

PENSIONS IN AGING SOCIETIES

THE CHANGING FACE OF PRIVATE RETIREMENT SAVING IN THE UNITED STATES

James M. Poterba*

Steven F. Venti**

David A. Wise***

Over the past twenty years, private sector retirement saving in the United States has changed dramatically. There has been a transition from employer-provided defined benefit pensions to personal retirement accounts. These individually managed and controlled retirement accounts first became popular with the introduction of Individual Retirement Accounts (IRAs) in the early 1980s. Today, a number of other programs, known by the numbers of the Internal Revenue Code section that define them, have overtaken IRAs. These include 401(k) plans for private sector employees, 403(b) plans for employees of non-profit organizations, 457 plans for state and local government employees, the Thrift Savings Plan for federal employees, and Keogh plans for self-employed workers.

Contributions to these plans, and the assets held in these plans, have grown enormously in the last two decades, while employer-provided defined benefit

(DB) pension plans have declined in importance. In 1980, 92 percent of private retirement saving contributions were to employer-based plans. Of these contributions, 64 percent were to DB plans, while the remaining contributions were to conventional employer-sponsored defined contribution (DC) plans. In 1999, including conventional DC plans, about 85 percent of private contributions were to accounts in which individuals controlled how much to contribute to the plan, how to invest plan assets, and how and when to withdraw money from the plans.

In this brief note, which draws heavily on our recent longer paper, PVW (2001), we describe the recent changes in the magnitude and the composition of saving for retirement. We focus primarily on aggregate data on retirement plan assets and contributions. Aggregate retirement saving plan assets have grown sharply over the past twenty-five years. We describe how these changes are related to the shift from employer-sponsored defined benefit plans to personal retirement saving. We conclude by discussing several broader issues, such as the relationship between retirement plan saving, which is close to eight percent of personal income, and the National Income and Product Account (NIPA) personal saving rate, which is now close to zero.

Retirement plan assets

Aggregate retirement plan assets include assets in employer DB pension funds and in conventional employer-sponsored individual DC plans, as well as assets in 401(k) plans, IRAs, Keogh plans, and other personal retirement accounts. Figure 1 shows the ratio of assets in all of these private retirement plans, as reported in the Federal Reserve Board's Flow of Funds Accounts, to private sector wage and salary earnings. This ratio increased from 0.39 to 2.02 between 1975 and 1998, the latest year for which we have data. The figure also shows the ratio of assets in all retirement plans, private plans as well as public sector plans, to total wages and salaries; this ratio tracks the private sector ratio

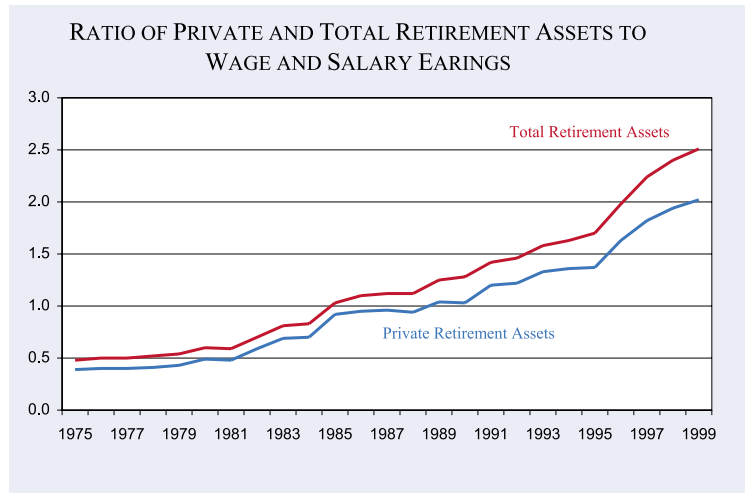


* James M. Poterba is the Mitsui Professor of Economics at the Massachusetts Institute of Technology. He is also the Director of the Public Economics Research Program at the National Bureau of Economic Research. He received his D.Phil. in Economics at Oxford University. His research focuses on the impact of taxation on household and firm behavior, with a particular emphasis on household portfolio and saving decisions.

** Steven F. Venti is a Professor of Economics at Dartmouth College and has been a member of the Dartmouth College faculty since 1982. He is also a Faculty Research Associate at the National Bureau of Economic Research. He received an A.B. in economics from Boston College and an A.M. and Ph.D. in economics from Harvard University. Professor Venti's research focuses on the relationship between tax policy and saving, the effectiveness of saving incentives, housing policy, and the process of wealth accumulation.

*** David A. Wise is the John F. Stambaugh Professor of Political Economy at the John F. Kennedy School of Government at Harvard University. He is the Area Director for Health and Retirement Programs, and the Director of the Research Program on the Economics of Aging, at the National Bureau of Economic Research. He received his Ph.D. from the University of California at Berkeley. Professor Wise' research spans many issues in the economic analysis of aging populations, especially the effect of population aging on labor markets and household saving.

Figure 1

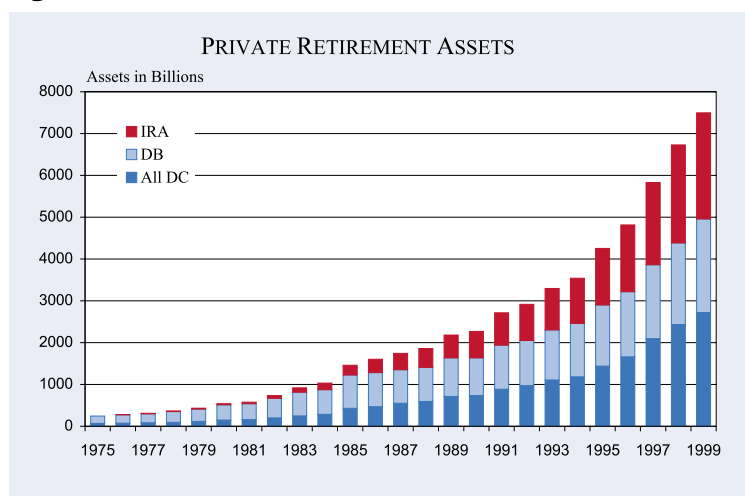


very closely. The figure shows modest growth in the ratio of retirement assets to earnings through 1981, more rapid growth between 1982 and 1994 following the introduction of IRAs and 401(k) plans and during a period of positive stock market returns, and rapidly accelerated growth beginning in 1995, corresponding to large increases in equity market returns.¹ The ratio has probably declined somewhat in the 1998-2001 period, as real stock market values have fallen.

Figure 2 dis-aggregates private retirement assets into several components. It shows that assets in DB plans continued to grow after the introduction of 401(k) and IRA plans, but that most of the growth of retirement assets since the early

¹ The IRA and 401(k) programs were both greatly expanded in 1982. The IRA program was subsequently scaled back in 1986.

Figure 2



² A substantial literature, reviewed in PVW (2001), suggests that much of the decline in DB pensions has to do with the decline of industries that traditionally offered DB plans and the increasing regulatory burden on firms offering DB plans.

³ The Flow of Funds accounts define the latter series as including "assets of private pension plans held at life insurance companies, such as guaranteed investment contracts and variable annuity plans, that are managed for the benefit of individuals who are not separately identified to the insurance companies."

1980s has been in individual accounts. Moreover, there is no evidence of a decline in the assets in DB plans during the time period when assets in individual accounts were growing most rapidly.

There is some debate about whether there is a linkage between the slowdown in the growth of DB assets and the rise of assets in individually managed accounts. The foregoing data alone cannot address the possibility of substitution of DC plans for DB plans since we

do not have data on the time path that other retirement plan assets would have followed in the absence of the growth in DC assets. One suggestive calculation, however, considers what would have happened if *all* contributions to personal retirement accounts between 1985 and 1998 had come at the expense of DB contributions. In this case, if DC assets had not increased but the contributions had gone instead to DB plans, DB assets would have grown by a factor of 8.4 instead of 2.7.²

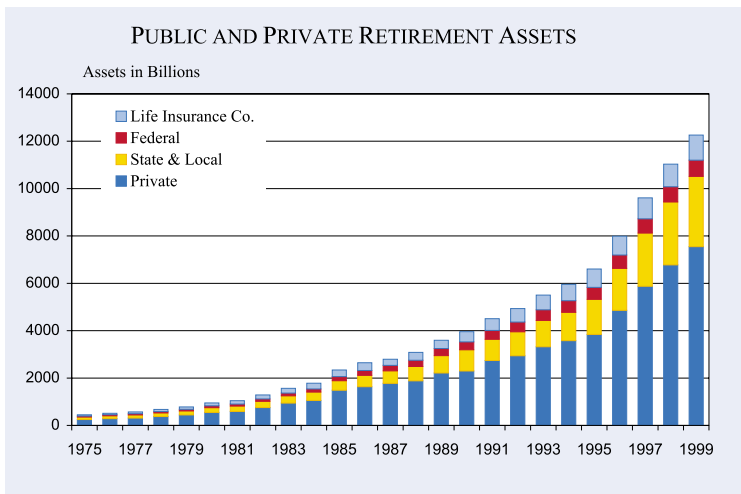
The private retirement assets in Figure 2 exclude assets in federal, state, and local retirement plans, and assets held by life insurance companies in retirement plans, that are also part of the retirement asset pool.³ Figure 3 shows the assets in private plans as well as the assets in these other plans. In 1999, about 40 percent of all retirement assets were in federal, state and local, and insurance plan funds.

The increase in retirement plan assets relative to income shown in Figure 1 is not mirrored in rising values of other assets. The case of equity in owner-occupied housing is particularly

² A substantial literature, reviewed in PVW (2001), suggests that much of the decline in DB pensions has to do with the decline of industries that traditionally offered DB plans and the increasing regulatory burden on firms offering DB plans.

³ The Flow of Funds accounts define the latter series as including "assets of private pension plans held at life insurance companies, such as guaranteed investment contracts and variable annuity plans, that are managed for the benefit of individuals who are not separately identified to the insurance companies."

Figure 3



interesting, since housing equity is the most important asset of a large fraction of Americans. Housing equity relative to income has not increased over the past two and one-half decades. Figure 4 shows housing equity as a fraction of disposable income from 1975 to 1998. The ratio increased about 25 percent between 1975 and 1989, but by 1999 it was essentially at the same level as in 1975. The figure also shows non-retirement-non-home-equity net worth as a share of disposable income. This ratio decreased and then increased between 1985 and 1999. The increase between 1975 and 1999, 27 percent, was not nearly as great as the increase in retirement assets over this period.

The growth of retirement assets relative to income may be “explained” by a number of factors. These include the advent of new retirement saving vehicles, as well as other factors such as demographic

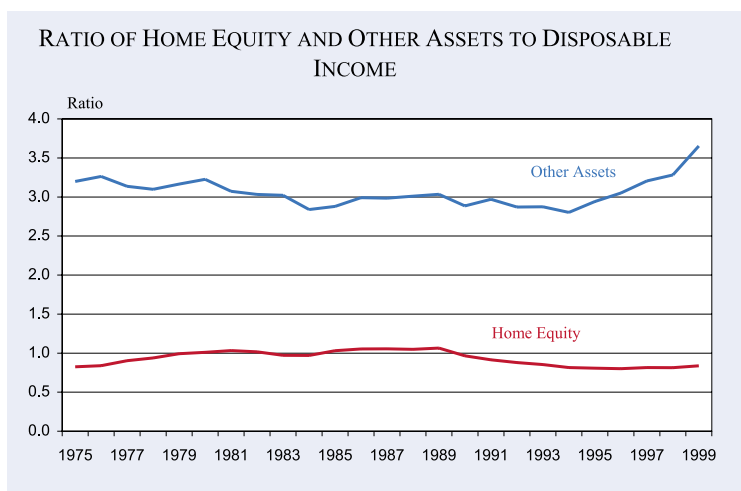
change. Changes in three features of the population – demographic composition, mortality rates, and labor force participation – have likely contributed to the rise in retirement assets relative to income. None of these factors seems capable, either alone or in tandem, of explaining the observed growth in retirement assets.

The increase in life expectancy at retirement age is the first substantial change that may have contributed to rising retirement assets. In 1975, life expectancy for a U.S. man at age 62 was 15.5 years, while that for a woman was 20.3 years. By 1997, male life expectancy at age 62 had increased to 17.6 years, while female life expectancy had risen to 21.4 years. For men, this implies a 13.5 percent increase in the number of years that need to be supported with retirement resources, beginning at age 62. For women, the change was 5.4 percent. These proportional changes provide a crude measure of the increase in retirement resources that would be needed to offset improved longevity. These changes might account for an increase in resources of roughly ten percent, much less than the actual growth of retirement assets relative to income.

The second important demographic change that might have contributed to rising retirement assets is the aging of the labor force. Translating information on the age structure of the population into predictions about the wealth to income ratio requires detailed information on saving by age, yet there is no agreement on the relative importance of life-cycle, precautionary, and other factors in saving decisions. In 1975, the average age of those over the age of 20 in the U.S. population was 44.6 years. For men, the average age was 43.9 years. Between 1975 and 1985 the average age of those over 20 actually declined, to 44.3 years for the entire population and 43.5 years for the male population. This reflected

Demographic factors account for only a small fraction of the large change in retirement assets

Figure 4

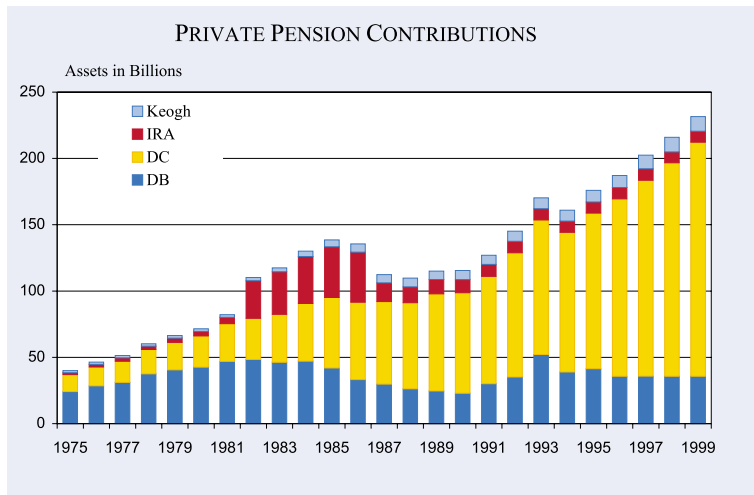


the entry of the “baby boom” cohorts into the 20-plus age group. By 1998, the working age population had grown older: the average age of all 20-plus persons was 45.5 years, and that of 20-plus men was 44.8 years. Thus between 1985 and 1998, the average age of the adult population rose by just over one year. Similarly, the average age of those in the labor force in 1985 was 38.5 years, while in 1998, it was 40.3 years. Thus, in the late 1990s, those who were in their earning years were older and had fewer remaining years of work to accumulate assets for retirement than those in the working population in the 1970s and early 1980s. But these changes were modest.

The final change that may have affected retirement assets is the shifting age of retirement in the U.S. population. During the 1980s and 1990s, these changes were modest by comparison to earlier decades. Burtless and Quinn (2000) present detailed information on age-specific labor force participation rates for U.S. men in 1970, 1984-5, and 1998-9. Their data show a sharp decline in labor force participation rates between 1970 and 1984-5, but relatively little decline subsequently. At ages above 65, the labor force participation rate in the late 1990s was greater than that in the mid-1980s. There is no systematic difference in labor force participation rates at younger ages. Labor force participation rates for women in their early 60s increased between the mid-1980s and the late 1990s, as cohorts of women with greater labor force participation rates when they were younger entered the retirement-age cohort.

Changes in retirement ages are therefore not likely to account for substantial changes in retirement wealth relative to income during the last two decades. Demographic factors – shifting age structure and lengthening life expectancy – seem likely to account for mod-

Figure 5a

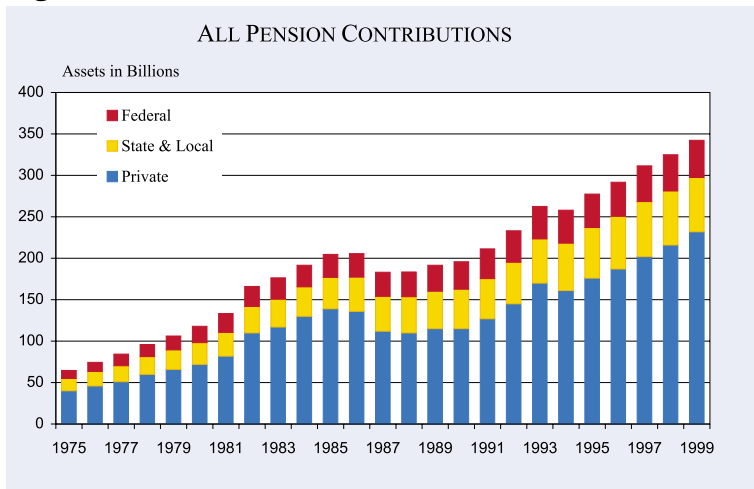


est increases in retirement assets, but they are unlikely to account for more than a small fraction of the large changes we observe.

Retirement assets flows

The accumulation of retirement assets depends on the inflow of contributions, the payout of benefits, and the return on invested assets. Figure 5a shows private pension plan contributions, which increased almost six-fold between 1975 and 1999, while Figure 5b shows contributions to all retirement plans. Neither of the series include contributions to privately held pension plans administered by insurance companies, which hold about 9 percent of the assets in all pension plans. IRA “rollover” contributions, in which assets are moved from another defined contribution plan to an IRA, are excluded from the contribution flows.

Figure 5b



Changes in retirement ages do not account for much of the change in retirement wealth

Figure 6a

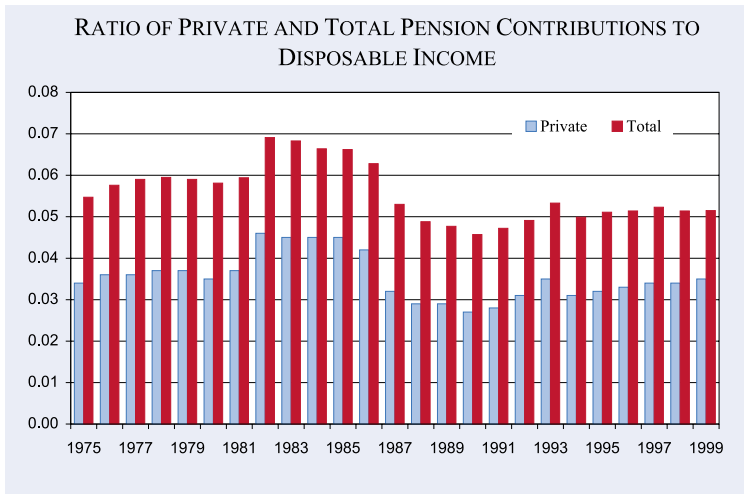
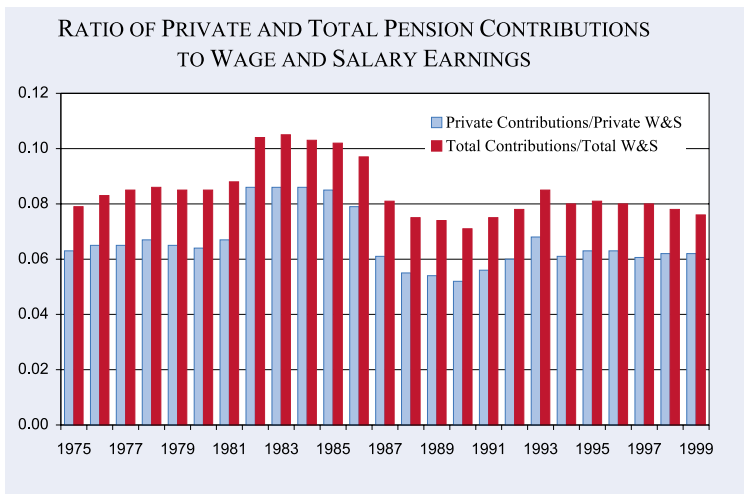
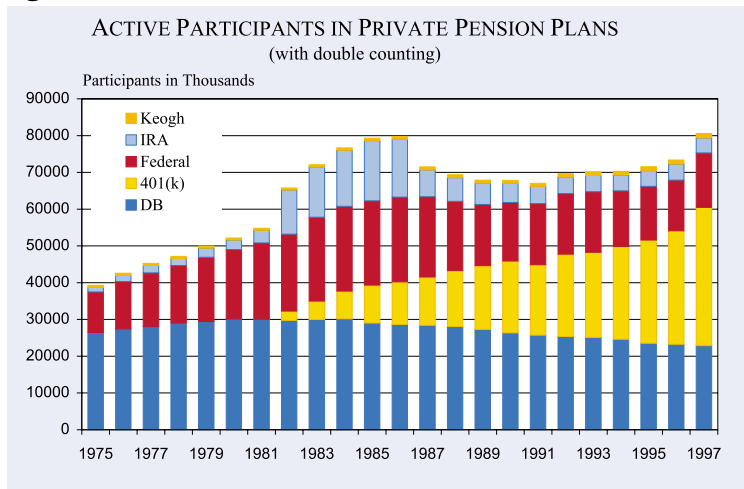


Figure 6b



The pronounced “hump” in retirement plan contributions between 1982 and 1986 corresponds to the beginning and subsequent retrenchment of the IRA program. The pattern strongly suggests that

Figure 7



IRA contributions during this period were not offset by a reduction in other forms of retirement saving. This suggests that the total pool of assets in retirement plans would likely be much greater today if the IRA program had not been limited in 1986.

Figure 6a shows both private and total retirement plan contributions scaled by disposable income, while Figure 6b shows the same contributions scaled by private and total earnings. We define these ratios as “retirement plan contribution rates.” They measure the proportion of current earnings that is saved in retirement accounts by current employees. Our analysis below compares retirement plan contribution rates to NIPA national saving rates.

Retirement plan contribution rates are remarkably stable

Figures 6a and 6b show that “retirement plan contribution rates” are remarkably stable over most of the last 25 years. Scaled by personal disposable income, the private plan contribution rate was about 3.5 percent in 1975 and in 1999, and the contribution rate for all plans varied between 5 and 6 percent for most of the period. When scaled by private and by all wage and salary earnings, the contribution rates are also stable, although they are greater than the rates scaled by personal disposable income. The retirement plan contribution rate for all plans, including those in the federal and state and local government sector, is near 8 percent for most of the period, or about two percentage points higher than the rate for the private sector alone.

The relative stability in the retirement plan contribution rates was broken only by a

large increase in the plan contribution rate when the IRA program was initiated, and a decrease when the program was curtailed in 1986. Relative to earnings, both the private and the all plan rates are about 2 percentage points higher during this period.

Time Series Changes in the “Retirement Plan Contribution Rate”

The relative stability of the retirement plan contribution rate conceals fluctuations in some of the factors that affect this rate. Contributions to private DC plans increased sharply over the 1975-1999 period, while DB contributions varied widely. At the end of this period, DB plan contributions were only slightly higher than at the beginning.

Retirement plan contributions are the product of the number of participants and the average contribution per participant. Figure 7 shows the sum of the number of active participants in all defined benefit and defined contribution plans.⁴ It illustrates in particular the rapid growth of 401(k) plans. These plans, which first became available in 1982, grew to almost 38 million participants by 1997. While 401(k) plan participation grew in the 1980s and 1990s, participation in DB plans declined from about 30 million in 1984 to about 23 million by 1997. Participation in non-401(k) DC plans increased until about 1986 and then declined, ending the period about 30 percent higher than at the beginning. In total, the number of plan participants increased from about 39 million in 1975 to over 80 million in 1997.

⁴ These data, from Form 5500 filings and IRS tabulations of tax returns, show the number of persons participating in each type of retirement saving plan. Many persons participate in more than one plan, so the total number of participants overstates the number of persons who participate in at least one plan. For 401(k) plans, participants include all persons eligible to contribute, regardless of actual contributions.

Figure 8a

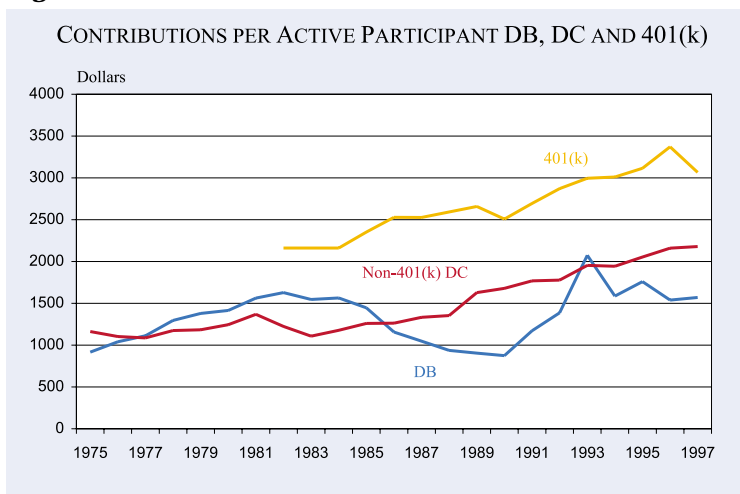


Figure 8b

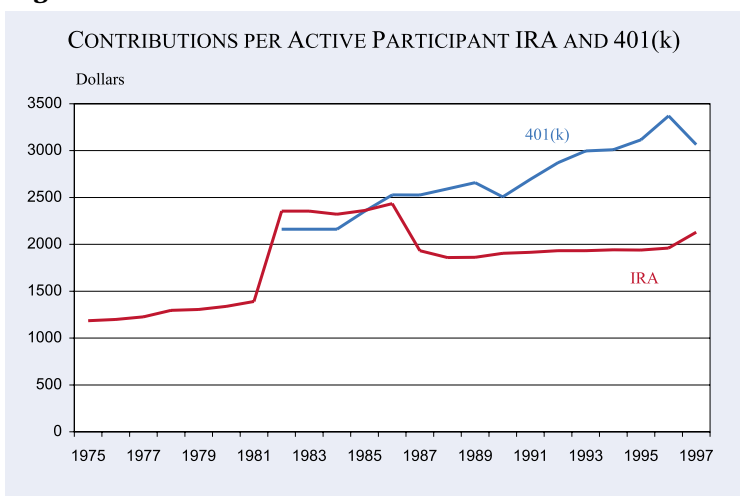


Figure 8a shows contributions per participant in DB, all DC, and 401(k) plans. The contributions to all DC plans include 401(k) contributions. Figure 8b shows IRA and 401(k) contributions. DB contributions per participant fluctuated substantially during the last two decades, and they were about 40 percent higher at the end of the period than at the beginning. Non-401(k) DC contributions per participant roughly doubled over the period, and on average were higher than DB contributions.

Over the past fifteen years, contributions per participant to 401(k) plans averaged twice the contributions per participant to DB plans. During the “unrestricted” IRA period, 1982-1986, IRA contributions on average were greater than 401(k) contributions. Recent legislative changes will raise the limits on IRA contributions between 2002 and 2006; this will probably raise IRA relative to 401(k) contributions.

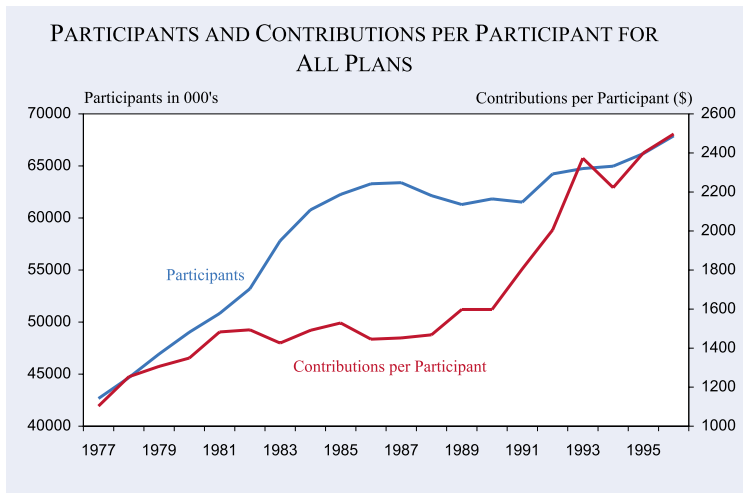
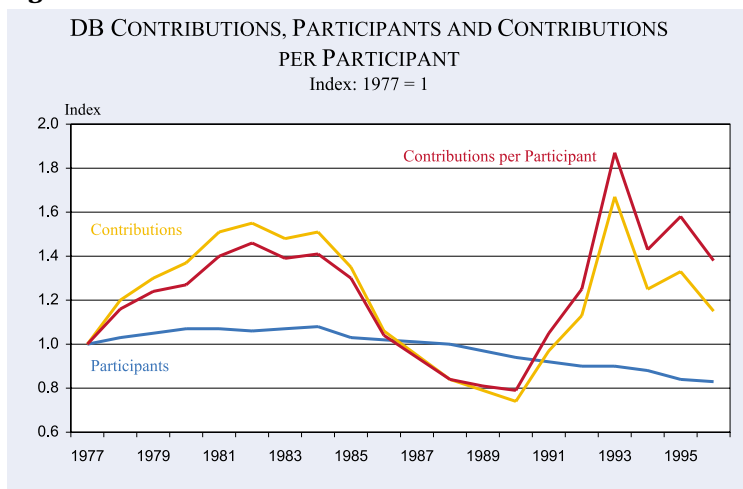
Figure 9

Figure 9 shows the trend in the number of participants in all plans combined and the trend in average contributions per participant. These two trends together yield an increase in total contributions. Since many individuals participate in more than one plan, and this results in double counting in the data on participants, the increase in average contributions per unique covered employee would be substantially higher than that shown in Figure 9.

DB Contributions and the Retirement Plan Contribution Rate

Figure 10 shows an index of defined benefit plan contributions per participant. It also shows an index for the number of participants, and the flow of contributions, to these plans. There are at least three reasons for the erratic variation in contributions to DB plans. The first is the slight rise and

Figure 10

then steady decline in the number of active participants (current employees) in DB plans over the 1975–98 period.

A second is the link between returns on DB plan assets and current funding decisions. Benefits promised by DB plans are prescribed by a formula, which is typically based on years of service and final salary. Promised benefits are a liability of the firm, and the firm must insure that assets held in the plan are sufficient to cover this liability. Other things equal, a

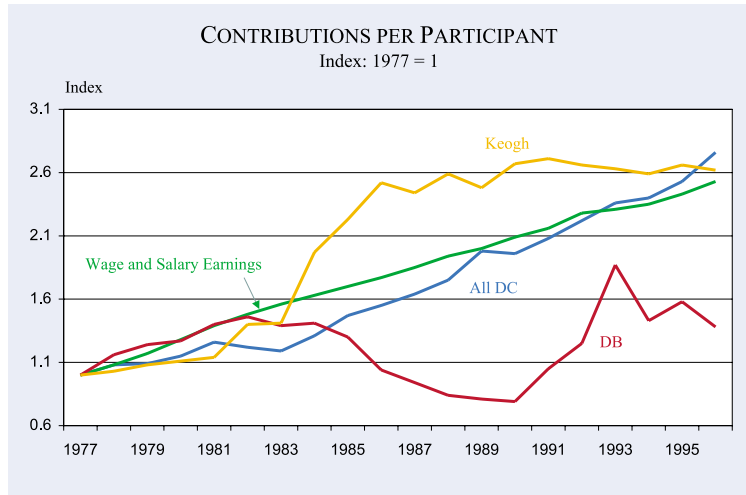
rise in investment returns increases DB asset balances relative to obligations, thereby reducing the need for additional contributions.

A third reason for the fluctuation in DB contributions is the series of legislative changes that limited the level of benefits that could be funded under DB plans and discouraged firms from over-funding their pension plans. Prior to 1986, firms could fund their DB plans to a level greater than their legal liability. A series of laws beginning with a 10 percent reversion tax, which was part of the Tax Reform Act of 1986, put stricter limits on funding. Ippolito [2001] estimates that in the absence of various funding restrictions, DB pension assets in 1995 would have been 28 percent higher. Schieber and Shoven [1997] report that when the limits on contributions to over-funded plans, that were part of the Omnibus Budget Reconciliation Act of 1987, took effect, 48 percent of a sample of large pension plans were precluded from making further contributions.

The substantial fluctuations in the DB plan contribution rate raises questions about how changes in DB plan contributions affect the retirement plan contribution rate. Total DB contributions are the product of the number of DB plan participants and the average contribution per participant. Fluctuations are due largely to movements in the contribution

DB contributions fluctuate widely

Figure 11



per participant. Figure 11 provides information on DB, DC, and Keogh contributions per participant over the 1975-1997 period. It shows that the earnings of wage and salary workers increased roughly 150 percent over this period. DC plan contributions per participant increased about 150 percent as well, as one would expect if contributions were a proportion of wage earnings. On the other hand, DB contributions per participant fluctuated and on average fell relative to wages.

DC contributions per participant rose in line with wages

Suppose that there had been no legislation limiting contributions to DB plans, that market returns had not affected DB contributions, that life expectancy at retirement had been constant, and that there were no changes in the demographic structure of the workforce covered by DB plans. If the returns on DB plan assets were in line with expectations, one might have expected DB contributions per participant, relative to wages, to remain roughly constant. Given rising life expectancy and an aging workforce, one might have expected contributions per employee to increase relative to wages.

To explore the effects of downward pressures on DB plan contributions due to both legislative changes and better-than-expected asset returns, we construct a “what if” scenario. Considering *the private sector only*, suppose that DB contributions per employee had increased at the same rate as

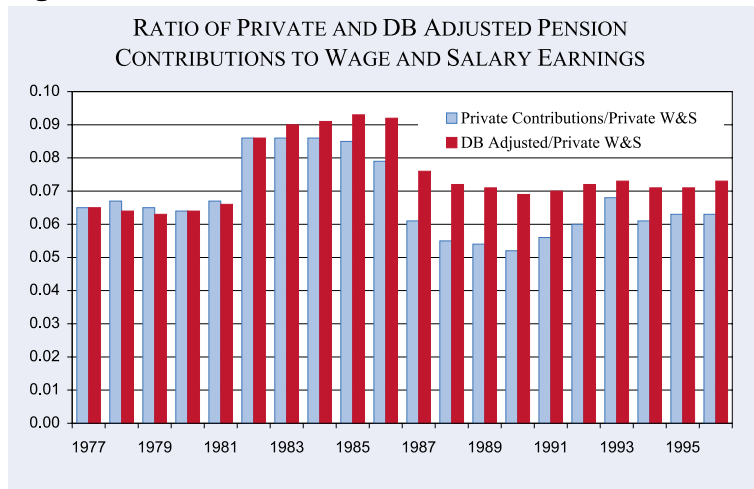
wages in every year after 1977. Figure 12 shows the private retirement plan contribution rate under this counterfactual, together with the actual rate. The saving rate under this counterfactual assumption is one percentage point higher than the actual rate at the end of the period. In the years when the DB contribution rate was at its lowest, the counterfactual saving rate was close to 2 percentage points higher than the actual rate. This counterfactual suggests that legislative changes and unexpectedly

favorable returns on DB plan assets probably reduced the private retirement plan contribution rate by a substantial amount.

The aggregate data also suggest that the retirement plan contribution rate would have been substantially higher were it not for the curtailment of the IRA program. Between 1982 and 1985, IRA saving added approximately 2.3 percentage points to the retirement plan contribution rate. Today, it accounts for only 0.3 percentage points.

The foregoing discussion demonstrates that aggregate retirement assets increased dramatically over the past two decades. All else equal, this reduces the likelihood that the rise of assets in DC retirement plans was offset by a reduction of assets in DB plans. This conclusion is consistent with the findings in previous studies using household data, which show increases in individual

Figure 12



financial assets with the advent of 401(k) and IRA plans.

The decline in DB plans was probably due to many factors other than the growth of DC plans. Gustman and Steinmeier [1992], for example, find that at least half of the trend in DB plans from 1977 to 1985 “is due to a shift in employment mix towards firms with industry, size, and union status that have historically been associated with lower defined benefit rates.” Ippolito [1995] concludes that “about half of the shift is attributable to a loss of employment in large unionized firms where DB plans are used intensively.”

Further issues

The foregoing analysis suggests that there have been substantial changes during the last twenty-five years in the structure of retirement saving in the United States. These changes portend significant future changes in the way Americans finance their retirement consumption. PVW [2001], for example, project that average 401(k) balances for the cohort retiring in 2025 will be roughly ten times greater than the balances for those who retired in the mid-1990s.

The sharp increase in retirement assets relative to income stands in contrast to the apparently low level of personal saving in the United States that is shown in the National Income and Product Accounts (NIPA). This is in part an artifact of the way the NIPA treats pension contributions. NIPA saving equals disposable income less consumption, so any increase in *measured* income increases saving, and any increase in *measured* consumption decreases saving. Contributions to pension plans are treated as income in the NIPAs, so these contributions increase saving.⁵ Interest and dividends received by pension plans are also imputed as a component of income, and pension plan management fees are charged as a consumption outlay. Neither capital gains on pension assets, nor distributions from pension plans, are included in NIPA income. If distributions from pension plans are part-

ly consumed, however, the net effect of pension distributions will be to raise consumption and therefore, without any corresponding increase in income, to reduce NIPA saving. In recent years, distributions from DB plans and IRAs have far exceeded contributions to these plans. Lusardi, Skinner, and Venti [2001] estimate that in 1999, the NIPA accounting of DB pension transactions alone reduced NIPA personal saving by almost \$55 billion.

The shift from defined benefit to defined contribution plans has other implications that we have not considered in this brief paper. One of the most important may be changes in the labor market participation incentives facing older workers. Most defined benefit plans create substantial incentives for workers to retire after they reach the plan’s early retirement age, which typically occurs before age 60. Defined contribution pension plans do not distort the returns to labor market activity. As a result, the shift to defined contribution plans may result eventually in higher labor force participation rates for older workers. This in turn would affect the stock of retirement saving assets relative to labor income, as individuals who remain in the labor force for longer and contribute a given fraction of income to retirement saving programs each year are likely to accumulate a larger stock of retirement wealth.

References

- Burtless, Gary and Joseph F. Quinn. “Retirement Trends and Policies to Encourage Work Among Older Americans,” mimeo, Boston College, 2000.
- Gustman, Alan and Thomas Steinmeier. “The Stampede Towards Defined Contribution Plans: Fact or Fiction?,” *Industrial Relations*, vol. 31 no. 2, Spring 1992, 361–369.
- Ippolito, Richard. “Toward Explaining the Growth of Defined Contribution Plans,” *Industrial Relations*, vol. 34 no. 1, January 1995, p. 1–19.
- Ippolito, Richard. “Reversion Taxes, Contingent Benefits, and the Decline in Pension Funding,” *Journal of Law and Economics*, 44 (April 2001).
- Lusardi, Annamarie, Jonathan Skinner, and Steven Venti. “Saving Puzzles and Saving Policies in the United States,” *Oxford Review of Economic Policy*, vol. 17 no. 1, (Spring 2001), 95–115.
- Poterba, James M. and Steven F. Venti, and David A. Wise. “The Transition to Personal Accounts and Increasing Retirement Wealth: Macro and Micro Evidence.” *NBER Working Paper* 8610, Cambridge, MA, 2001.
- Schieber, Sylvester and John Shoven. “The Consequences of Population Aging on Private Pension Fund Saving and Asset Markets,” in Michael Hurd and Naohiro Yashiro, eds., *The Economic Effects of Aging in the United States and Japan*. Chicago: University of Chicago Press, 1997, 111–130.

⁵ Since 2000, public and private pensions have been treated in the same way in the NIPA. Previously, employee contributions to the federal civilian retirement plan, state and local pension plans, and Social Security were not included in income, while benefits from these plans were counted as income. Employee contributions thus reduced saving. If benefits were fully spent, the resulting increase in consumption would precisely offset the increase in income associated with the benefits and saving would not be affected.

Increase in retirement assets relative to income, but low level of NIPA saving