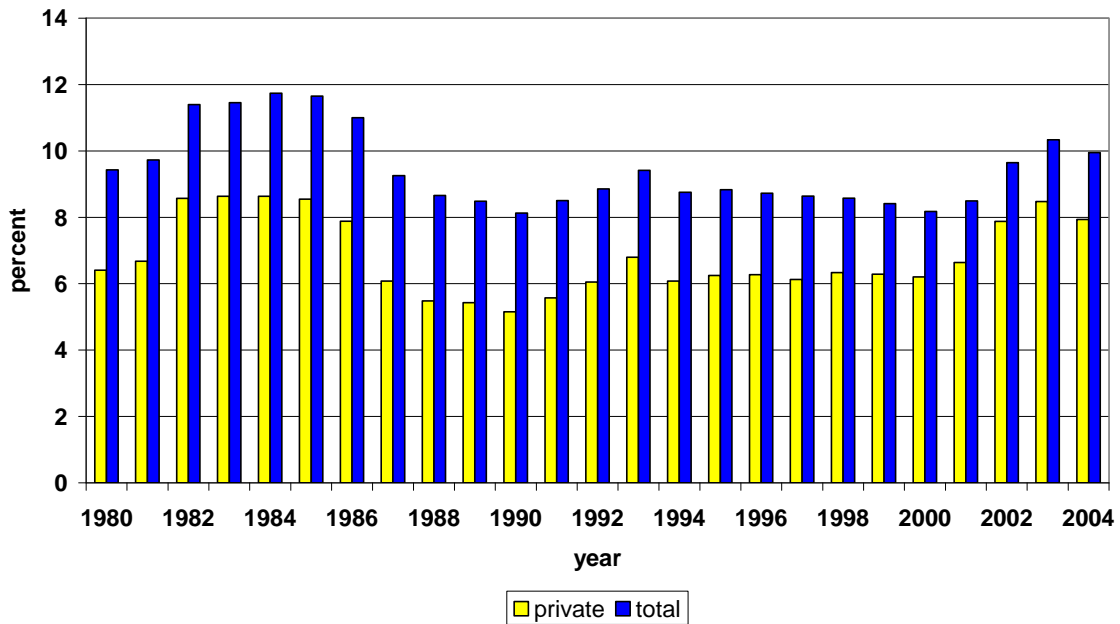


Total pension contributions have increased because of economic growth and in particular because of growth in wage and salary earnings. It is therefore

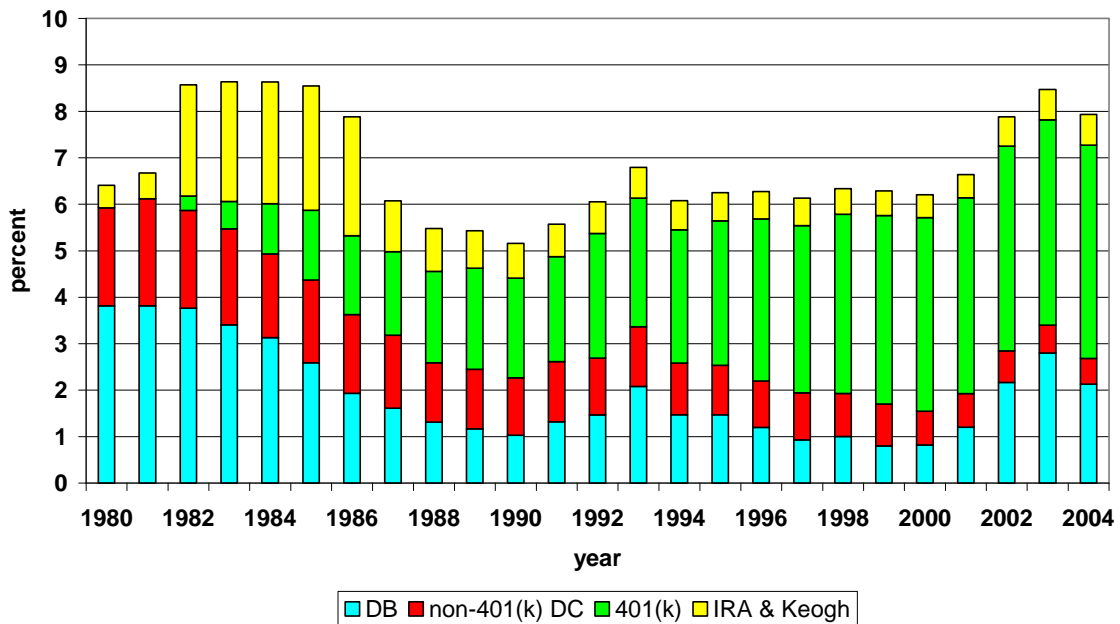
natural to consider contributions as a percent of National Income and Product Account (NIPA) wage and salary earnings. We begin with aggregate pension contribution rates and then show detail by sector. Figure 1-3 shows total pension contributions as a percent of total NIPA wage and salary earnings and private pension contributions as a percent of private sector NIPA wage and salary earnings for the 1980 to 2004 interval. The total contribution rate was about 10 percent in 1980, and again in 2004, but it ranged widely in the interim. The highest rate was almost 12 percent in 1984, while the low was just over 8 percent in 1990. As discussed in more detail below, this fluctuation is due largely to changes in IRA contributions and contributions to DB plans.

The private contribution rate was about 2 percentage points higher at the end than at the beginning of the period, but it also fluctuated substantially. The pension contribution rate was about 8.6 percent between 1982 and 1985 but declined to 5.2 percent by 1990. Again, this decline was largely accounted for by reductions in IRA contributions.

1-3. Total (private) pension contributions as percent of total (private) NIPA wage and salary



1-4. Private sector contributions as a percent of private NIPA wage & salary, 1980-2004, by type



The contribution rate differs greatly by sector and, within the private sector, by plan type. Figure 1-4 shows contribution rates in the private sector by plan type, all as a percent of NIPA private wage and salary earnings. There are several noticeable features of this figure. First, the growth in 401(k) plan contributions stands out. Contributions increased from 0.3 percent of wage and salary earnings in 1982 to 4.6 percent in 2004. Second, contributions to all personal retirement accounts increased from 2.6 percent of wage and salary earnings in 1980 to 5.8 percent in 2004. Conversely, contributions to DB plans were 3.8 percent in 1980 and fell to 2.1 percent by 2004. Third, the figure suggests that curtailing the IRA program after 1986 affected the pension saving rate in the ensuing years. Tax-deductible contributions to IRAs were 2.6 percent of wage and salary earnings in 1986 but dropped to 1.1 percent in 1987 and to only 0.7 percent by 1990. It seems likely that if the IRA program had not been curtailed, the total private pension contribution rate today would have been higher than it is.

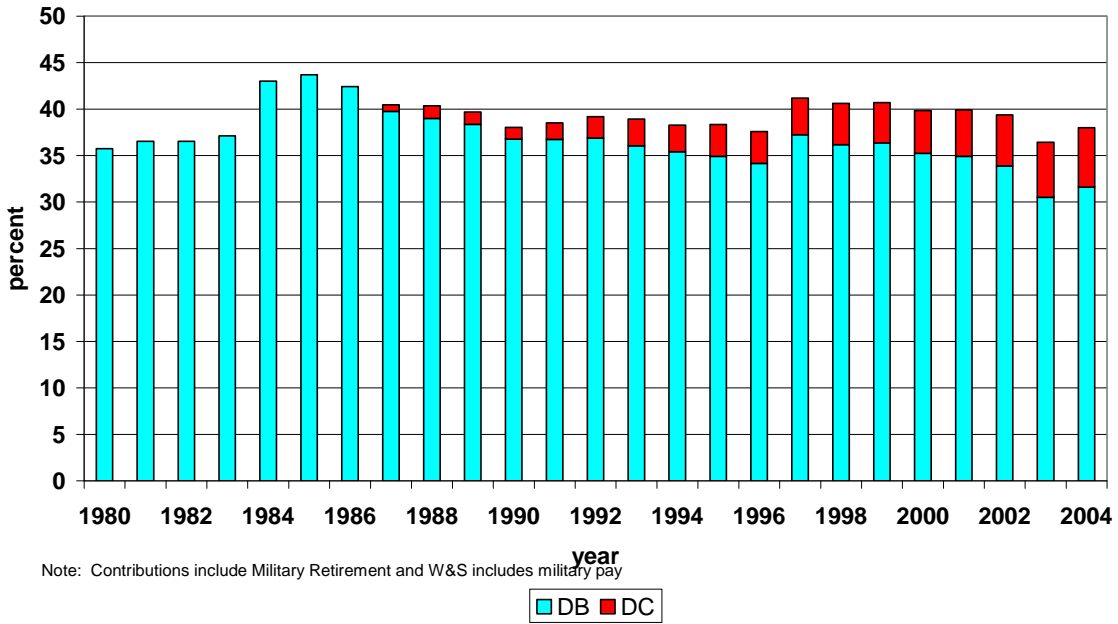
Fourth, the total private pension contribution rate reached a low of 5.2 percent in 1990 and then grew to nearly 8 percent in 2004. As a percent of wage and salary earnings, DB contributions fell by more than non-IRA personal account contributions increased between 1980 and 2000. DB contributions declined from 3.1 percent to 0.8 percent and personal account contributions increased from 2.9 percent to 4.9 percent. The depressing effect of changes in DB funding rules, which Schieber and Shoven [1997], Ippolitto [2001], and Poterba, Venti, and Wise [2004] discuss, swamped the positive effect of

increasing personal account contributions. Fifth, aside from changes due to the curtailment of the IRA program, the fluctuation in the total private pension saving rate is due almost exclusively to fluctuation in the DB plan contribution rate.

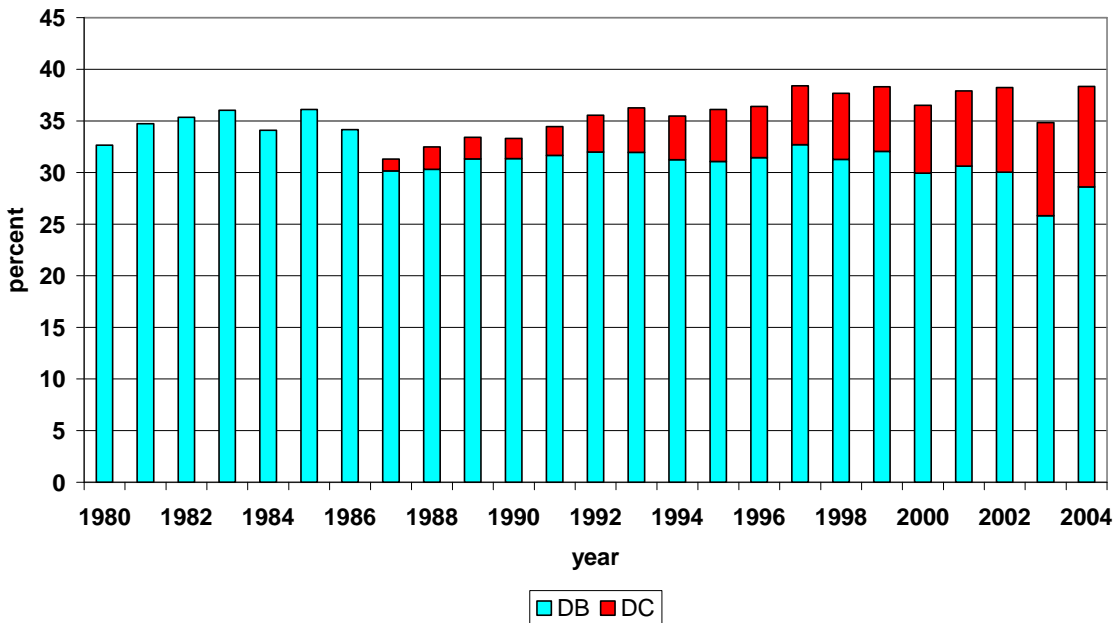
The contribution rate in the federal sector is much higher than the contribution rate in the private sector. Figure 1-5 shows federal DB and DC pension contributions as a percent of federal NIPA wage and salary earnings. Over the 1980 to 2004 period, the total federal contribution rate was around 40 percent in most years, compared to an average of around 6.5 percent in the private sector. The data for Figure 1-5 include both military and civilian pension contributions. Figure 1-6 shows the contribution rate for civilian employees as a percent of NIPA wage and salary earnings for federal civilian employees. The total pension contribution rate for federal civilian employees was around 35 percent, roughly four times greater than the contribution rate in the private sector.

Figure 1-7 shows the pension contribution rate of state and local government employees as a percent of NIPA wage and salary earnings of these employees. The data on state and local pensions do not allow us to distinguish between DB and DC contributions. The state and local rate shows a substantial decline, from about 16 percent in the early 1980s to around 12 percent by 2004. The state and local contribution rate is about twice as high as the private rate.

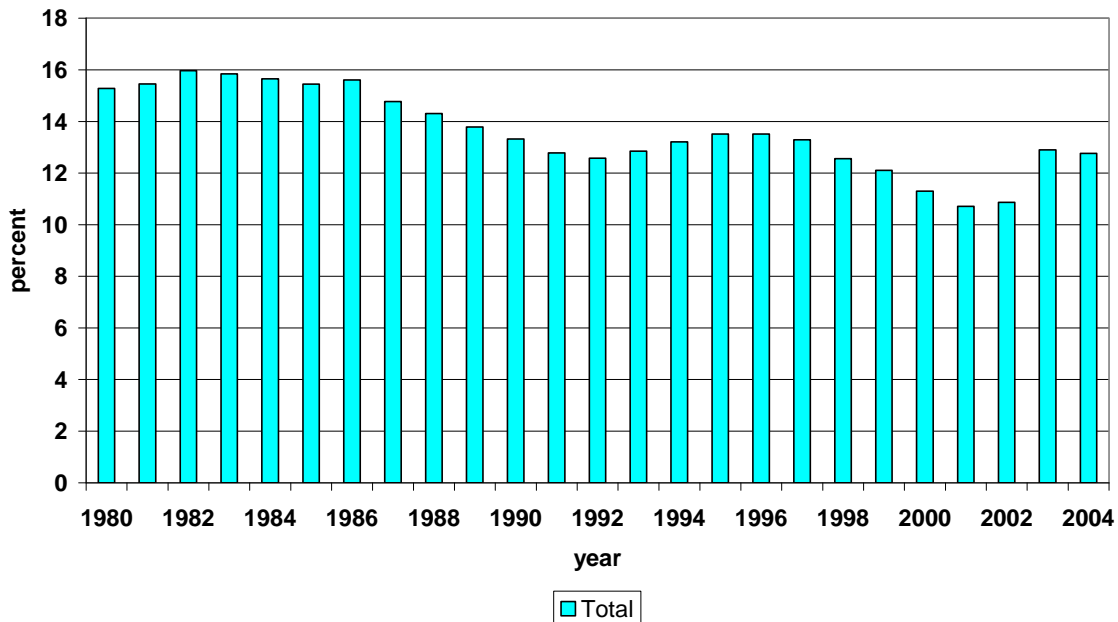
1-5. Federal sector contributions as a percent of Federal NIPA wage & salary, 1980-2004, by type



1-6. Federal civilian contributions as a percent of Federal civilian NIPA wage & salary, 1980-2004, by type



1-7. State and local sector contributions as a percent of state and local NIPA wage & salary, 1980-2004



The difference between the contribution rates in the private and public sectors is likely explained in large part by differences in coverage and in plan generosity. Coverage is nearly universal in the federal sector and over 90 percent in the state and local sector, but less than 50 percent in the private sector. Thus, all else constant, the ratio of contributions to earnings should be twice as high in the public sector as in the private sector. Moreover the generosity of employer plans is much greater in the public sectors.

Table 1-1 shows monthly pension benefits by age in 2003, based on data from the Survey of Income and Program Participation (SIPP). Over all ages, state and local government pension benefits are about 1.7 times as large as benefits from private sector union or company pensions. Military retirement benefits are almost 2.1 times as large as private sector benefits and federal

civilian benefits are over 2.2 times as large. These differences in generosity may, in part, stem from differences in job turnover. Employee turnover is higher in the private than in the public sector so, and given the back-loading of DB pension accruals, many private sector workers may receive reduced benefits on account of changing jobs. Differences in the number of years over which benefits are collected will also affect employer contributions. DB pensions are more prevalent in the public sector and are typically associated with earlier retirement dates than private-sector DC plans.

Table 1-1. Mean pension benefits for persons with pension, by age and source, 2003

Source	Age						All
	55-60	60-65	65-70	70-75	75-80	80+	
Pension from company or union	1,294	1,191	860	717	656	566	830
Local govt pensions	1,863	1,932	1,586	1,117	1,038	810	1,410
State govt pensions	2,015	1,704	1,473	1,242	1,232	875	1,416
U.S. military retirement pay	1,852	1,980	1,578	1,559	1,509	1,656	1,714
Federal civilian retirement pension	2,161	2,567	2,009	1,664	1,523	1,468	1,836

Source: authors' calculations from wave 7 of the 2001 SIPP

Another factor that affects contributions in a particular year is whether employers are required to or choose to pay down unfunded liabilities. A spike in contributions to private DB plans is clearly evident in Figure 1-4 for 2002 and 2003 as firms were legally obligated to increase contributions to offset the decline in equity prices. Purcell (2003) explains that in the federal sector current contributions must not only fund the "new" (fully funded) FERS program, but

must also pay off obligations of the "old" CSRS program which has substantial unfunded liabilities.

The pension contribution rates in the private sector reveal the transition from a pension system dominated by employer-provided DB plans to a system composed primarily of personal retirement accounts of which the 401(k) plan is the most important. The contribution rates also highlight the much greater generosity of government plans compared to private sector plans. The pension contribution rate for federal plans is perhaps four times as large, and that for state and local governments twice as large, as that for private plans.

2. The Growth Pension Assets

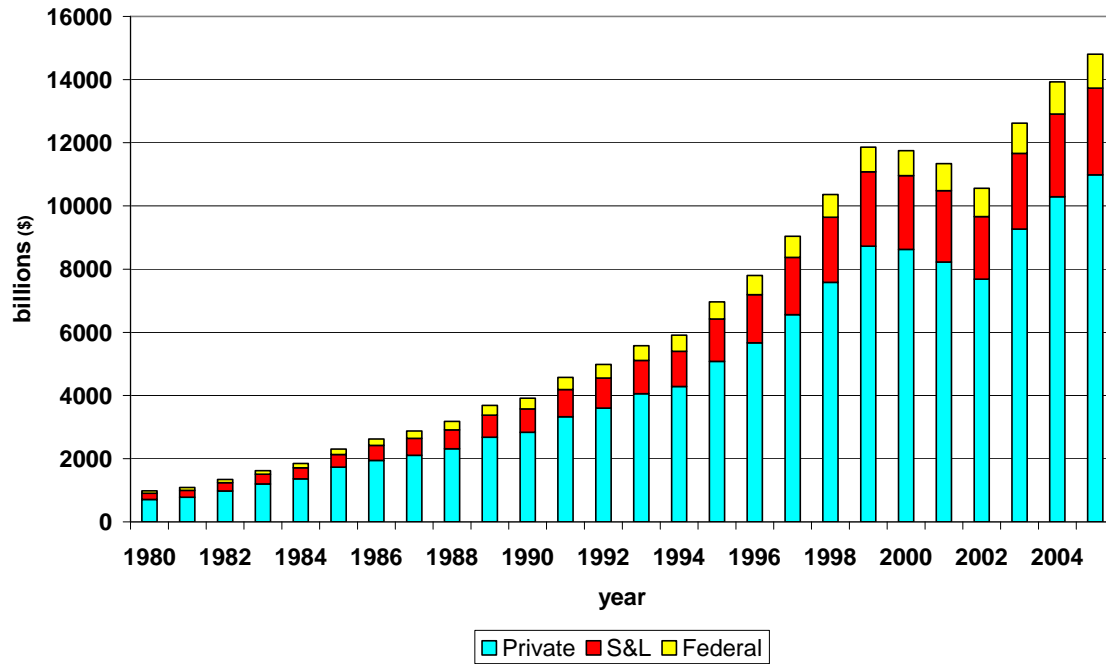
The foregoing evidence suggests that aside from the years of fully-deductible IRAs, total pension contributions as a percent of wage and salary earnings remained between 8 and 10 percent between 1980 and 2004. However, private sector contributions as a percent of wage and salary earnings increased from about 5 percent in 1990 to about 8 percent in 2004, and assets in pension plans grew dramatically over this period. Figure 2-1 shows pension assets by sector. Total pension assets, measured in nominal dollars, grew from \$464 billion in 1980 to \$14,185 billion in 2005. In constant 2005 dollars, the 1980 pension assets would be valued at \$1,100 billion. The drop in assets after 2000, as well as the sharp increase after 2002, is directly related to fluctuating stock market values.

Figure 2-2 shows assets as a percent of NIPA wage and salary earnings. Total pension assets grew from 71.5 percent of wage and salary earnings in 1980 to 261.1 percent in 2005, a 3.65-fold increase. Assets in private pension plans grew from 63.7 percent of private NIPA wage and salary earnings in 1980 to 234.0 percent in 2005. This increase in the "wealth-to-income" ratio describes the rise in retirement asset accumulation over this period.

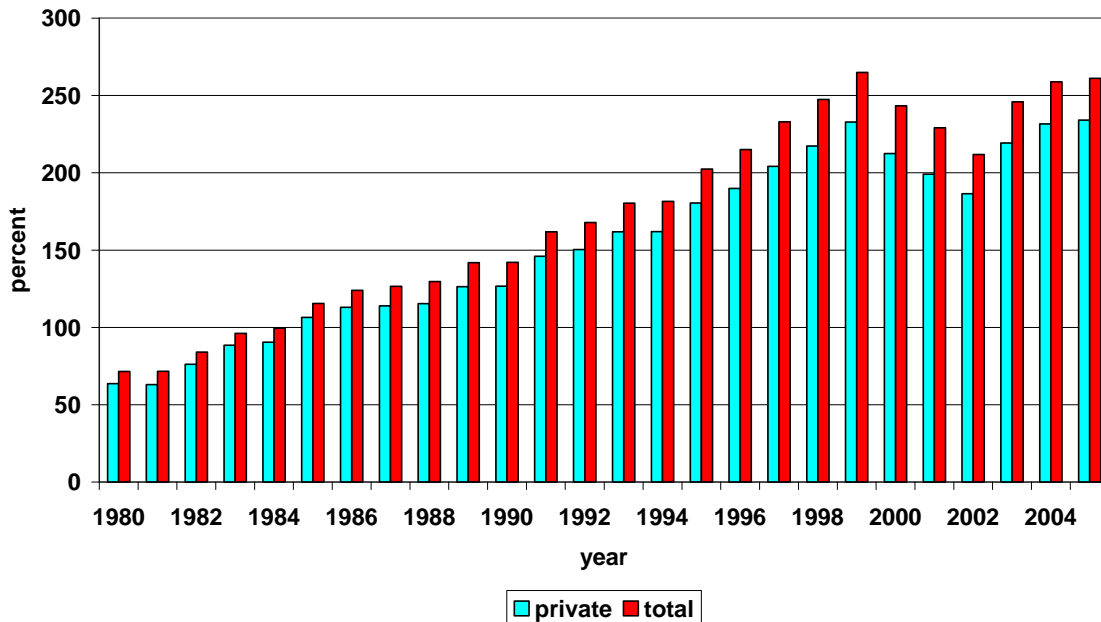
Demographic changes between 1980 and 2005 complicate comparison of the pension asset-to-earnings ratios in the two years. The U.S. population was older in 2005 than in 1980, so even if the age profile of pension wealth was the same in the two years, one could find a higher aggregate pension wealth to earnings ratio in 2005. Yet demographic changes do not seem large enough to explain the observed differences. The share of the population over the age of 55 rose from 20.9 percent in 1980 to 22.7 percent in 2005. The share between ages 45 and 54 rose from 10.1 percent to 14.3 percent, reflecting the presence of many members of the Baby Boom cohort in this age range in 2005. Even this increase of nearly forty percent in the population share in key pre-retirement age groups is more modest than the increase in pension assets relative to earnings. The increase in pension assets relative to earnings suggests that, on average, the capacity to replace pre-retirement income has increased rather substantially over the past twenty-five years although it does not mean that all current or future retirees have sufficient retirement assets. Persons retiring in 2005 retire earlier and live longer than persons retiring in 1980 so the "wealth-to-income" ratio

required to replace pre-retirement earnings should be higher in 2005 than in 1980.

2-1. Growth of pension assets, 1980-2005, by sector



2-2. Total (private) pension assets as percent of total (private) NIPA wage and salary



This increase in retirement assets can also be seen in the micro data.

Table 2-1 shows mean assets in 2000 for all households age 63 to 67 in the Health and Retirement Study. In this year the mean of DB pension assets, defined as the present value of expected benefits, is \$92,228; 401(k) assets in this year were \$26,098 and IRA and Keogh assets, which include rollovers from 401(k) plans, are \$77,716. Poterba, Venti and Wise [2007c] show that the real value of DB assets at age 65 was higher in 2000 than in 1980. Similarly, 401(k) and IRA assets are much higher in 2000 than in 1980, indicating that the accumulation of assets dedicated to retirement increased substantially between 1980 and 2000. For comparison, Table 2-1 also includes mean household Social Security wealth of \$181,373 in 2000. On average, the sum of DB, 401(k), IRA,

and Keogh assets exceeded the present value of future Social Security benefits in 2000.

Table 2-1. Mean assets of households with head age 63 to 67 in 2000

Asset	Amount
DB Pension Assets	\$92,288
401(k) Assets	\$26,098
IRA & Keogh Assets	\$77,716
Social Security Wealth	\$181,373

Source: Authors' calculations from the 2000 Health and Retirement Study

3. Pension Participation

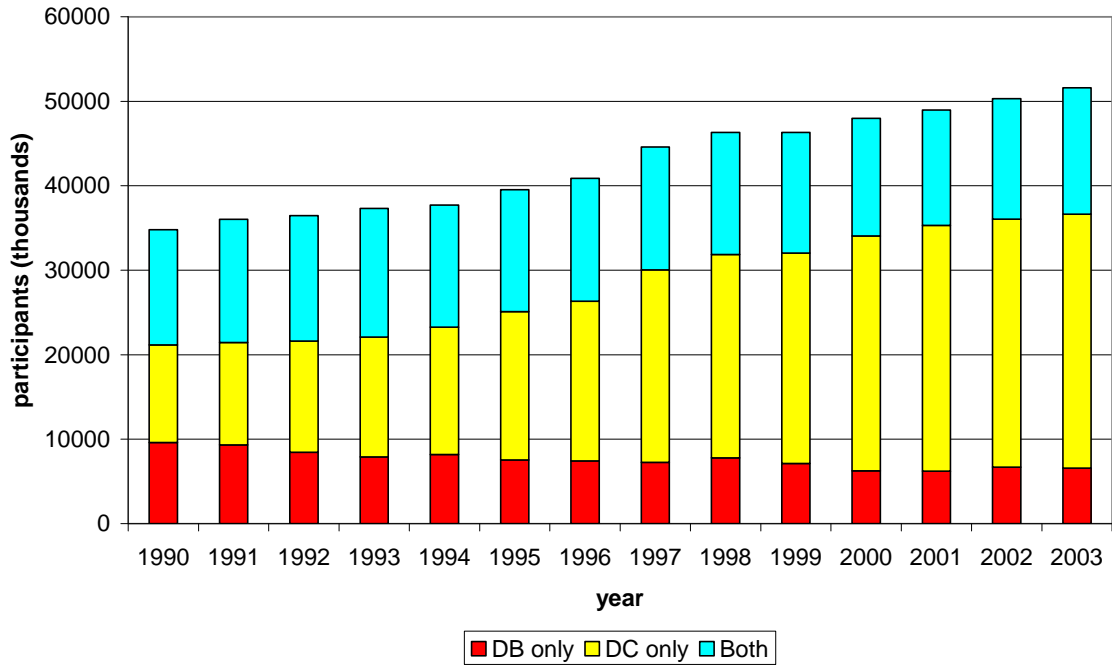
While assets in pension plans have grown dramatically since 1980, the proportion of private sector employees participating in a pension plan has remained roughly constant, according to estimates from the Current Population Survey (CPS) described in Munnell and Perun [2006] and Purcell [2006]. Other surveys, summarized for example by Sanzenbacher [2006], yield similar profiles although some report slightly rising participation and others report slightly falling participation. The percentage of public sector workers participating in a pension plan has remained constant at nearly 100 percent between 1980 and 2004.

The data from the Form 5500 reports that we have used to track contributions and assets are not helpful for studying overall trends in participation. They report the number of active participants in each pension plan offered by each employer. Since many employers offer more than one pension plan to their employees, most commonly a DB and a 401(k), the total number of

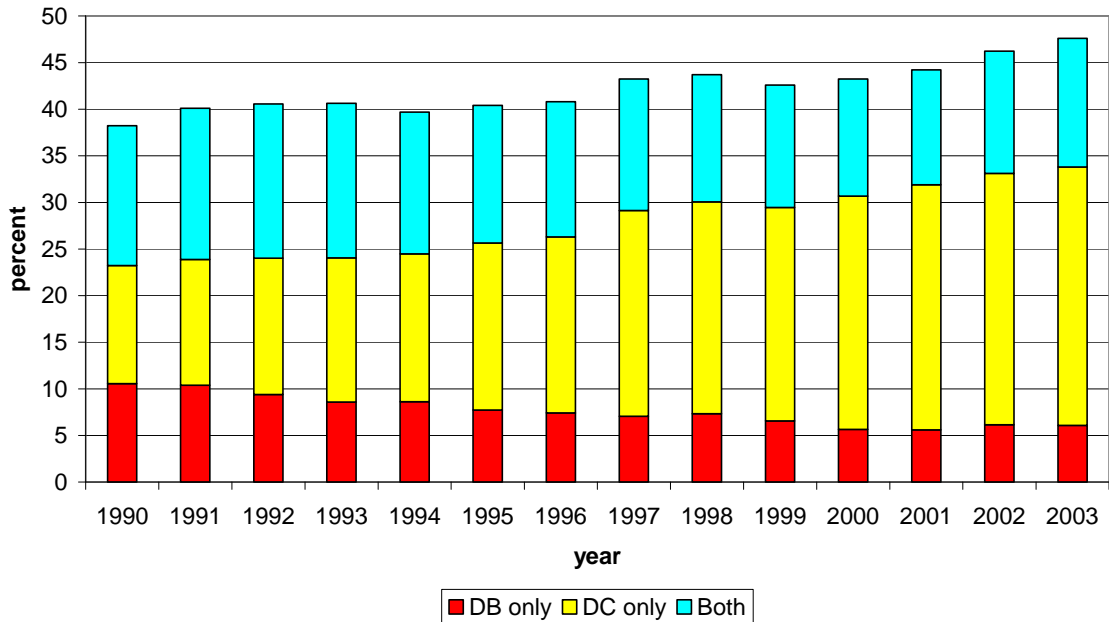
active participants in the Form 5500 may double-count many employees. Buessing and Soto [1996] have carefully attempted to adjust for double-counting by making a number of assumptions to distinguish between primary and supplemental plans. By eliminating supplemental plans they derive an estimate of pension plan participants for each year between 1990 and 2003 for private firms with at least 100 employees. Figure 3-1 shows their estimates. Over this period the number of employees covered by a DB plan declined by about one-third, while the number covered by only a DC plan (primarily 401(k)s) increased almost three-fold. The number of employees participating in both a DB and a DC plan remained roughly constant. Overall, participation increased from about 35 million in 1990 to nearly 52 million in 2003.

To place these changes in perspective we graph participation as a percent of private sector employment in Figure 3-2. In contrast to the results obtained from the CPS, these results show an upward trend in the overall number of private sector pension participants, from 38.2 percent in 1990 to 47.6 percent in 2003. The overall participation rate is slightly lower than the level found in the CPS, probably because Buessing and Soto [2006] exclude small firms. Because much of the recent growth in 401(k)s coverage is in small firms, these results are likely to understate the growth in 401(k) participation.

3-1. Growth of private sector participants, 1990-2003



3-2. Private sector participants as a percent of private sector employment, 1990-2003



The double-counting problem does not prevent the use of the Form 5500 data to study trends in participation in each type of pension since employers typically offer each worker at most one DB plan and one personal account plan. Figure 3-3 shows the change in the number of active participants by plan type in the private sector between 1980 and 2004. Unlike the previous two figures, IRA and Keogh participants, many of whom also have employer-sponsored pensions, are included here. Without any adjustment for double-counting, the total number of participants increased from just over 50 million in 1980 to almost 80 million in 2004. The figure shows the large increase in the number of 401(k) participants and the much smaller decline in the number of DB participants. Between 1982 and 2004, while the number of 401(k) participants grew by over 44 million, the number of DB participants declined by about 10 million. Poterba, Venti, and Wise [2004] show that there was very little replacement of DB plans by 401(k) plans between 1984 and 1997. The majority of new 401(k) plans during this period supplemented existing DB plans.

Figure 3-3 also shows the decline in the number of traditional employer-provided DC plans. It is likely that some of the growth in 401(k) plans is due to the conversion of traditional employer-provided DC plans to 401(k) plans. Benjamin [2003] estimates that about 30 percent of 401(k) assets in 1991 were originally contributed to traditional DC plans. Gale, Papke and VanDerhei [2005] estimate that between 23 and 41 percent of existing 401(k) plans in 1989 had been converted from previously existing DC plans.

3-3. Active participants in the private sector, 1980-2004

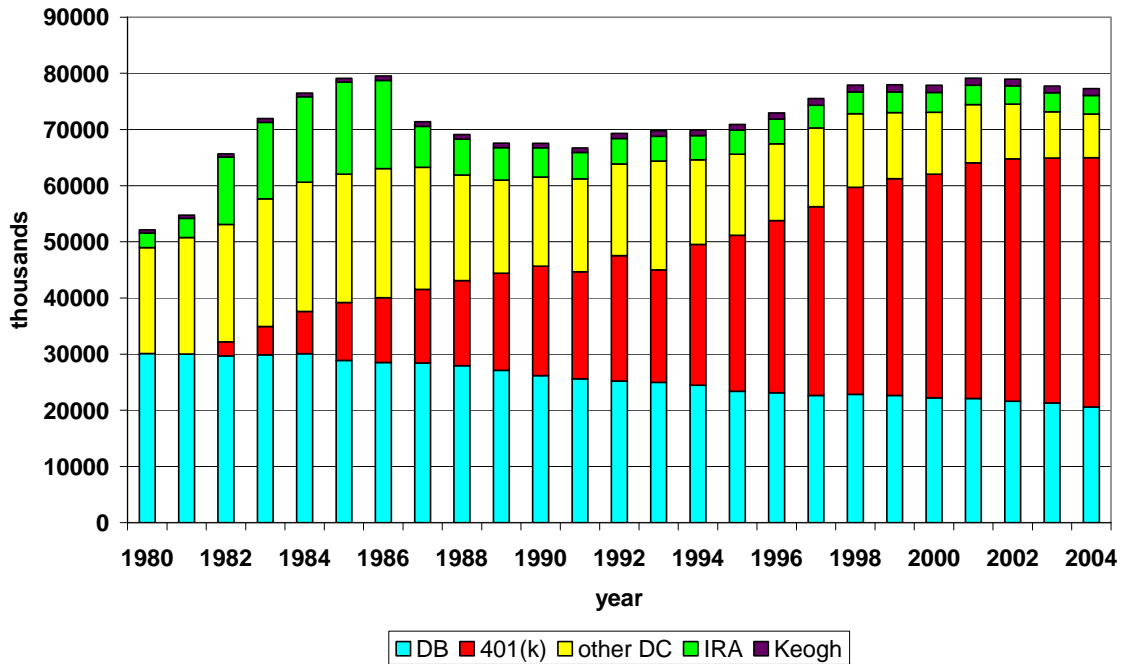
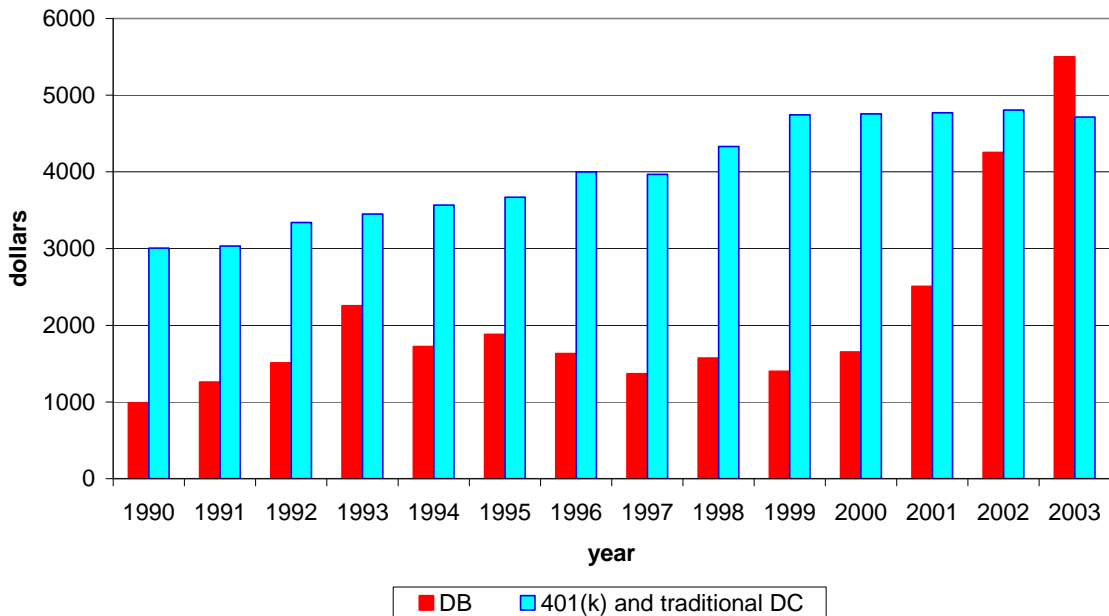


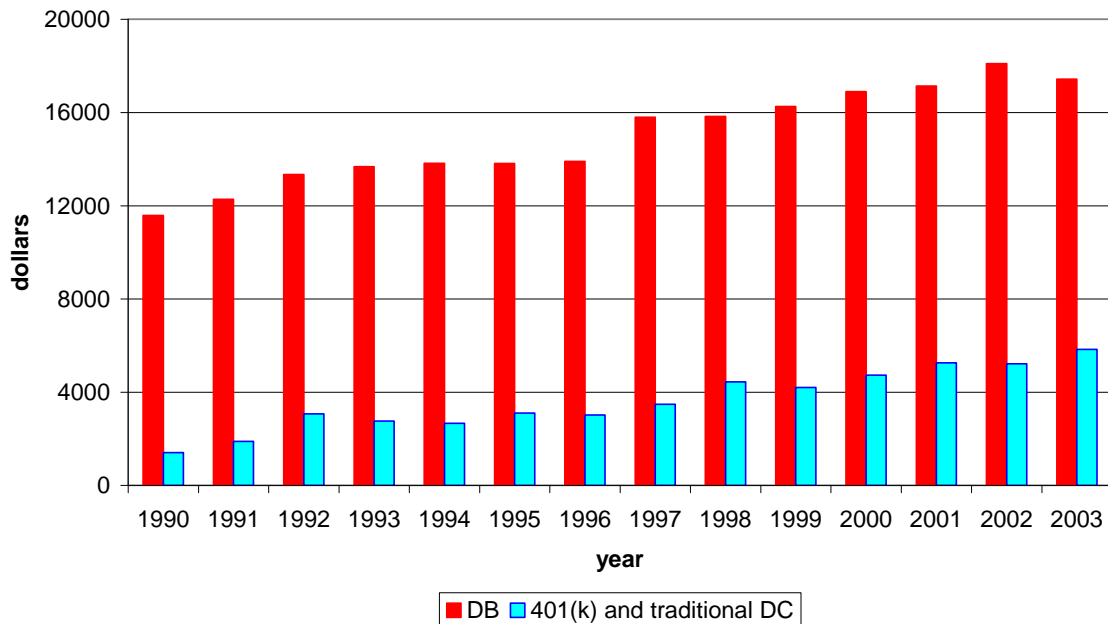
Figure 3-4 shows the average contribution per participant in the private sector. The estimate for DB plans is total contributions to DB plans divided by Buessing and Soto's [2006] estimate of the number of participants in these plans. The estimate for "401(k) and traditional DC plans" is the sum of all contributions to 401(k) plans and to traditional DC plans divided by the estimate of participants in these plans. Contributions per participant to 401(k)-like plans increased from \$3,000 in 1980 to almost \$5,000 by 1990. Between 1990 and 2000, 401(k) – like plan contributions were between two and three times as large as DB contributions per participant in most years. Contributions per participant to DB plans exceed \$3,000 only in the last two years when plan sponsors had to "catch-up" as the result of the sharp decline in equity prices.

3-4. Average contribution per participant in the private sector, by type



The federal sector estimates, shown in Figure 3-5, are total DB contributions divided by the number of federal DB participants and total contributions to 401(k)-like plans also divided by the number of DB participants. This calculation assumes that all federal sector 401(k)-like plans are supplementary. The relationship between DB and 401(k)-like contributions per participant in the federal sector is the opposite of that observed in the private sector. The level of 401(k)-like contributions per participant in the federal sector is very similar to the level of 401(k)-like contributions per participant in the private sector. However, federal sector DB contributions are much larger than federal sector 401(k)-like contributions. We do not present comparable estimates for the state and local sector because we are unable to distinguish between DB and 401(k)-like plans in this sector and thus cannot correct for double-counting.

3-5. Average contribution per participant in the federal sector, by type



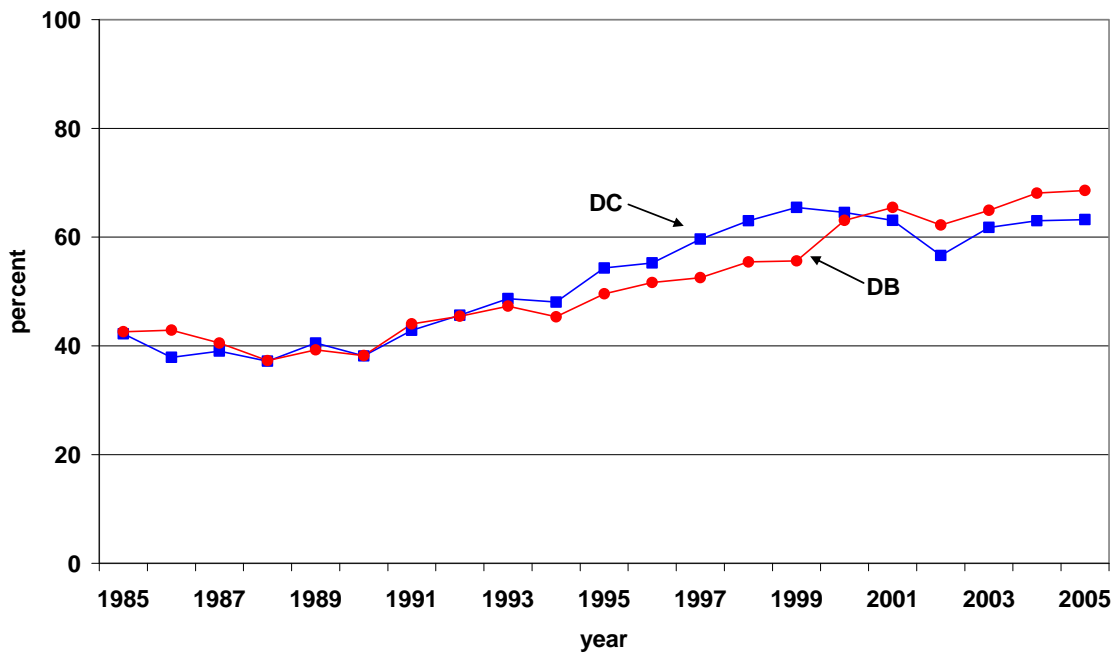
4. The Evolving Features of Personal Retirement Plans

There has been a transition from employer-provided DB plans to personal retirement accounts in the private sector. The proportion of personal accounts has also grown in the federal and in the state and local sectors. We now consider several other evolving dimensions of the transition and their implications. The next section considers how the transition will affect the retirement wealth of future retirees.

There has been a great deal of concern in the press and elsewhere that the rise of 401(k) plans exposes workers to financial market risks that they would not face in a traditional DB system. Indeed, the perceived risk of 401(k)

portfolios has been increasing in recent years. Figure 4-1 shows that the proportion of 401(k) assets allocated to equities increased substantially between 1985 and 2005, from 42 percent to 63 percent. The percent of DB assets invested in equities increased by almost the same amount.

4-1. Percent of assets held in equities by plan type



While the financial market risk of 401(k) plans has been widely emphasized, the job change risk of DB plans has received little if any attention. DB plans effectively penalize employees who change jobs; DC plans do not. This job change or turnover risk of DB plans was emphasized by Kotlikoff and Wise [1989]. Whether the transition from DB plans to DC-like plans increases risk exposure depends on the relative magnitudes of job-change risk and market risk. Several recent studies have directly addressed this question.

Samwick and Skinner [2004] use a sample of pension plans from the Survey of Consumer Finances to compare the risks associated with DB and DC plans. They consider risks associated with both job change and financial market returns. They conclude that the distribution of expected retirement income provided by 401(k) plans is preferred to the distribution provided by DB plans for all but the most risk-averse investors.

Schrager [2005] uses the Panel Study of Income Dynamics to estimate a life-cycle model of wealth accumulation that also incorporates both asset market risk and job turnover risk. She finds that because of rising job turnover in the 1990's, DC plans provide a more desirable source of retirement income for many workers. Her findings suggest that industries with the highest job risk have experienced the largest increases in DC participation over the last 15 years.

Aaronson and Coronado [2005] also suggest that the transition to DC plans has been stimulated by increasing rates of worker mobility. Poterba, Rauh, Venti, and Wise [2006b] analyze pension risk using actual earnings histories that incorporate job changes. They conclude that the job change risk inherent in DB plans outweighs the financial market risk of 401(k) plans. Thus the evidence indicates that the transition to DC-like plans has not increased the overall level of risk faced by workers and indeed may have reduced it. There is of course substantial heterogeneity in the circumstances of different workers. For some workers with very little risk of job turnover, for example, the transition from a DB plan to a DC plan with significant equity exposure may increase overall risk.

The role of DC plans within the DC sector has also changed over the past two decades. Early adopters tended to be large firms with pre-existing DB plans. The data in Table 4-1 show that in the early years over three-quarters of 401(k) participants also had a DB plan. As 401(k) plans spread to smaller firms, fewer new participants were also covered by a DB plan; the 401(k) plan was the sole plan. Perhaps the most important question about future 401(k) plan growth is the extent to which 401(k) plans will continue to be adopted by small firms. The projections discussed in the next section incorporate assumptions about the future spread of 401(k) plans. The realized diffusion of these plans, however, will depend importantly on government legislation and institutional arrangements that might facilitate the adoption of plans by small firms.

Table 4-1. Percentage of 401(k) participants also covered by a DB plan

Year	All 401(k) plans	Pre-existing 401(k) plans	First-year 401(k) plans
1984	82.4		
1985	78.0		
1986	75.3		
1987	69.7		
1988	67.8	69.3	47.5
1989	65.3	66.8	46.0
1990	61.8	63.5	32.8
1991	58.2	60.2	26.1
1992	55.7	58.3	19.0
1993	52.9	54.4	22.9
1994	51.0	51.6	32.9
1995	46.9	47.6	28.0
1996	45.8	46.0	39.4
1997	42.4	43.2	22.5
1998	40.1	41.1	16.7
1999	37.3	37.5	33.6
2000	36.6	36.6	38.0
2001	35.2	34.9	41.4
2002	36.0	36.2	29.0
2003	34.3	34.4	29.3

Source: Authors' calculations from Form 5500 filings.

Note: The number of active participants used in these calculations includes noncontributors.

Future participation in 401(k) plans, given plan eligibility, may be aided by recent legislation that makes it easier for firms to offer 401(k) plans containing participation-enhancing features. The Pension Protection Act of 2006, for example, makes it easier for employers to implement automatic enrollment, set default contribution rates, and set default asset allocations in 401(k) plans. The enormous influence that changes in these plan features may have on

participation and the accumulation of assets has been extensively studied by Choi, Laibson and Madrian [2004], Beshears, Choi, Laibson and Madrian [2006], and Holden and VanDerhei [2005].

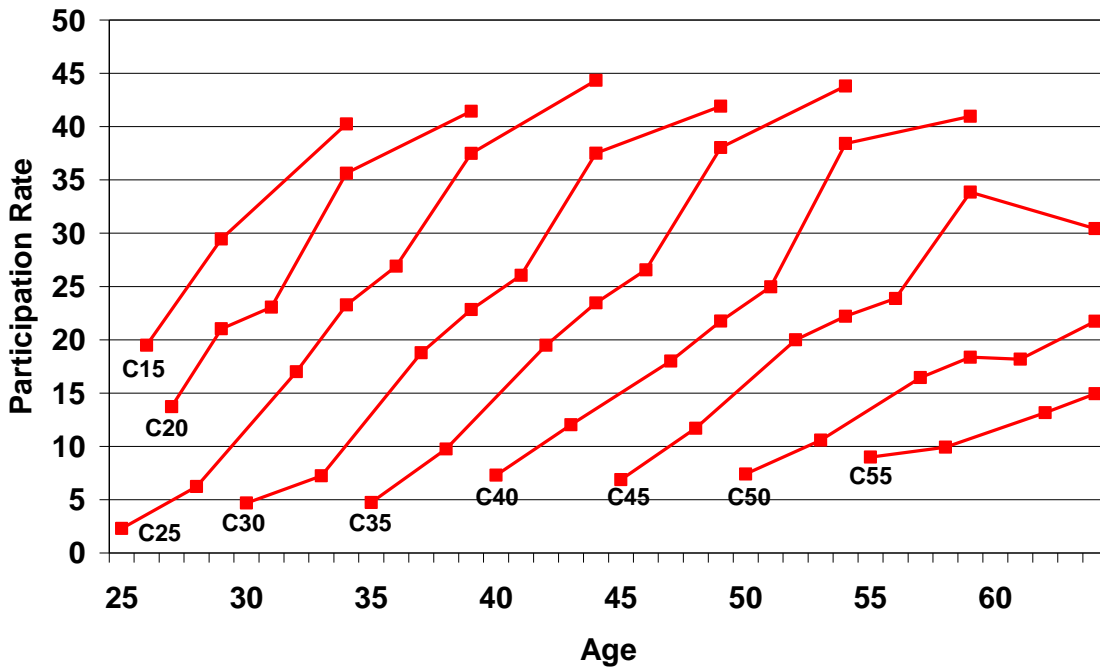
Finally, the investment options available to 401(k) participants are evolving rapidly. Recent legislation has greatly reduced the role of employer stock as an investment option and encouraged plan sponsors to diversify investment offerings. More and more plans are offering "life-cycle" or "target-retirement" funds that maintain a well-diversified investment mix that is intended to be appropriate for the participant's age or retirement date. Poterba, Rauh, Venti, and Wise [2006a] suggest that these plans have the potential to either reduce risk or increase returns for some participants, depending on the investment options that otherwise would have been available. The PPA of 2006 enables plan sponsors to offer such funds as "defaults" for participants.

5. Projections of Future 401(k) Wealth

We now consider how the future spread of 401(k)-like plans will affect the retirement wealth of future retirees. The results are drawn from Poterba, Venti, and Wise [2007a,b,c,d], which explain our method and underlying assumptions in detail. We project future 401(k) participation rates based on historical data from the Survey of Income and Program Participation (SIPP). These data organized into cohort format are shown for persons in selected cohorts in Figure 5-1, where the cohort age "XX" in 1984 is identified as "CXX". Such data cannot be directly extrapolated to project participation rates for a given cohort in subsequent years.

We assume that participation continues to grow in the future, but that it grows more slowly than in the past. The maximum participation rate attained is under 60 percent for all but the five cohorts that retire between 2035 and 2040. For those groups, the latter cohorts the projected participation rate attains 75 percent in some in instances.

5-1. 401(k) participation for persons in 9 cohorts

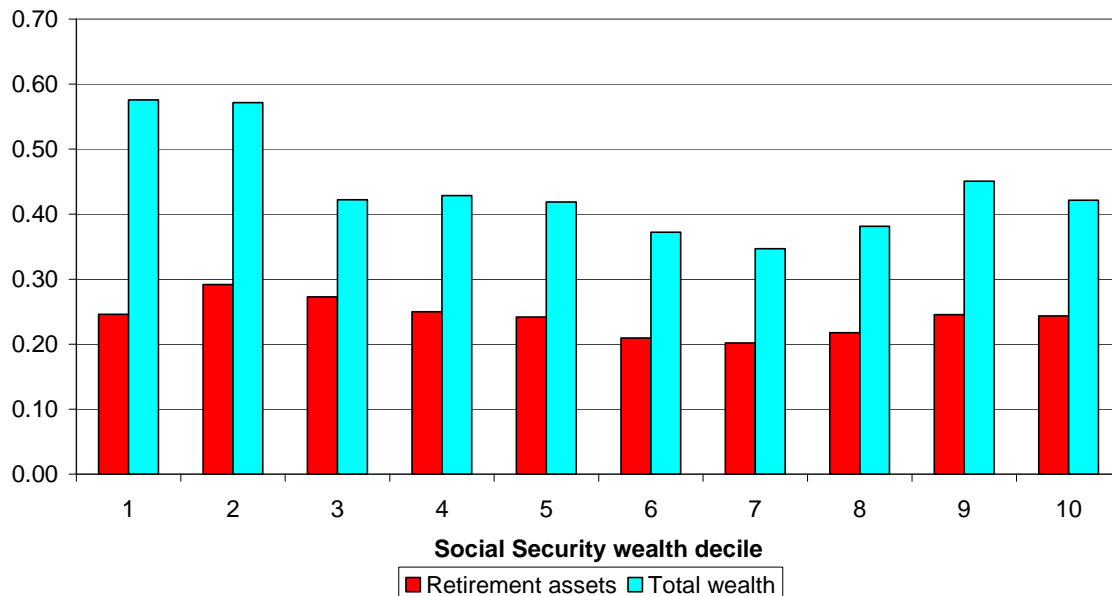


We have projected the average 401(k) retirement assets of families who will attain age 65 between now and 2040. We have also considered how the advance of 401(k) plans will affect future wealth for families with different levels of Social Security wealth. We group families by Social Security wealth because a large fraction of households now rely primarily on Social Security benefits for support in retirement and we want to understand how these families in particular

will be affected by the spread of 401(k) plans. The results reported here are taken for the most part from Poterba, Venti, and Wise [2007d].

For comparison, we tabulate the composition of household wealth for households between ages 63 and 67 in 2000 in the HRS. We do not show the detail here, but a striking feature of these data is the relationship of assets at retirement to “lifetime earnings.” Figure 5-2 shows the ratio of dedicated retirement assets (the sum of DB, 401(k), SS, IRA, and Keogh assets) to lifetime earnings for households in each Social Security wealth decile. It also shows the ratio of total wealth to lifetime earnings. There is little variation across deciles and no systematic increase in total wealth with rising Social Security wealth.

Figure 5-2. Ratio of retirement assets to lifetime earnings and ratio of total wealth to lifetime earnings, by Social Security wealth decile

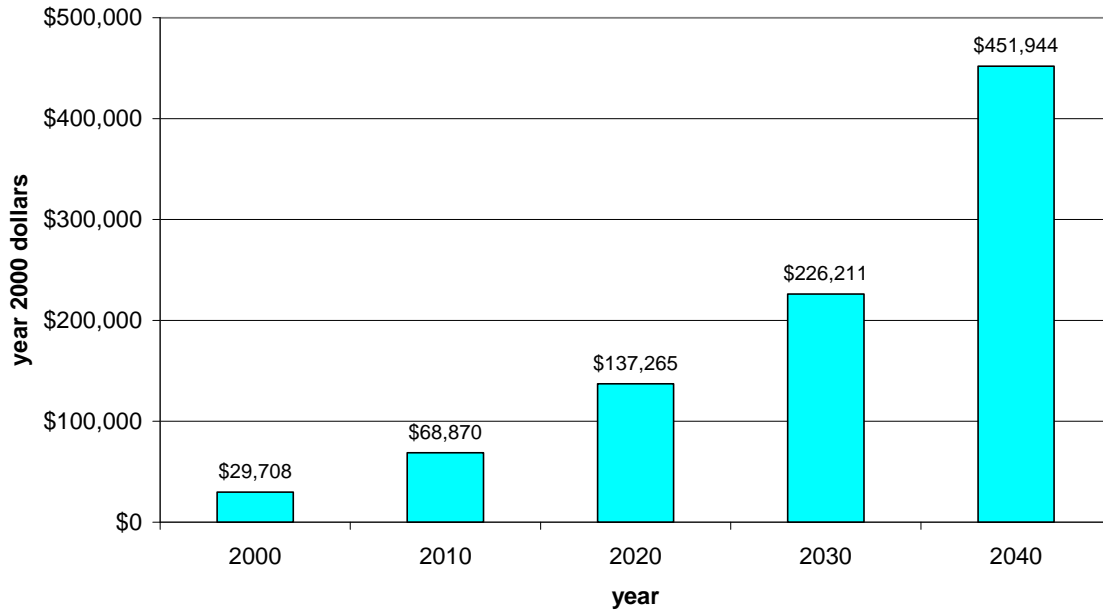


Over the next 35 years our projections show an enormous increase in the 401(k)-like assets of future retirees. Figure 5-3 shows the average 401(k) assets

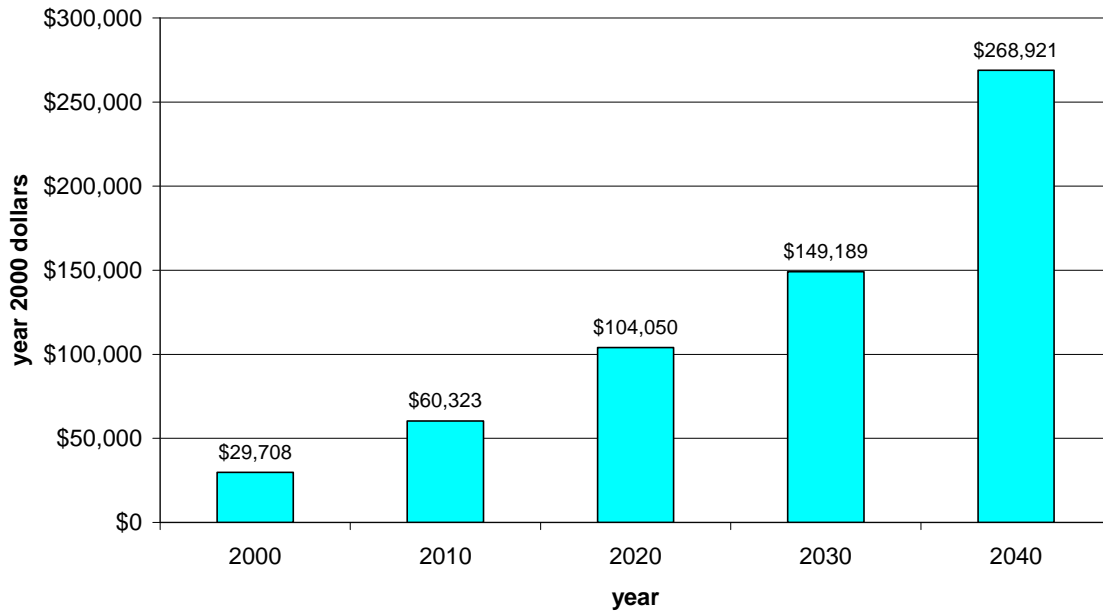
of all persons reaching age 65 in each decade between 2000 and 2040, assuming that historical rates of return on equities persist into the future. By 2040, the projections suggest that the average 65-year old will have over \$450,000 (in year 2000 dollars) in personal retirement accounts. Figure 5-4 shows that if future equity returns fall 300 basis points below the historical average, average 401(k)-like wealth at retirement will be almost \$270,000.

These projections are roughly in line with projections contained in other studies that have modeled aspects of the retirement accumulation process. Holden and VanDerhei [2002a, b] project 401(k) at retirement for persons who are age 26 to 35 in 2000. They base their projections of future participation rates on the 2000 cross-section by age and thus do not allow for younger cohorts to have higher participation rates than older cohorts had at the same age. Their results are presented in terms of the proportion of pre-retirement income that will be replaced by 401(k) income after retirement. Although it is difficult to directly compare their estimates to ours, their baseline estimates suggest that 401(k) income will replace between 50 and 70 percent of pre-retirement income. Purcell [2007] calculates 401(k) accumulations for young households in 2004 under the assumption of 100 percent participation. He projects a median 401(k) balance at age 65 of \$844,000 in year 2004 dollars.

**5-3. Growth of 401(k) assets at retirement (all persons)
assuming historical returns on equity**



**5-4. Growth of 401(k) assets at retirement (all persons)
assuming historical returns on equity less 300 bp**



To put these data in a broader economic context we show projected total 401(k) assets and projected DB assets relative to projected GDP. The projected DB assets are from Poterba, Venti and Wise [2007c] and the GDP projections are the "intermediate" forecasts from the Social Security Administration. Ratios assuming historical equity returns are shown in Figure 5-5, while ratios calculated under the assumption that equity returns average 300 basis points below the past are shown in Figure 5-6. Under both of the equity return assumptions, the sum of DB and DC assets continues to grow as a percentage of GDP and the increase in 401(k) assets far outweighs the decrease in DB assets.

Figure 5-5. Ratio of projected 401(k) and DB assets to projected GDP for selected years (historical equity returns)

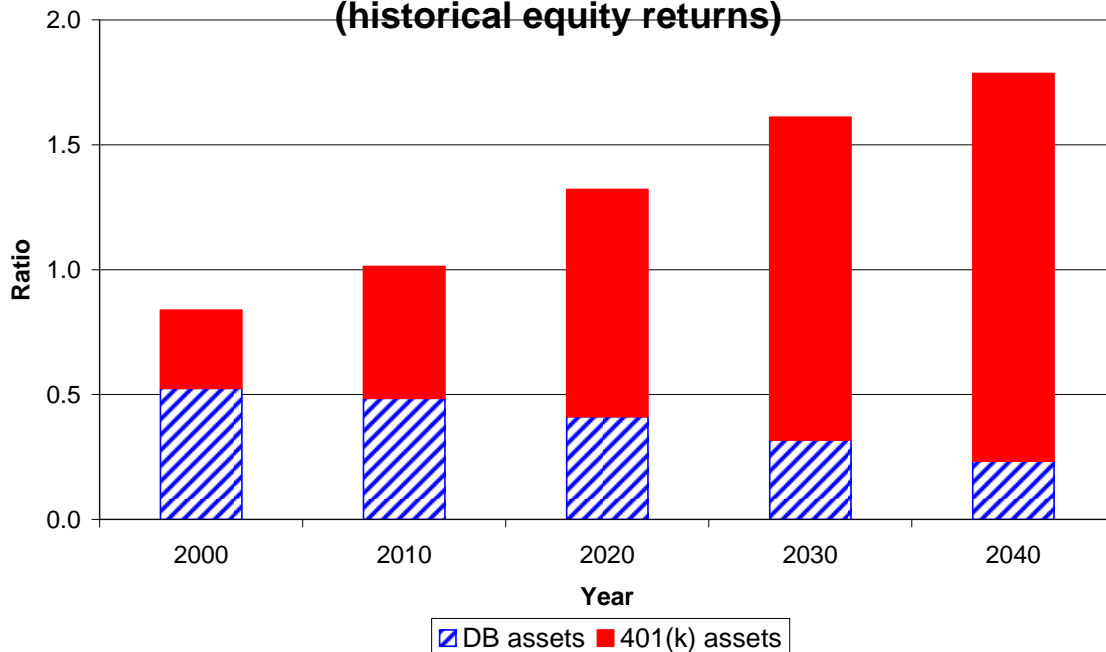
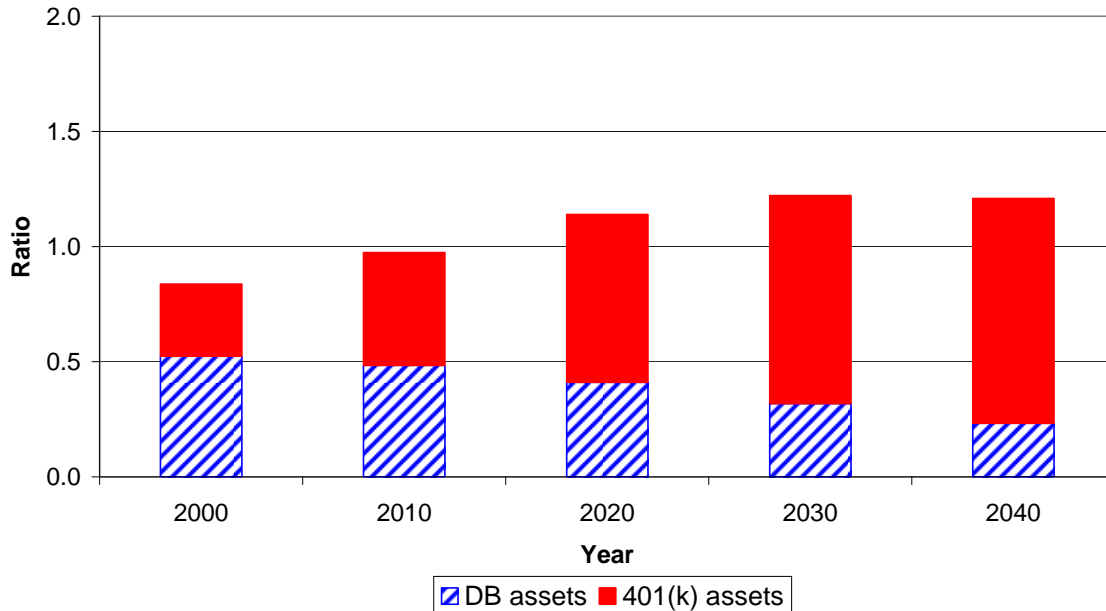


Figure 5-6. Ratio of projected 401(k) and DB assets to projected GDP for selected years (historical returns less 300bp)

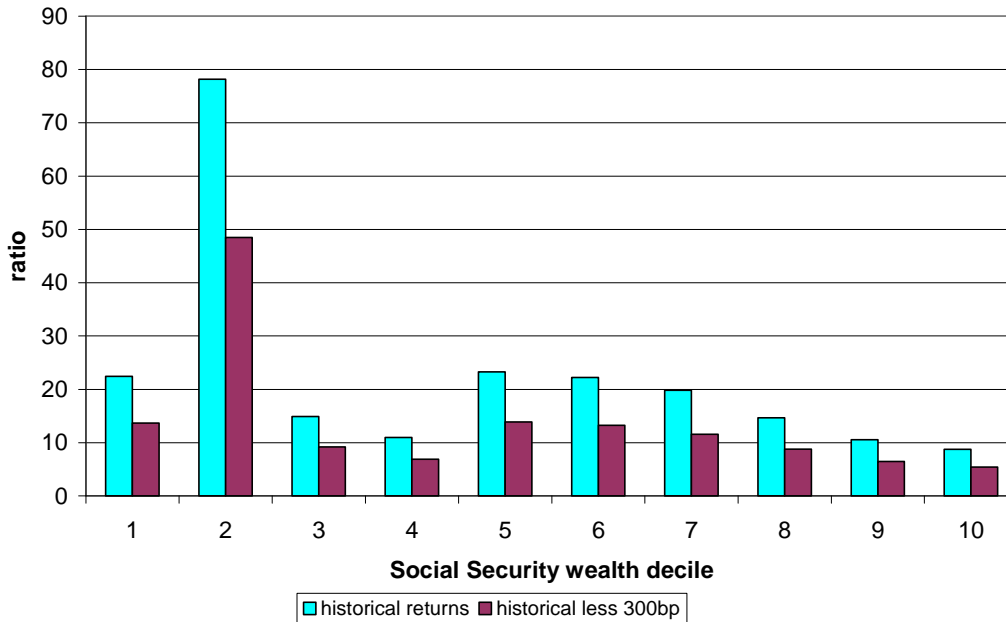


The projections show a very large increase in aggregate 401(k)-like retirement assets and in total retirement assets including both 401(k) and DB pensions. Because it appears that 401(k) assets will be the dominant form of retirement assets for most future retirees, we consider how these assets will affect the wealth of future retirees. We first show our projections of 401(k) assets for households in each decile of the Social Security wealth distribution and then show projections of the sum of Social Security wealth and 401(k) assets.

Figure 5-7 shows the ratio of projected 401(k) assets in 2040 (in year 2000 dollars) to 401(k) assets in 2000, by deciles of the Social Security wealth distribution, for both of our rate of return assumptions. In both cases the increase for the second decile is greater than expected because of the Social Security coverage issues discussed in Poterba, Venti and Wise [2007c]. The first

decile includes many households that worked at least part of their career outside the Social Security system and thus accumulated substantial assets, but little Social Security wealth. Ratios for the first two deciles are expected to be high because these households held very little 401(k) wealth in 2000. For both equity return assumptions, there is a large relative increase for all Social Security wealth deciles. If historical returns continue, the projections suggest that households in 2040 would have more than eight times the 401(k) assets held by households in 2000. Households in 2000 only had at most 18 years to contribute to a 401(k), and most contributed for fewer than ten years. In 2040, however, 401(k) assets will be based on as many as 40 years of contributions. A similar pattern arises if equity returns are 300 basis points lower in the future. In this case the ratio of assets in 2040 to assets in 2000 exceeds five for all Social Security wealth deciles.

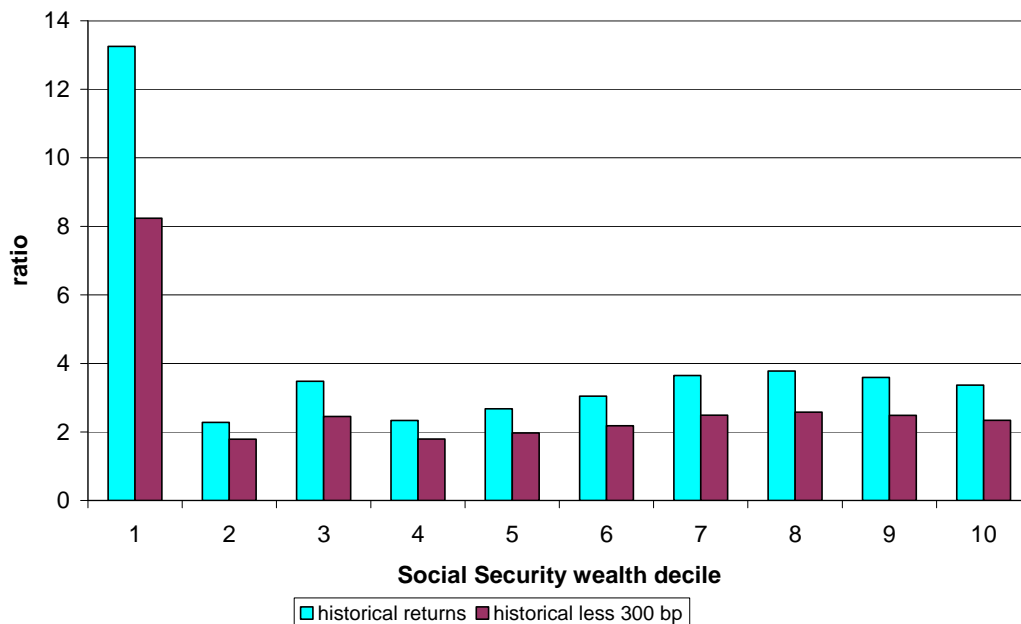
5-7. Ratio of 401(k) assets in 2040 to 401(k) assets in 2000 by SSW decile assuming historical equity returns and historical returns less 300 basis points



Finally, for each Social Security wealth decile, Figure 5-8 shows the ratio of the sum of Social Security wealth and 401(k) assets in 2040 (in year 2000 dollars) to the same sum in 2000. The figure shows the ratios assuming the historical rate of return on equity, as well as the ratios assuming the return on equity is 300 basis points less than the historical return. With the exception of the lowest decile, retirees will have combined Social Security and 401(k) asset balances in 2040 that are 2.2 to 3.8 times as great as those in 2000 if historical rates of return prevail. If future returns on equity are 300 basis points lower than historical returns, the ratio ranges from 1.7 to 2.6 for all but the lowest decile of the Social Security wealth distribution. There is no systematic pattern across the Social Security wealth deciles, although the very low level of 401(k) assets in 2000 for persons in the lowest decile makes the ratio very high. Thus our

projections suggest that the spread of 401(k) assets will result in a substantial increase the retirement assets of persons with the lowest Social Security wealth, and will result in a doubling or tripling of retirement assets for households in the rest of the Social Security wealth distribution. Because Social Security wealth is determined in large part by lifetime earnings, the ratios are similar if households are grouped by lifetime earnings rather than by Social Security wealth.

5-8. Ratio of the sum of SSW and 401(k) assets in 2040 to the sum of SSW and 401(k) assets in 2000 by SSW decile assuming historical equity returns and historical returns less 300 basis points



6. Summary

Over the past 25 years, personal retirement accounts have become the principal form of retirement saving in the United States, especially for persons who have entered the labor force during this period. While today most contributions to pension plans are to personal retirement accounts, three decades ago most contributions were to employer-provided defined benefit

plans. We have described these past changes in the pension landscape, projected future changes, and considered how these changes will affect the well-being of future retirees.

We emphasize three key findings. First, the total value of assets in retirement accounts has increased substantially since 1980. Assets in all retirement accounts increased from about 71 percent of NIPA wage and salary earnings in 1980 to 261 percent in 2005. Thus there has already been a very large increase in the accumulation of saving for retirement. Although the demographic structure of the population today is different from that in 1980, and this means it is not possible to simply compare the aggregate ratio of retirement wealth to labor income, the increase in the "wealth-to-income" ratio suggests an increase in the capacity to replace pre-retirement income over this period.

Second, the proportion of employees covered by at least one pension plan has remained about the same over the past 25 years, but the proportion covered by more than one plan has increased substantially. The future spread of 401(k) plans and the participation rate of eligible employees will likely depend primarily on the adoption of plans by small firms that currently do not offer pension plans and by employers' adoption of plan features such as automatic enrollment and default options that encourage participation.

Third, the projections of Poterba, Venti, and Wise [2007b] show that 401(k) assets will increase enormously over the next three decades. The sum of Social Security wealth and 401(k) assets held by households that reach retirement age in 2040 will be at least twice as large (in real dollars) as the sum

of these assets in 2000. Moreover, retirement assets are projected to grow for households all along the distribution of Social Security wealth. The advent of personal account saving is projected to yield very large increases in the financial assets of future retirees across the lifetime earnings spectrum.

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Appendix: Data Sources for Figures

Figure 1-1. DB and DC contributions are from Form 5500 reports (published in the Private pension Plan Bulletin, various years). IRA and Keogh contributions are from the IRS Statistics of Income. The figure includes IRA contributions from both private and public sector employees (the data do not distinguish one from the other). The IRA amount includes tax-deductible contributions only.

Figure 1-2. Private sector contributions are from the Form 5500. Federal and state and local contributions are from the National Income and Product Accounts (NIPA), Table 6-11 and the EBRI Databook.

Figures 1-3 & 1-4. Pension contributions from the Form 5500. Wage and salary data from the NIPA.

Figure 1-5 – 1-7. Contributions from the NIPA and EBRI Databook. Wage and salary data from the NIPA.

Figure 2-1. Pension assets are from the Federal Reserve's Flow of Funds Accounts (FFA). IRA and Keogh assets are included in the private sector totals. IRA assets include assets originating as deductible IRAs, Roth IRAs, and rollovers from other pensions.

Figure 2-2. Pension assets as described for Figure 2-1. Wage and salary data from the NIPA.

Figure 3-1. The number of active participants in the private sector is from Buessing and Soto (2006), Table A11.

Figure 3-2. The number of participants is from Buessing and Soto. Private sector employment is from U.S. BLS, Employment and Earnings.

Figure 3-3. Data for DB and DC participants are from the Form 5500. No adjustment is made for double-counting of participants. Data for IRA and Keogh participants are from the IRS Statistics of Income.

Figure 3-4. The dollar value of contributions is obtained from the Form 5500. The number of participants is from Buessing and Soto.

Figure 3-5. The dollar value of contributions and the number of participants are from the National Income and Product Accounts (NIPA) and the EBRI Databook.

Figure 4-1. Data are from the FFA.

Figure 5-1. Authors' calculations from various panels of the SIPP.

Figure 5-2 to 5-8. Authors' calculations based on projection model described in Poterba, Venti and Wise (2007b,d).