

# THE DEVOLUTION OF THE AMERICAN PENSION SYSTEM: WHO GAINED AND WHO LOST?

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## INTRODUCTION

While almost all the attention of the media is riveted on the Social Security system, the devolution of the private pension system has received surprisingly little attention. Indeed, one of the most dramatic changes in the economy over the last two decades has been the substitution of Defined Contribution (DC) pensions such as 401(k)s for traditional Defined Benefit (DB) pension plans. Moreover, pensions are often viewed as an equalizer, offsetting the inequality in standard household net worth. The main focus of the paper is to analyze the effects of this substitution on median wealth holdings and the overall distribution of household wealth.

The work of Poterba, Venti, and Wise [1998] suggests that the transition from DB to DC type plans increased pension wealth dramatically. My results, reported below, also confirm that *mean* pension wealth rose strongly between 1983 and 1998. However, *median* pension wealth barely rose over this period despite enormous gains in the stock market, and pension wealth inequality grew sharply as well. In fact, counting total wealth (including pensions), the average household was worse off at the end of the 1980s than in the early 1990s.

The next section of the paper provides a review of the pertinent literature on this subject followed by a description of the data sources. I then describe the differences between Defined Contribution (DC) and Defined Benefit (DB) plans and develop the accounting framework used in the analysis. I continue by showing time trends in standard measures of household wealth over the 1983-1998 period. The paper then investigates changes in pension wealth over this period for the middle-aged (ages 47-64), since this group was most affected by the transformation of the pension system. Summary measures on Private Accumulations, defined as the sum of net worth and pension wealth, are then presented. I provide a summary of results and speculate on the reasons for the transformation of the pension system. I conclude with some policy recommendations on how to shore up the U.S. pension system.

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## LITERATURE REVIEW

Edward Wolff [1987] was the first paper to add estimates of private pension wealth to conventional net worth and examine their effects on the overall distribution of wealth. Using the 1969 Measurement of Economic and Social Performance (MESp) database, the paper showed that pension wealth actually had a *disequalizing* effect on total (augmented) household wealth. Similar results were reported by Wolff [1993a; 1993b] on the basis of the 1962 Survey of Financial Characteristics of Consumers (SFCC) and the 1983 Survey of Consumer Finances (SCF).

Arthur Kennickell and Annika Sunden [1999] used the 1989 and 1992 SCF to look at the effects of Social Security and pension wealth on the overall distribution of wealth. They found a net equalizing effect from the inclusion of these two forms of retirement wealth. Interestingly, they also reported that there is a negative effect of both defined benefit plan coverage and Social Security wealth on non-pension net worth but that the effects of defined contribution plans, such as 401(k) plans, is insignificant.

Several papers used the Health and Retirement Survey (HRS). Alan Gustman, Olivia Mitchell, Andrew Samwick, and Thomas Steinmeier [1997] found that in 1992, pensions, Social Security, and health insurance accounted for half of the wealth held by all households aged 51 to 61 in the HRS; for 60 percent of total wealth of HRS households who are in wealth percentiles 45 to 55; and for 48 percent of those in the 90th to 95th wealth percentiles. In a follow-up study, Gustman and Steinmeier [1998] used data from the HRS to examine the composition and distribution of total wealth for a group of 51 to 61 years olds. They focused on the role of pensions in forming retirement wealth. They found that pension coverage is widespread, covering two thirds of households and accounting for one quarter of accumulated wealth on average. Social Security benefits accounted for another quarter of total wealth. They also reported that the ratio of wealth to lifetime earnings was the same for those individuals with pensions and for those without pensions. They concluded that pensions cause very limited displacement of other forms of wealth.

Several studies have documented changes in pension coverage in the United States, particularly the decline in DB pension coverage among workers over the last two decades. Laurence Kotlikoff and Daniel Smith [1983] provided one of the most comprehensive treatments of pension coverage and showed that the proportion of U.S. private-wage and salary workers covered by pensions more than doubled between 1950 and 1979. David Bloom and Richard Freeman [1992], using Current Population Surveys (CPS) for 1979 and 1988, were among the first to call attention to the decline in DB pension coverage. They reported that the percentage of all workers in age group 25-64 covered by these plans fell from 63 to 57 percent over this period. Among male workers in this age group, the share covered dropped from 70 to 61 percent, while among females in the same age group, the share remained almost constant, at 53 percent.

Both Alan Gustman and Thomas Steinmeier [1992] and Richard Ippolito [1995] drew attention to the rapid growth of DC plans over the 1980s and early 1990s. Gustman and Steinmeier, in particular, found that about half of the shift between

DB and DC plan coverage is due to shifts in employment mix toward firms with industry, size, and union status that are historically associated with lower DB plan rates and the other half is due to changes in pension coverage type conditional on industry, size, and union status.

A related topic of interest is whether DC pension plans have substituted for DB-type plans. Leslie Popke [1999], using employer data (5500 filings) for 1992, found that, indeed, 401(k) and other DC plans have substituted for terminated DB plans and that offering a DC plan raises the chance of a termination in DB coverage. On the other hand, James Poterba, Steven Venti, and David Wise [1998], using HRS data for 1993, found that the growth of 401(k) plans did not substitute for other forms of household wealth including DB pensions and, in fact, raised household net worth relative to what it would have been without these plans.

## DATA SOURCES AND METHODS

The data sources used for this study are the 1983, 1989, and 1998 Survey of Consumer Finances (SCF) conducted by the Federal Reserve Board. Each survey consists of a core representative sample combined with a high-income supplement. The supplement is drawn from the Internal Revenue Service's Statistics of Income data file. The 1983 SCF, for example, used an income cutoff of \$100,000 of adjusted gross income as the criterion for inclusion in the supplemental sample. Individuals were randomly selected for the sample within pre-designated income strata. The advantage of the high-income supplement is that it provides a much "richer" sample of high income and therefore potentially very wealthy families. However, the presence of a high-income supplement creates some complications, because weights must be constructed to meld the high-income supplement with the core sample.<sup>1</sup>

The SCF has the advantage of providing exceptional detail on both assets and debt (several hundred questions are asked). Moreover, it provides considerable detail on pension coverage. The SCF also gives detailed information on expected pension benefits for both husband and wife. For 1983, the Federal Reserve Board has also made its own calculations of the wealth equivalent value of both expected pension benefits and Social Security benefits and made these available in its Public Use sample. This has not been done, however, for the other years.

## WHAT ARE DEFINED BENEFIT AND DEFINED CONTRIBUTION PENSION PLANS?

Defined Benefit (DB) plans are ones in which the benefit the worker receives when he (or she) retires is determined by a formula based on earnings history and years of service. A typical formula may be: the benefit equals the average of the highest five years of earnings multiplied by the ratio years of service to 20 multiplied by 0.6.

In DB plans, the firm or employer *guarantees* a certain benefit level at retirement. The employer contributes money into a pension fund to pay for the benefit when the worker retires. Typically, the employee contributes nothing into the fund.

The money accumulated in the pension fund is then invested in various assets. The employer absorbs all the risk: the pension level is guaranteed but the returns on the pension fund investment depend on the vagaries of the market. The employer retains the liability for paying the pension benefits.

Defined Contribution (DC) plans are ones in which an employee and his (or her) employer both contribute money into a retirement account, such as a 401(k) plan. Normally, the employer contributes money only if the employee also contributes into the plan. A typical arrangement may be that the worker contributes 5 percent of his or her salary into the plan and the firm contributes 10 percent. The funds in the plan are then invested in various assets. When the employee retires, the benefit level is determined by the amount of money accumulated in the plan.

With a DC plan, the actual benefit level at retirement is determined by the amount of money contributed into the plan and the rate of return on the assets. The employee bears all the risk. If the stock market does well, the employee will have a high benefit level; if the stock market is lousy, the benefit can be low at retirement. The employer's liability ends after the money is contributed into the plan.

## ACCOUNTING FRAMEWORK

The principal wealth concept used here is marketable wealth (or net worth), which is defined as the current value of all marketable or fungible assets less the current value of debts. Net worth is thus the difference in value between total assets and total liabilities or debt. Total assets are defined as the sum of: (1) the gross value of owner-occupied housing; (2) other real estate owned by the household; (3) cash and demand deposits; (4) time and savings deposits, certificates of deposit, and money market accounts; (5) government bonds, corporate bonds, foreign bonds, and other financial securities; (6) the cash surrender value of life insurance plans; (7) the current market value of Defined Contribution pension plans, including IRAs, Keogh, and 401(k) plans; (8) corporate stock and mutual funds; (9) net equity in unincorporated businesses; and (10) equity in trust funds. Total liabilities are the sum of: (1) mortgage debt, (2) consumer debt, including auto loans, and (3) other debt.

I use the symbol NW to refer to standard net worth. NW indicates the "disposable" wealth that households have available. It should be stressed that the standard definition of net worth includes the market value of DC pension plans. We shall return to this point later on in the paper.

This measure reflects wealth as a store of value and therefore a source of potential consumption. The assumption is that this concept best reflects the level of well-being associated with a family's holdings. Thus, only assets that can be readily converted to cash (that is, "fungible" ones) are included. As a result, consumer durables, such as automobiles, televisions, furniture, household appliances, and the like, are excluded here since these items are not easily marketed, or their resale value typically far understates the value of their consumption services to the household.

The imputation of pension wealth involves a large number of steps, which are summarized below.<sup>2</sup> For retirees ( $r$ ) the procedure is straightforward. Let  $PB$  be the pension benefit currently being received by the retiree. The SCF questionnaire indi-

cates how many pension plans each spouse is involved in and what the expected (or current) pension benefit is. The SCF questionnaire also indicates whether the pension benefits remain fixed in nominal terms over time for a particular beneficiary or is indexed for inflation. In the case of the former, the (gross) Defined Benefit pension wealth is given by:

$$(1a) \quad DB_r = \int_0 PB(1 - m_t)e^{-\delta t} dt$$

where  $m_t$  is the mortality rate at time  $t$  conditional on age, gender, and race;  $\delta$  the nominal discount rate, for which the (nominal) 10-year treasury bill rate is used; and the integration runs from the current year to age 109. In the latter case,

$$(1b) \quad DB_r = \int_0 PB(1 - m_t)e^{-\delta^* t} dt$$

and  $\delta^*$  is the real 10-year treasury bill rate, estimated as the current nominal rate less the Social Security Plan II-B assumption of 4.0 percent annual increase of the Consumer Price Index (CPI).

Among current workers ( $w$ ) the procedure is somewhat more complex. The SCF provides detailed information on pension coverage among current workers, including the type of plan, the formula used to determine the benefit amount (for example, a fixed percentage of the average of the last five years' earnings), the retirement age when the benefits are effective, the likely retirement age of the worker, and vesting requirements. Information is provided not only for the current job (or jobs) of each spouse but for up to five past jobs as well. On the basis of the information provided in the SCF and on projected future earnings, future expected pension benefits ( $EPB_w$ ) are then projected to the year of retirement or the first year of eligibility for the pension. Then the present value of pension wealth for current workers ( $w$ ) is given by:

$$(2) \quad DB_w = \int_{LR} EPB(1 - m_t)e^{-\delta^* t} dt$$

where  $RA$  is the expected age of retirement and  $LR = A - RA$  is the number of years to retirement. As above, and the integration runs from the expected age of retirement to age 109.<sup>3</sup>

Estimates are provided for the following components of household wealth:

$$(3) \quad NW = NWX + DC$$

where  $DC$  is the current market value of Defined Contribution pension plans and  $NWX$  is marketable household wealth excluding  $DC$ .  $NW$  corresponds to marketable wealth or net worth. Total pension wealth,  $PW$ , is given by:

$$(4) \quad PW = DC + DB.$$

Private Accumulations  $PA$  is then defined as the sum of  $NWX$  and total pension wealth:

$$(5) \quad PA = NWX + PW.$$

The term "Private Accumulations" is used to distinguish contributions to wealth from the private sector of the economy from those from the public sector – notably, Social Security.

### TRENDS IN STANDARD MEASURES OF HOUSEHOLD WEALTH

Perhaps, the most striking result from Table 1 is that median wealth was only 4 percent greater in 1998 than in 1989. After rising by 7 percent between 1983 and 1989, median wealth dipped by 17 percent from 1989 to 1995 and then rose by a robust 24 percent from 1995 to 1998. Mean wealth also showed a sharp increase from 1983 to 1989, by 15 percent, followed by a somewhat smaller gain of 11 percent from 1989 to 1998. The latter figure compares to a 4 percent gain in median wealth over the 1989-1998 period. However, like median wealth, mean wealth declined sharply from 1989 to 1995 before recovering in 1998.

The time pattern is very similar for household income, based on Current Population Survey (CPS) data (Panel C). Median household income, after surging by 11 percent between 1983 and 1989, increased by an anemic 2 percent from 1989 to 1998.<sup>4</sup> I use the CPS income data because I can obtain income statistics for the same years as the SCF wealth data; the SCF income data are for the preceding year.

Here, again, we see that median income fell rather sharply from 1989 to 1995 before recovering in 1998. Mean income climbed by 16 percent from 1983 to 1989 and another 8 percent in the ensuing nine years. It, too, fell between 1989 and 1992 but then recovered to its 1989 level by 1995.

Looking at Panel B of Table 1 we see the important role played by DC pension wealth, which forms part of net worth  $NW$ . If DC pension wealth is excluded from net worth, then median wealth actually declined sharply over the 1990s, by 17 percent, while mean wealth fell slightly, by one percent. The rapid accumulation of DC pension wealth thus helped maintain household savings over the 1990s. We shall return to this point later in the paper.

Table 2 shows trends in both wealth and income inequality. It is most useful to begin with the income trends (Panel C). Household income inequality, based on CPS data, increased between 1983 and 1989, with the share of the top five percent rising by 2.5 percentage points, while the share of the next fifteen percent and that of the bottom four quintiles all fell.<sup>5</sup> The Gini coefficient rose from 0.414 to 0.431 over this period. Between 1989 and 1998, the share of the top five percent rose by another 2.8 percentage points while the next fifteen percent and the bottom four quintiles again lost ground, so that the Gini coefficient again increased, from 0.431 to 0.456. All told, according to the CPS figures, there was no abatement in the growth of inequality in the 1989-1998 period compared to 1983-1989.

**TABLE 1**  
**Mean and Median Wealth and Income, 1983-1998**  
**(In thousands, 1998 dollars)**

	1983	1989	1998	Percent Change		
				1983-89	1989-98	1983-98
<b>A. Net Worth (NW)</b>						
1. Median	54.6	58.4	60.7	7.0	3.8	11.1
2. Mean	212.6	243.6	270.3	14.6	11.0	27.1
<b>B. Net Worth excluding DC Pension Accounts (NWX)</b>						
1. Median	53.0	55.6	46.4	4.8	-16.6	-12.6
2. Mean	209.0	235.2	233.2	12.6	-0.9	11.6
<b>C. Income<sup>a</sup></b>						
1. Median	34.2	38.0	38.9	11.2	2.3	13.8
2. Mean	41.6	48.0	51.9	15.5	8.0	24.7

Note: Own computations from the 1983, 1989, and 1998 Surveys of Consumer Finances.

a. Source for household income data: U.S. Census Bureau, Current Populations Surveys, available on the internet.

**TABLE 2**  
**Inequality Measures for**  
**the Size Distribution of Wealth and Income, 1983-1998**

	1983	1989	1998	Percent Change		
				1983-89	1989-98	1983-98
<b>A. Net Worth (NW)</b>						
1. Share of Top						
One Percent ( percent)	33.8	37.4	38.1	10.7	2.0	12.9
2. Gini Coefficient	0.799	0.832	0.822	4.2	-1.1	3.0
<b>B. Net Worth excluding DC Pension Accounts (NWX)</b>						
1. Share of Top						
One Percent ( percent)	33.9	35.6	38.1	5.0	7.0	12.4
2. Gini Coefficient	0.802	0.835	0.842	4.1	0.9	5.0
<b>C. Income<sup>a</sup></b>						
1. Share of Top						
Five Percent ( percent)	16.4	18.9	21.7	15.2	14.8	32.3
2. Gini Coefficient	0.414	0.431	0.456	4.1	5.8	10.1

Note: Own computations from the 1983, 1989, and 1998 Surveys of Consumer Finances.

a. Source for household income data: U.S. Census Bureau, Current Populations Surveys, available on the internet.



**TABLE 3**  
**Composition of Total Household Wealth, 1983, 1989 and 1998**  
**(Percent of gross assets)**

Component	1983	1989	1998
Principal residence (gross value)	30.1	30.2	29.0
Other real estate (gross value)	14.9	14.0	10.0
Unincorporated business equity <sup>a</sup>	18.8	17.2	17.7
Liquid assets <sup>b</sup>	17.4	17.5	9.6
Pension accounts <sup>c</sup>	1.5	2.9	11.6
Financial securities <sup>d</sup>	4.2	3.4	1.8
Corporate stock and mutual funds	9.0	6.9	14.8
Net equity in personal trusts	2.6	3.1	3.8
Miscellaneous assets <sup>e</sup>	1.3	4.9	1.8
Total	100.0	100.0	100.0
Debt on principal residence	6.3	8.6	10.7
All other debt <sup>f</sup>	6.8	6.4	4.2
Total debt	13.1	15.0	15.0

Note: Own computations from the 1983, 1989, and 1998 Surveys of Consumer Finances.

- a. Net equity in unincorporated farm and non-farm businesses and closely-held corporations.
- b. Checking accounts, savings accounts, time deposits, money market funds, certificates of deposit, and the cash surrender value of life insurance.
- c. IRAs, Keogh plans, 401(k) plans, the accumulated value of defined contribution pension plans, and other retirement accounts.
- d. Corporate bonds, government bonds, open-market paper, and notes.
- e. Gold and other precious metals, royalties, jewelry, antiques, furs, loans to friends and relatives, future contracts, and miscellaneous assets.
- f. Mortgage debt on all real property except principal residence; credit card, installment, and other consumer debt.

The trends are different for wealth. As shown in Panel A, wealth inequality rose steeply between 1983 and 1989. The share of wealth held by the top 1 percent rose by 3.6 percentage points from 1983 to 1989, and the Gini coefficient increased from 0.80 to 0.83. However, between 1989 and 1998, the share of the top percentile grew by a more moderate 0.7 percentage points. The share of the next 9 percentiles fell by 0.4 percentage points and that of the bottom two quintiles grew by 0.9 percentage points, so that overall, the Gini coefficient actually fell from 0.83 to 0.82.

However, when we now exclude DC pension wealth from net worth, we find that inequality in wealth actually rose over the 1990s (see Panel B). The share of the top one percent gained 2.5 percentage points and the share of the top quintile 1.4 percentage points between 1989 and 1998, and the Gini coefficient rose by 0.007 points. Here, too, the accumulation of DC pension wealth helped to moderate wealth inequality over the 1990s.

Table 3 changes in the composition of household wealth. I begin with the overall portfolio composition of household wealth. In 1998, owner-occupied housing was the most important household asset in the breakdown shown in this breakdown, accounting for 29 percent of total assets. However, net home equity—the value of the



house minus any outstanding mortgage—amounted to only 18 percent of total assets. Real estate, other than owner-occupied housing, comprised 10 percent, and business equity another 18 percent.

Liquid assets, including demand deposits, time deposits, money market funds, CDs, and the cash surrender value of life insurance made up 10 percent; pension accounts amounted to 12 percent; and bonds and other financial securities, corporate stock and mutual funds, and trust equity added up to 20 percent. Debt as a proportion of gross assets was 15 percent, and the debt-equity ratio (the ratio of total household debt to net worth) was 0.18.

There have been three notable changes over time in the composition of wealth. The most important from the standpoint of this paper is that DC pension accounts rose from 1.5 to 11.6 percent of total assets between 1983 and 1998, with almost the entire gain occurring after 1989. This increase almost exactly offset the decline in liquid assets, from 17.4 to 9.6 percent—again, with almost all of the change occurring after 1989. Though there is no direct econometric evidence of substitution, the explosion in the use of various pension type accounts, like IRAs, 401(k) plans, and other thrift plans appears to have allowed households to substitute tax-free pension accounts for taxable savings deposits, rather than increasing overall family savings.

A second notable trend is the rising indebtedness of American families, with the debt-equity ratio, as noted above, leaping from 15.1 to 17.6 percent between 1983 and 1998. The principal source of these increases, contrary to popular wisdom, is not rising consumer debt, such as credit card balances. In fact, non-mortgage debt as a fraction of total assets fell from 6.8 to 4.2 percent from 1983 to 1998. Rather, the primary source is rising mortgage debt, including home equity loans and second mortgages, which climbed from 6.3 to 10.7 percent of total assets. Indeed, mortgage debt as a share of the value of homeowner's property increased from 21 to 37 percent. Whereas the total market value of homes remained almost constant as a share of total assets over this period, net home equity plummeted from 24 to 19 percent of total assets.<sup>6</sup>

A third important change is that the share of corporate equities and mutual funds in total assets, after falling from 9.0 to 6.9 percent between 1983 and 1989, grew steadily thereafter to 14.8 percent in 1998. This shift, in part, reflects the surge in stock prices during the 1990s.<sup>7</sup>

## PENSION WEALTH

Table 4 highlights trends in pension holdings from 1983 to 1998. In this table, as in the ensuing analysis, I focus on the age group 47 to 64, since this is the one most affected by the transformation of the pension system. The share of households in this age group with DC pension accounts skyrocketed over the period, from 12 to 60 percent, or by 48 percentage points. Most of the gains occurred after 1989.

Opposite trends are apparent for Defined Benefit (DB) pension wealth. The share of middle-aged households with DB pension wealth fell by 27 percentage points between 1983 and 1998, from 69 to 42 percent. Here, too, most of the loss in coverage occurred between 1989 and 1998. All told, the percentage of all households in this

**TABLE 4**  
**Percent of Households in Age Group 47-64 with**  
**Pension Wealth, 1983-1998**

	1983	1989	1998	% Point Change 1983-98
DC Pensions	11.9	28.3	59.7	47.8
DB Pensions	68.9	61.0	42.4	-26.5
DC or DB Pensions	70.2	72.2	73.7	3.5

Note: Own computations from the 1983, 1989, and 1998 Surveys of Consumer Finances.

**TABLE 5**  
**Mean and Median Pension Wealth for**  
**Households Aged 47-64, 1983-1998**  
**(In thousands, 1998 dollars)**

Pension Type	1983	1989	1998	% Point Change 1983-98
<b>Mean Pension Wealth</b>				
DC Pensions	7.4	16.1	69.2	838.1
DB Pensions	87.0	70.9	52.7	-39.4
DC or DB Pensions	94.4	87.0	121.9	29.1
<b>Median Pension Wealth</b>				
DC or DB Pensions	39.0	28.5	40.0	2.6

Note: Own computations from the 1983, 1989, and 1998 Surveys of Consumer Finances.

age group covered by either a DC or a DB plan increased by a very modest 3.5 percentage points, from 70.2 to 73.7 percent between 1983 and 1998. These results indicate that for the most part, DC plans substituted for DB plans among this age group rather than providing additional pension coverage.

The average holdings of DC pension accounts also increased significantly as Table 5 shows. Among households in age group 47-64, the average value of these accounts increased by a factor of 8.1 between 1983 and 1998, from \$7,400 (in 1998 dollars) to \$69,200. Once again, most of the growth occurred after 1989.

Countervailing trends are again evident for the average value of DB pension wealth (see Panel B). Its mean value fell by 39 percent between 1983 and 1998, from \$87,000 (in 1998 dollars) to \$52,700.

We can now consider one of the issues raised above: Has the spread of DC type pension plans adequately compensated for the decline in traditional DB pension coverage? The results indicate that the answer is a partial "yes." Average pension wealth *PW* (the sum of DC and DB pensions) increased by 29 percent between 1983 and 1998, from \$94,400 to \$121,900, with all the growth occurring after 1989. The story is not quite as positive when we look at trends in median pension wealth. Among age group 47-64, median pension wealth *PW* grew by a meager 2.6 percent, from \$39,000 to \$40,000.

**TABLE 6**  
**Inequality of Pension Wealth among Account Holders**  
**for Households Aged 47-64, 1983-1998**  
**(Gini Coefficients)**

Pension Plan	1983	1989	1998	Change 1983-98
DC Pensions	0.732	0.726	0.709	-0.023
DB Pensions	0.530	0.569	0.546	0.016
DC or DB Pensions	0.539	0.597	0.634	0.095
<b>Memo: Pension Wealth among All Households</b>				
DC or DB Pensions	0.677	0.709	0.730	0.053

Note: Own computations from the 1983, 1989, and 1998 Surveys of Consumer Finances.

In Table 6, I investigate trends in the inequality of pension wealth among account holders *only*. I use a standard Gini coefficient for this purpose. It is first of note that DC pension wealth inequality among DC pension wealth holders is considerably greater than the inequality in DB pension accounts among holders of DB plans. In 1998, the Gini coefficient for DC wealth was 0.709, while that for DB wealth was only 0.546. Moreover, the Gini coefficient among all DC pension account holders of 0.709 in 1998 compares to a Gini coefficient for net worth of 0.822.<sup>8</sup>

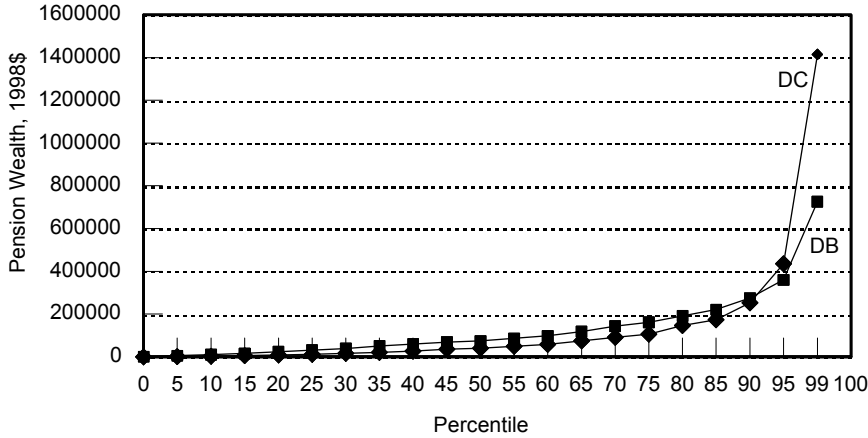
Figures 1a and 1b portray just how much more unequal DC wealth is than DB wealth. DB pension wealth holders have more pension wealth than corresponding DC pension holders up through the 92<sup>nd</sup> percentile. After that point, DC pension holders own considerably more pension wealth. The differences are again striking. Up to the 75<sup>th</sup> percentile, DB pension holders own from 1.54 to 3.93 as much pension wealth as DC holders. At the median, DB holders have almost twice as much pension wealth as DC holders. However, at the 95<sup>th</sup> percentile, DC account holders own 21 percent more pension wealth than DC holders, and at the 99<sup>th</sup> percentile they own almost *twice* as much. Not surprisingly, the switch-over from DB pension plans to DC pension plans has resulted in an upsurge in pension wealth inequality.

Inequality of DC pension wealth fell from 1983 to 1998 among households in age group 47-64 with DC accounts. The decline was somewhat greater after 1989 than before. In contrast, the dispersion in traditional DB pension wealth among middle-aged households with DB plans trended slightly upward over the 1983-1998 period. The Gini coefficient rose from 0.530 to 0.546. All the increase in inequality took place before 1989 (DB inequality actually declined between 1989 and 1998).

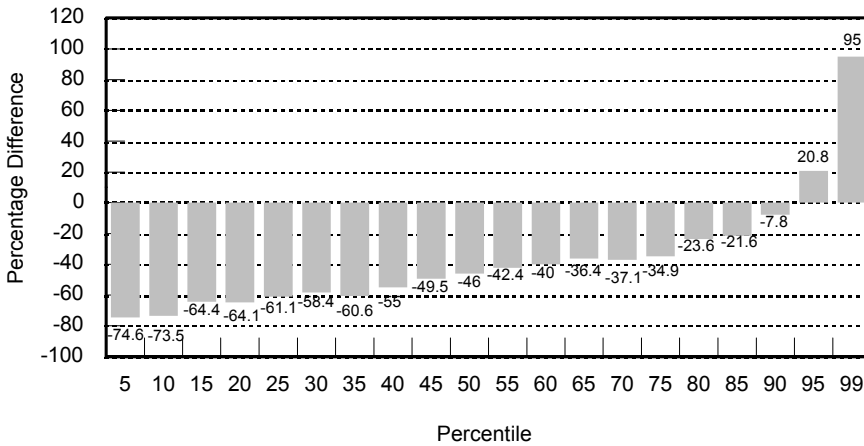
The result of the switch-over from DB to DC pensions is a rise in pension inequality. Among all households, the Gini coefficient for total pension wealth *PW* rose by 0.053 from 0.677 to 0.730, while among pension wealth holders, the gains were even more striking, by 0.095, from 0.539 to 0.634. In this case, the increase in pension wealth inequality was about equally split before and after 1989.

Figures 2a and 2b provide further detail on the change in the distribution of pension wealth among households in age group 47-64 from 1983 to 1998. The share with positive pension wealth grew from 70.2 to 73.7 percent over the period, so that

**FIGURE 1a**  
**DB and DC Pension Wealth among**  
**Account Holders by Pension Percentile, Ages 47-64, 1998**



**FIGURE 1b**  
**Percentage Difference between DB and DC Pension Wealth**  
**among Account Holders by Pension Percentile, Ages 47-64, 1998**

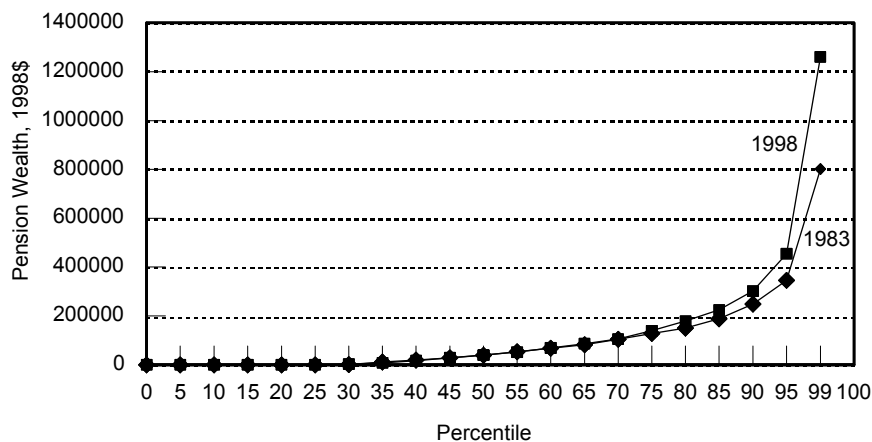


percentage gains in pension wealth were very high at lower percentiles. However, pension wealth at the 40<sup>th</sup> percentile fell by a substantial 16 percent and pension wealth at percentiles 50 to 70 gained less than 3 percent. In contrast, percentage gains in pension wealth increased from 19 percent at percentile 80 to a striking 57 percent at percentile 99.

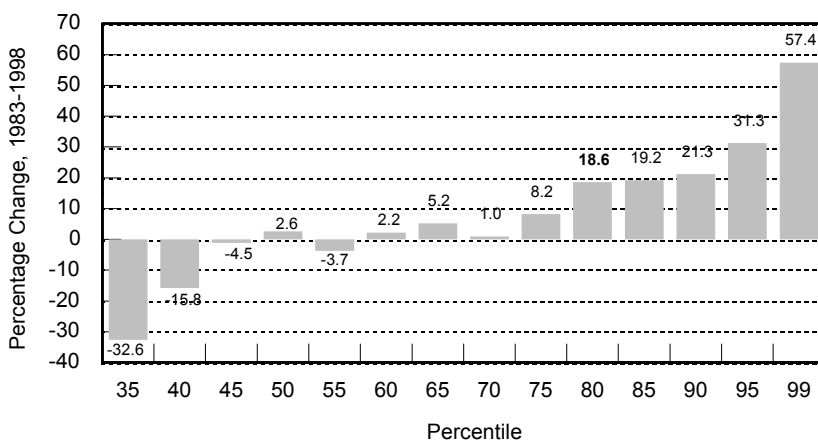
**PRIVATE ACCUMULATIONS**

Table 7 provides figures on the trend in both mean and median net worth and Private Accumulations (*PA*) from 1983 to 1998. Among households in age group 47-64, mean *NWX* (net worth excluding DC) rose by 12 percent while the median actually fell by 18 percent. Mean net worth rose by 30 percent, while its median in-

**FIGURE 2a**  
**Pension Wealth PW in 1998 Dollars**  
**by Pension Percentile, Ages 47-64, 1983 and 1998**



**FIGURE 2b**  
**Percentage Growth of Pension Wealth in 1998 Dollars**  
**by Pension Percentile, Ages 47-64, 1983 to 1998**



creased by only 11 percent. I next add pension wealth to NWX to obtain Private Accumulations. Its mean value was up by 16 percent, compared to 30 percent for net worth. However, the main result is that its median value was *down* by a very sizeable 14 percent, compared to an 11 percent increase in median net worth.

It seems clear that Private Accumulations fared worse than conventional net worth. Mean *PA* rose less than mean net worth, and median *PA* fell while median net worth increased. A comparison of trends in *PA* with those in *NWX* reveals that households dipped into their private savings to finance their 401(k) and other DC plans.

In Table 8, I consider the effects of pension wealth on overall wealth inequality. The Gini coefficient for net worth is 0.792 among households in age class 47-64 in 1998. If we subtract DC pensions, then the Gini coefficient rises by 0.015 points to

**TABLE 7**  
**Mean and Median Net Worth and Private Accumulations**  
**For Households Aged 47-64, 1983-1998**  
**(In thousands, 1998 dollars)**

	1983	1989	1998	Percentage Point Change		
				1983-89	1989-98	1983-98
<b>A. Net Worth Excluding DC Pension Accounts (NWX)</b>						
Mean	336.0	358.9	375.5	6.8	4.6	11.7
Median	99.5	112.1	81.4	12.6	-27.3	-18.2
<b>B. Net Worth (NW)</b>						
Mean	343.4	375.0	444.6	9.2	18.6	29.5
Median	99.7	122.6	110.4	23.0	-9.9	10.8
<b>C. Private Accumulation (PA)</b>						
Mean	430.4	445.9	497.3	3.6	11.5	15.6
Median	188.1	175.2	162.8	-6.9	-7.1	-13.5

Note: Own computations from the 1983, 1989, and 1998 Surveys of Consumer Finances.  
Key: Private Accumulations  $PA = NWX + PW$ .

**TABLE 8**  
**Inequality of Net Worth and Private Accumulations**  
**For Households Aged 47-64, 1983-1998**  
**(Gini coefficients)**

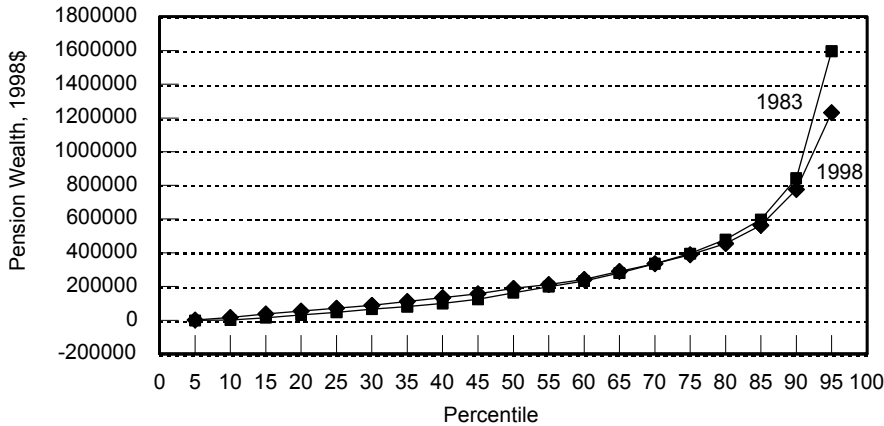
	1983	1989	1998	Percentage Point Change		
				1983-89	1989-98	1983-98
<b>A. Net Worth Excluding DC (NWX)</b>						
Gini Coefficient	0.762	0.780	0.817	0.017	0.037	0.055
<b>B. Net Worth (NW)</b>						
Gini Coefficient	0.761	0.775	0.792	0.013	0.018	0.031
<b>C. Private Accumulation (PA)</b>						
Gini Coefficient	0.681	0.720	0.753	0.040	0.033	0.073

Note: Own computations from the 1983, 1989, and 1998 Surveys of Consumer Finances.  
Key: Private Accumulations  $PA = NWX + PW$ .

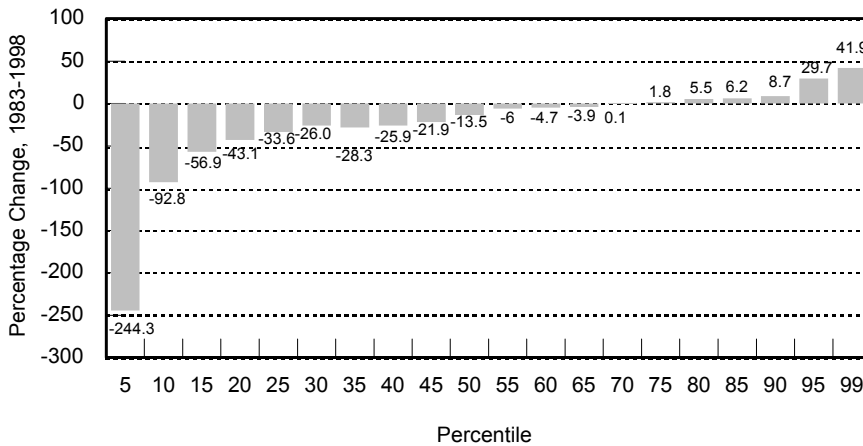
0.817. Adding DB pension wealth to net worth reduces the Gini coefficient by 0.039 points, to 0.753. This rather modest decline in the Gini coefficient is due to both the high level of pension wealth inequality in the population and the high correlation of pension wealth with marketable net worth.<sup>9</sup>

Looking over time, we also find that the equalizing effect of DB pension wealth has mitigated from 1983 to 1998. Whereas the Gini coefficient for net worth advanced by 0.031 points from 1983 to 1998 among middle-aged households, the Gini

**FIGURE 3a**  
**Private Accumulations in 1998 Dollars by**  
**Private Accumulations Percentile, Ages 47-64, 1983 and 1998**



**FIGURE 3b**  
**Percentage Growth of Private Accumulations in 1998 Dollars**  
**by Percentile, Ages 47-64, 1983 to 1998**



coefficient for *PA* gained 0.073 points. Likewise, adding DB pension wealth to net worth results in a 0.080 decline in the Gini coefficient in 1983 but only a 0.039 decrease in 1998. The joint effect of adding total pension wealth to *NWX*, however, is much more similar in the two years: a 0.081 reduction in the Gini coefficient in 1983 and a 0.064 reduction in 1998.

Figures 3a and 3b provide a closer look at the size distribution of *PA* in 1983 and 1998 for households in age group 47 to 64. *NWX*. Here it becomes quite clear that the major gains from 1983 to 1998 were made by households at the high end of the wealth distribution. Indeed, comparing the size distributions among all households



in the two years at different percentile levels, it becomes clear that there is an almost monotonic relation between percentile level and percentage change in *PA* over the period. The percentage growth in *PA* surges from -93 percent at the tenth percentile to 42 percent at the 99<sup>th</sup> percentile. The crossover point in the two distributions occurs just about at the 70<sup>th</sup> (that is, households below percentile 70 experienced losses whereas household above percentile 70 had gains).

## SUMMARY

The 1980s and 1990s have witnessed the devolution of the traditional Defined Benefit pension system in favor of Defined Contribution pension coverage. In general, middle-aged Americans have seen improvements in both the mean and median levels of their marketable net worth from 1983 to 1998. On the other hand, traditional Defined Benefit pension coverage declined from 1983 to 1998. The share of households in age group 47-64 (the age group most affected by the transition from the old to the new pension system) covered by a DB plan plummeted by 27 percentage points, from 69 to 42 percent. Mean DB pension wealth among households in this age group fell by 39 percent, from \$87,000 to \$53,000. Average DC pension wealth, on the other hand, skyrocketed. By 1998, 60 percent of households in age group 47-64 held some form of DC type pension plan in 1998, compared to 12 percent in 1983.

The rise of DC pensions plans more than fully compensated for the loss of DB type pension plans from 1983 to 1998 in terms of average values. Mean total pension wealth (the sum of DB plus DC wealth) increased by 29 percent among households in age group 47-64. However, the fraction of households in age group 47-64 with one or the other plan grew only slightly over the period, from 70.2 to 73.7 percent.

The story looks somewhat different, however, when we look at trends in median values. Among age group 47-64, median pension wealth increased by a meager 3 percent, from \$39,000 to \$40,000. Moreover, median net worth excluding DC pension plans fell by 18 percent between 1983 and 1998. Altogether, median Private Accumulations fell by a sizeable 14 percent for those aged 47 to 64.

The inequality of total pension wealth increased sharply between 1983 and 1998. This trend is traceable to the switch-over from DB plans to DC accounts. The inequality of Private Accumulations rose substantially more than that of net worth from 1983 to 1998. DB pension wealth has a very modest equalizing effect on overall wealth inequality (particularly in comparison to Social Security wealth). Moreover, DB pension wealth has a weaker offsetting effect on wealth inequality in 1998 than in 1983. Among middle-aged households, the Gini coefficient for net worth rose by 0.03 between 1983 and 1998, whereas the Gini coefficient for Private Accumulations jumped by 0.073.

In sum, I find that despite the proliferation of defined contribution plans at a time when the stock market experienced one of its longest bull runs in history, the wealth holdings of middle-aged households did not improve. Indeed, median Private Accumulations actually deteriorated from 1983 to 1998. This result reflects the large shift in the composition of private retirement wealth away from defined benefit (DB) plans toward defined contribution (DC) plans. Indeed, the devolution of the tradi-

tional pension system of the 1980s and 1990s has left many families unprepared to meet the challenges of retirement. Despite the hype, the switch-over from DB to DC has not benefited the average family—instead, it has hurt the average family. The shift from DB to DC plans is part of the general unraveling of the “worker safety net.”

### WHY THE TRANSFORMATION OF THE PENSION SYSTEM?

One might wonder about why the rapid transformation from DB to DC Plans, particularly if workers are made worse off? I speculate on some of the reasons here. Employers might prefer DC plans for three reasons. First, DC plans allow firms to shift the risk to workers. Second, firms no longer have long-term pension liabilities. Third, employers generally make lower contributions to DC plans than DB plans. William Wolman and Anne Colamosca [2002] estimated that DC plans, on average, cost the employer 50 percent less than traditional DB pension plans.<sup>10</sup>

There were also some pulls and pushes. With regard to *the pull*, the main reasons were the availability of DC plans. IRAs were established in 1974. This was quickly followed by 401(k) plans in 1978 for profit-making companies (403(b) plans for non-profits are much older). Another is the option to convert DB pension plans to so-called Cash Balance plans (effectively, DC accounts). Though the IBM case is still pending since it was initiated in 1999, new regulations issued by the IRS seem to make such conversions legal. This may further expedite the elimination of DB plans.

With regard to *the push*, the first is the passage of ERISA in 1975, which increased regulatory burdens on DB plans and made DB plans more costly. ERISA meant that companies could not “fool around” with their pension assets. Companies must put money into pension funds to meet future liabilities and must pay out benefits. ERISA also required companies to pay premiums to the PBGC (the Pension Benefit Guarantee Corporation), which was created in 1974, to insure their pension plans.<sup>11</sup> A second push is the Omnibus Budget Reconciliation Act of 1987, which established even tighter funding limits on DB plans. A third push is the decline of unions in the U.S. According to Current Population Survey data, the unionization rate fell from 20 percent in 1983 to 14 percent in 1998. Unions have been one of the bulwarks supporting the traditional DB pension system.<sup>12</sup>

A recent proposal by the Bush administration (in 2003) to establish employer Retirement Savings Accounts (RSA) as the successor to 401(k) plans might accelerate the growth of DC type plans even more. One provision of the RSA is to eliminate the tax deductibility of both the employer and employee contribution to these new accounts. This would overturn the long-standing ability (since 1942) of firms to deduct pension contributions from their taxes as long as they offer proportional benefits to both executives and rank-and-file workers. Indeed, the new RSA might hasten the further withdrawal of firms to provide pension support by eliminating the employer contributions to pension plans altogether.

## WHAT IS TO BE DONE TO REFORM THE PENSION SYSTEM?

From the point of view of workers, the best solution is to encourage companies to return to the old-fashioned DB plans. This could be accomplished through a combination of tax incentives and tax credits. Also, DB plans could be made portable, so that workers retain credits for their job tenure at one firm if they move to another firm.

Given that it seems politically unlikely that Congress will enact this type of legislation, then we must think about how to shore up the DC pension system. Here are six proposals:

1. Make participation universal within a firm, so that all workers are covered. Do *not* require employee contributions in order to have funds provided (or matched) by employer. Employer contributions should be *mandatory*. Employee contributions should be *voluntary*.
2. Make provisions *universal* within a firm. No special deals for top management. No sweetheart deals for the CEO. The plans should be the same for rank-and-file workers as well as top management.
3. To avoid Enron-type disasters, put limits on the amount of company stock invested in the pension plan. Pending legislation in Congress imposes a cap of 20 percent. Even this may be too high.
4. Have an independent agency administer the pension plan. TIAA-CREF is a good model.
5. Allow investment choices within the pension plan. Mutual funds should be encouraged so as to lessen the risk. A choice should be provided among different mutual funds.
6. Require independent investment advice—perhaps from a TIAA-CREF or a Vanguard.

## NOTES

1. Technical details on the imputations and adjustments that I use for the 1983 and 1989 SCF can be found in Wolff [2001]. No adjustments were made to the 1998 SCF data.
2. Greater details can be found in Wolff [2002].
3. Technically speaking, the mortality rate associated with the year of retirement is the probability of surviving from the current age to the age of retirement.
4. I use the CPS income data because I can obtain income statistics for the same years as the SCF wealth data; the SCF income data are for the preceding year.
5. The CPS tabulations published by the U.S. Bureau of the Census do not include the income shares of the top percentile.
6. This occurred while, according to the SCF data, the home ownership rate (the percent of households owning their own home) rose from 63.4 percent in 1983 to 66.3 percent in 1998.
7. It should be noted that these figures do not include stocks held in pension funds run by corporations, banks, other financial institutions, and labor unions. Technically, these securities are directly owned by the institutions that administer them and therefore are not in the direct control of individuals.
8. This result accords with media accounts of a large divide in the value of 401(k) plans between executives and staff workers in large corporations [see, for example, Leonhardt, 2002].
9. In contrast, adding Social Security wealth to net worth results in a much more sizeable reduction in the Gini coefficient of 0.13 points, from 0.792 to 0.667. This reflects both the much lower level of in-

- equality in Social Security wealth than in marketable wealth, as well as its relatively low (though positive) correlation with net worth [Wolff, 2002].
10. Many firms have already eliminated employer contributions to company 401(k) plans. According to an article in the *New York Times* [Walsh and McGeehan, 2003, D1], the Charles Schwab Corporation was about to do this. Ford and General Motors had suspended their company contributions to 401(k) plans in 2002.
  11. However, Gustman and Steinmeier [1992], examining the 1977-85 period, concluded that regulatory changes could account for no more than half (and perhaps a lot less) of the shift from DB to DC plans, at least over this period.
  12. Another factor that has been mentioned is greater worker mobility in the 1990s than in the 1980s. The argument is that because DB pensions are not portable between employers, workers who switch jobs may prefer DC to DB plans. According to Farber [2001], however, there was virtually no change, on average, in the degree of job tenure between the 1980s and 1990s.

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