

HOW HAS THE SHIFT TO 401(K) PLANS AFFECTED RETIREMENT INCOME?

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Introduction

Employer-sponsored retirement plans have shifted dramatically in recent decades from defined benefit (DB) to defined contribution (DC) plans. Although theoretical calculations show that participants in 401(k) and other DC plans who stay the course can accumulate substantial account balances, many studies have documented how such plans often fall short. This shortfall reflects a failure of workers to participate, inadequate contribution rates, leakages, poor investment choices, and subpar market returns. On the other hand, while DB plans provide generous benefits for workers who spend most of their career with a single employer, the pensions of job-hoppers are eroded by inflation and those who separate prior to vesting receive nothing. Therefore, the net effect of the shift from DB to DC plans on retirement wealth and income is unclear.

This *brief*, adapted from a recent paper, uses the *Health and Retirement Study* (HRS) to document the amount and distribution of retirement wealth, the amount of retirement income it produces, and the pattern of replacement rates for households ages 51-56 in 1992, 1998, 2004, and 2010.¹

The discussion proceeds as follows. The first section describes the data and presents trends in retirement plan coverage. The second section explores whether workers in 2010, when DC plans dominated, had more or less retirement wealth in employer plans than their counterparts in 1992, when DB plans dominated. It also reports how that wealth was distributed by education. The third section shifts the focus from wealth to income. It shows the impact of moving from DB plans, where annuities are actuarially fair, to DC plans, where annuities must be purchased on the open market; and it examines the pattern of replacement rates over time.

The final section concludes with four observations. First, retirement wealth has been relatively steady or declining, depending on whether the starting year is 1992 or 1998. Second, DC wealth is more concentrated in the top quartile of education than DB wealth, and this concentration will become more evident in the aggregate wealth measure as the shift from DB to DC plans evolves. Third, the shift from DB to DC has reduced the amount of retirement income per dollar of wealth because DC participants

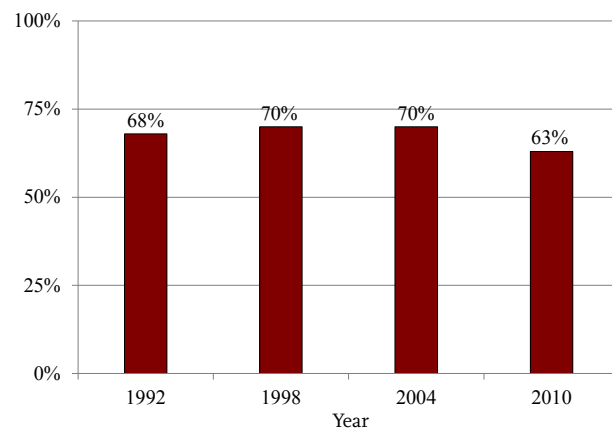
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have to pay more for annuities, and annuity rates fell as interest rates dropped. Fourth, even with later retirement ages, steady retirement income combined with rising wages has produced declining replacement rates. Thus, retirement income from employer plans has been contracting.

Retirement Plan Coverage

The data for this analysis come from the 1992, 1998, 2004, and 2010 waves of the *Health and Retirement Study* (HRS), a nationally representative survey of older Americans. The sample includes both single individuals ages 51-56 and couples in which at least one spouse was 51-56.² A household is classified as having a retirement plan if one or both spouses is currently receiving DB benefits, is covered by a DB pension or participating in a DC plan on a current job, or has DB or DC assets from a past job. Under this definition, coverage has declined from 68 percent in 1992 to 63 percent in 2010 (see Figure 1).

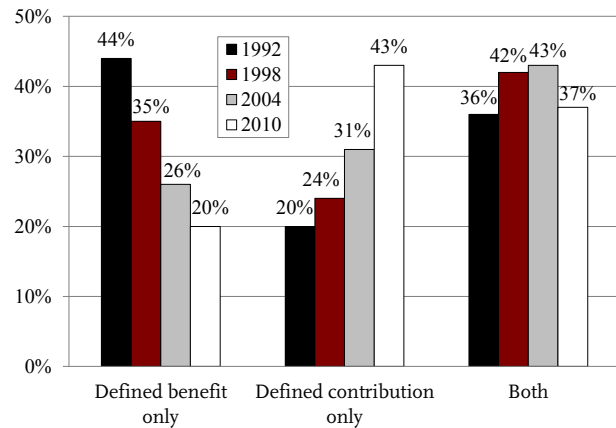
FIGURE 1. PERCENTAGE OF ALL HOUSEHOLDS AGES 51-56 WITH A RETIREMENT PLAN, 1992-2010



Note: These data include coverage from current and past jobs. Source: Authors' calculations from the University of Michigan, *Health and Retirement Study* (HRS) (1992-2010).

Within the context of declining participation overall, those households with coverage have seen a sharp shift from DB to DC plans (see Figure 2). The question is whether this shift has made households better or worse off. The first step to answering this question is looking at trends in retirement wealth over time.³

FIGURE 2. HOUSEHOLDS AGES 51-56 WITH A RETIREMENT PLAN BY PLAN TYPE, 1992-2010



Note: These data include coverage from current and past jobs. Source: Authors' calculations from the 1992-2010 HRS.

Retirement Wealth: 1992-2010

The calculations of DC and DB wealth are done separately. DC wealth may be held in a 401(k) plan from a past or current job or in an Individual Retirement Account (IRA).⁴ Household 401(k) wealth is computed by summing across both the head and spouse, where applicable. For most people, IRA accumulations are balances transferred from past employer-sponsored DC plans.

DB wealth is based on self-reported estimates of pension income at the participant's expected retirement age. Following previous research, DB wealth is the expected present value of lifetime benefits, discounting using annual survival probabilities and a rate of interest, and assuming that the employee does not leave the firm prior to retirement.⁵ Wealth is then apportioned between past and projected service, based on self-reported years of tenure for past service and years from current age to expected retirement age for future service.⁶

Table 1 (on the next page) presents the pattern of retirement wealth for households over time. Several points are relevant. First, DB wealth in all years is higher than DC wealth. Second, DB wealth is roughly constant over time. Third, DC wealth nearly doubled between 1992 and 2010. Combine these patterns with the shift in coverage from DB to DC between 1992 and 2010, and the result is relatively level retirement wealth over time. While mean and median wealth in 2010 were larger than in 1992, they were lower than in 1998 and 2004.⁷

TABLE 1. RETIREMENT WEALTH FOR HOUSEHOLDS AGES 51-56 WITH A PLAN, 1992-2010, IN 2014 DOLLARS

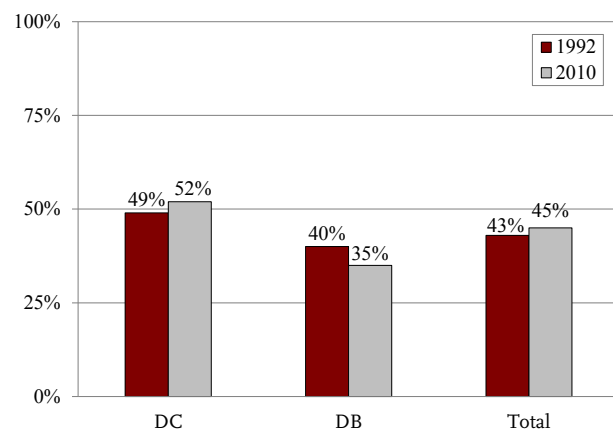
Plan type	1992	1998	2004	2010
Defined benefit				
Mean	\$242,540	\$259,236	\$280,450	\$237,814
Median	145,264	155,264	159,597	120,038
Defined contribution				
Mean	123,877	189,772	203,147	216,855
Median	50,621	76,976	80,995	97,711
Total				
Mean	268,236	335,370	350,543	316,497
Median	139,590	178,915	187,584	162,852

Source: Authors' calculations from the 1992-2010 HRS.

Stable aggregate retirement wealth does not necessarily imply that households today are as well prepared for retirement as those in 1992. Preparedness depends on how retirement wealth is distributed, how much income that wealth produces, and how that income relates to pre-retirement wages.

Figure 3 reports the distribution of DB and DC wealth and total wealth held by the quartile of households with the most education.⁸ DC wealth is skewed more toward those with more education and higher earnings, with the top quartile holding 52 percent of total DC wealth in 2010 compared to 35 percent of DB wealth.

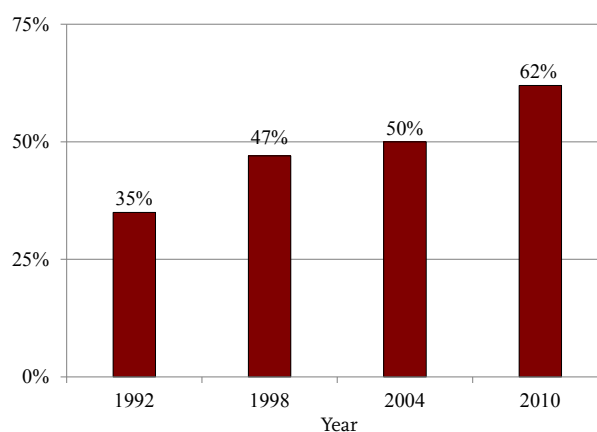
FIGURE 3. SHARE OF RETIREMENT WEALTH HELD BY TOP EDUCATION QUARTILE, HOUSEHOLDS AGES 51-56



Source: Authors' calculations from the 1992 and 2010 HRS.

In the 1990s, however, the skewness of DC wealth toward the higher education group was less evident as DCs were a smaller share of total retirement wealth. Only now, as DC wealth begins to exceed DB wealth, is this greater concentration of wealth at the top becoming more apparent (see Figure 4).

FIGURE 4. DC WEALTH AS A PERCENTAGE OF TOTAL RETIREMENT WEALTH FOR HOUSEHOLDS AGES 51-56, 1992-2010



Source: Authors' calculations from the 1992-2010 HRS.

The real question, however, is not just the level and distribution of retirement wealth for households in their 50s but how much income they will have when they get to retirement.

Trends in DC and DB Income

The task is to project retirement income at the individual's estimated retirement age based on DC and DB wealth at ages 51-56. Household retirement income is then the total of each individual's employer plan income plus IRA income, which is reported only on a household basis. The final step, to get a sense of how much retirement income will contribute to a household's overall retirement security, is to relate this income to pre-retirement earnings.

DC and DB Income

DC income is estimated by projecting current plan balances (including IRAs) to the individual's expected retirement age, assuming no further contributions. For consistency with DB plans, the assumption is that DC assets earn 5.8 percent over the projection period. At retirement, participants are assumed to purchase a single-life immediate annuity with their DC holdings. Although few households voluntarily annuitize their DC plan balances, annuities act as a proxy for a sustainable withdrawal rate. The annuity calculation is based on historical data from Annuity Shopper.⁹

DB income is derived from DB wealth as follows. DB wealth is projected to grow at 5.8 percent until the individual's expected retirement age. At that point, the wealth is annuitized using Social Security's mortality table and an assumed interest rate of 5.8 percent. Those with both a DB and DC plan are assumed to annuitize their DC wealth at the age they expect to start receiving income from their DB plan.

Projected retirement income from DB and DC plans separately and combined is shown in Table 2. In 2010, the median projected income was \$20,800, and the mean was \$37,000. This pattern reflects that of wealth, with 2010 income close to 1992, but

TABLE 2. RETIREMENT INCOME AT PROJECTED RETIREMENT AGES FOR HOUSEHOLDS AGES 51-56 WITH A PLAN, 1992-2010, IN 2014 DOLLARS

Plan type	1992	1998	2004	2010
Defined benefit				
Mean	\$29,414	\$32,641	\$34,960	\$29,533
Median	20,531	20,897	23,133	19,201
Defined contribution				
Mean	16,186	23,900	23,073	24,369
Median	6,465	9,754	9,705	10,698
Total				
Mean	\$33,415	\$42,232	\$41,752	\$36,992
Median	19,542	23,182	24,657	20,813

Source: Authors' calculations from the 1992-2010 HRS.

significantly lower than 1998 and 2004. Similarly, DB income was consistently higher than DC income over the period 1992-2010, but DC income increased substantially while DB income remained relatively flat.

Income as a Percentage of Wealth

Looking at the ratio of income to wealth provides an indication of the effectiveness of the two types of plans in producing retirement income (see Table 3). As expected, the yield on DB wealth in recent years has been higher than that on DC wealth, because DC participants face two disadvantages when turning wealth into income. First, while DB participants face actuarially fair annuities, DC participants have to buy annuities on the open market where marketing and other costs reduce annuity factors by about 15-20 percent. Second, the interest rate used to calculate com-

TABLE 3. RETIREMENT INCOME AT PROJECTED RETIREMENT AGES AS A PERCENTAGE OF WEALTH AT AGES 51-56 FOR HOUSEHOLDS WITH A PLAN, 1992-2010

Pension type	1992	1998	2004	2010
Total	12.5%	12.6%	11.9%	11.7%
Defined benefit	12.1	12.6	12.5	12.4
Defined contribution	13.1	12.6	11.4	11.2

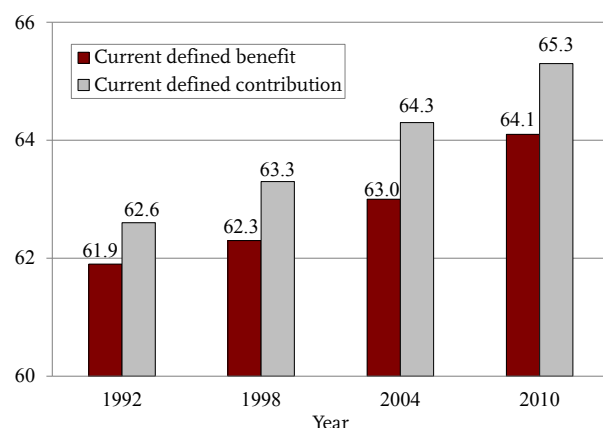
Source: Authors' calculations from the 1992-2010 HRS.

mercial annuity rates has declined sharply since 1992, while the interest rate assumption for DB annuities is a steady 5.8 percent. The lower yield on DC wealth and its increasing importance over time has led to a decline in the total wealth-to-income ratio.

Given the growth of DC wealth and the disadvantages of annuitizing that wealth, one might have expected an even greater decline in the ratio of retirement income to current retirement wealth. The main reason the ratio did not decline more is that overall retirement ages have been increasing, and the difference in the retirement age between those in DC and

DB plans has been getting larger (see Figure 5). Later retirement ages, all else equal, produce more annuity income per dollar of retirement savings because payout periods are shorter for people who work longer. Indeed, if the analysis had instead assumed that everyone retired at 62 over the entire period, the ratio of income to wealth would have declined much more sharply.

FIGURE 5. AVERAGE EXPECTED RETIREMENT AGE FOR CURRENT DB AND DC PARTICIPANTS IN HOUSEHOLDS AGES 51-56, 1992-2010



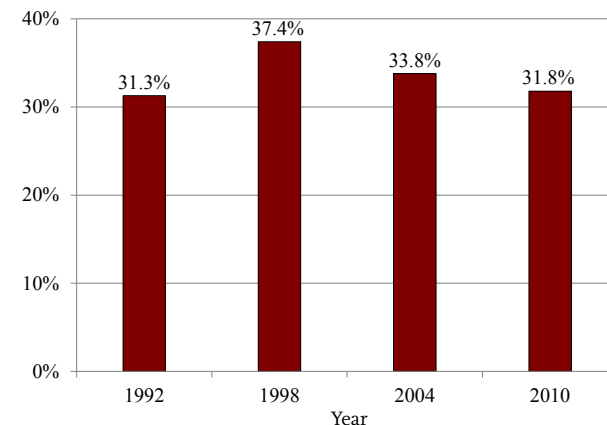
Source: Authors' calculations from the 1992-2010 HRS.

Replacement Rates

While the previous section looked at the yield on retirement wealth, a more important indicator for assessing retirement security is the ratio of benefits to pre-retirement earnings. For simplicity, the “replacement rate” reported here is the already-calculated income at the projected retirement ages divided by the highest five years of earnings between ages 51-56.¹⁰

The earnings data come from W-2 forms linked to the HRS records. Approximately 75 percent of the HRS sample has given permission to link this information. Researchers have concluded that this earnings sample is reasonably representative of the larger sample.¹¹ The results for this subsample show that, at least between 1998 and 2010, the replacement rate has declined more than the income-to-wealth ratio because earnings at ages 51-56 have increased over time (see Figure 6).

FIGURE 6. “REPLACEMENT RATE” FROM RETIREMENT WEALTH FOR HOUSEHOLDS AGES 51-56 WITH A PLAN, 1992-2010



Source: Authors' calculations from the 1992-2010 HRS.

Conclusion

With increases in Social Security's Full Retirement Age (which reduces replacement rates at any given claiming age), growing out-of-pocket health costs, and rising longevity, households will require ever-larger replacement rates from employer plans to maintain their standard of living in retirement.

The findings from the *Health and Retirement Study*, however, show that overall participation in employer plans has declined and that total wealth from retirement plans can at best be characterized as “flat” over the 1992 to 2010 period. While mean and median wealth in 2010 were larger than in 1992, they were lower than in 1998 and 2004. Moreover, DC wealth is more skewed toward the top education quartile than DB wealth. In 2010, the top quartile held 35 percent of DB wealth compared to 52 percent of DC wealth. As DC plans have become more prominent, this pattern is beginning to show up in the total wealth data.

In terms of retirement income, the shift from DB to DC plans – with actuarially unfair annuities and declining interest rates – has resulted in a decline in the income-to-wealth ratio. This decline would have been even greater if retirement ages had not been increasing for all participants. Finally, despite later

retirement, the ratio of projected retirement income to the highest five years of age 51-56 earnings has been declining steadily because of rising earnings.

The bottom line is that employer-sponsored plans are providing less income today than in the past. This outcome could be improved by: 1) making 401(k) plans work better through auto-enrollment, auto-escalation of default contribution rates, and reduced leakages; and 2) expanding coverage to workers whose employers do not offer a plan. Without significant changes, however, future retirees will be much more dependent on Social Security than those in the past, which is problematic given the reduced support due to the rising Full Retirement Age and the need to close the program's long-term funding gap.

Endnotes

- 1 Munnell et al. (2016).
- 2 These age criteria yield samples of 4,599, 2,753, 2,779, and 3,984 households in the four waves.
- 3 The discussion of the analysis and results below includes a general description of the methodology. For more details, see the full paper (Munnell et al. 2016).
- 4 IRAs can be employment-based plans (SEP and SIMPLE), or non-employment based. Non-employment-based plans can be funded with direct contributions and rollovers from 401(k) plans.
- 5 Mitchell and Moore (1997), Gustman, Steinmeier, and Tabatabai (2010). For consistency with Gustman, Steinmeier, and Tabatabai (2010), the nominal interest rate is assumed to be 5.8 percent, the sum of a 3-percent real interest rate and 2.8-percent inflation. Using a constant interest rate controls for the impact of interest rates on DB wealth, which is important in a cross-wave comparison of DB wealth. Using current interest rates permits a comparison between DB and DC wealth in the same wave.
- 6 Fang, Brown, and Weir (2016) estimated retirement wealth for HRS households using supplementary data from Form 5500s and W-2s – rather than HRS self-reported data – and found that their estimates were generally quite consistent with the self-reported data.
- 7 Fang, Brown, and Weir (2016) found a similar pattern of declining retirement wealth between 1998 and 2010.
- 8 The focus is on quartiles rather than educational attainment because those with less than a high school diploma have become an increasingly select group over time.
- 9 Annuity Shopper (2016) reports average male and female single life annuity rates for ages 60, 65, 70, and 75 at six-month intervals from 1986. Our analysis linearly interpolates to obtain rates at other ages.
- 10 The calculations follow Goss et al. (2014) in defining earnings in excess of \$100 a year as significant. If the household has substantial earnings in fewer than five years, the average is based on the number of years available.
- 11 Haider and Solon (2000).

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