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The Wealth Dynamics of American Families, 1984–94

DURING THE 1990s, the United States has experienced substantial economic growth in both family income and wealth. The rise in wealth has occurred despite the well-documented decline in traditional saving and investment since the mid-1980s. However, because of the lack of panel data on the composition of individual wealth holdings, it has not so far been possible to analyze properly the changing patterns in household wealth accumulation or the distribution of these changes across the population. This paper introduces features of the comprehensive measures of wealth, saving, and income in the Michigan Panel Study of Income Dynamics (PSID), in particular, the supplements on household family wealth funded by the National Institute on Aging. These data—currently available for 1984, 1989, and 1994—permit an improved understanding of a number of issues, such as generational differences in long-term saving and wealth accumulation, differences in the accumulation of wealth between African American and other households, regional differences in accumulation, and the importance for wealth

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accumulation of the stock market and other vehicles for the investment of savings.

To anticipate some of our findings, saving and wealth accumulation are increasingly in equity-based assets, and the rise in per family wealth has been disproportionately greater than rates of active saving. Those households wise or lucky enough to have invested in public or private business equities have benefited greatly, but the distribution of these asset holdings is highly skewed. African American families, at a given income level, composition, and age, are less likely to have been equity holders initially or to have jumped onto the equity bandwagon. Partly as a result, the gap in wealth between blacks and whites has closed only modestly in recent years. Wealth is systematically related to income, point in the life cycle, and other demographic characteristics. But apart from those differences, there remains great residual heterogeneity in wealth holding. Among baby boomers, there was a large group with little in the way of household wealth accumulation as of 1994. Whether this reflects a "grasshopper" approach toward household finances or whether they were just unlucky "ants" is not clear.[1] Also, because the household wealth measure in the PSID does not take account of pensions, the position of some families may differ in significant ways from their household wealth holdings alone.

The paper is organized as follows. We first describe levels of household wealth in 1984, 1989, and 1994, and active saving over 1989–94. The cross-sectional wealth distribution has a complex shape that is not readily parameterized, and the distribution of assets across age and across family composition is highly diverse, both by subcomponent and for total household wealth. Rates of active saving also differ greatly across age and demographic groups, and the overall median rate is very low. Household wealth from these data appears to be in line with aggregate data, once allowance is made for the fact that household surveys of this type seem capable of providing good data only up to (at least) the ninety-eighth percentile of household wealth. We then portray the wealth transitions of American families and analyze which families are likely to participate in various aspects of financial markets. We look specifically at the wealth accumulation of the baby boom cohorts and

1. Hurst and Stafford (1998) draw this analogy from Aesop's fable in which the ants work all summer to save for the potential hardships of winter, while the grasshoppers sing and are left with nothing to draw on when current resources dwindle.

at the differences in wealth holdings between African-American and other families. The last section of the paper offers a highly preliminary analysis of the interaction between wealth accumulation and the form of investment of household savings.

The Changing Distribution of Wealth

Table 1 describes household wealth in 1984, 1989, and 1994, based on the PSID Supplemental Wealth Files.[2] The data are based on three weighted, cross-sectional snapshots of the families surveyed in each of these years. Mean family wealth (including equity in the main home) grew from $148,364 in 1984 to $162,156 in 1989 and then essentially remained unchanged, standing at $159,217 in 1994.[3]

In reflecting on this very modest rise in mean wealth over ten years, one needs to bear in mind several issues of measurement. First, the wealth of very high-wealth families is not readily measured in household surveys. There was a very strong rise in the ownership and price of equities over 1989–94. Some of this is reflected in the growing proportion of families holding stocks (27.9 to 34.5 percent), and the rise in the value of stocks conditional on holding. Yet families may be reluctant to disclose the value of very large holdings of stocks. Further, components of wealth that have complex financial structures, such as farm or business equity, may be hard to report in a household survey. Such complexity is more likely with an enterprise of high value.

Second, the household wealth measured in the PSID excludes pension and social security wealth. Data from the Federal Reserve's Flow of Funds show that over the period 1984–94, pension fund reserves more than doubled, rising from $2.5 trillion in 1984 to $4.3 trillion in

2. Wealth is defined to include real estate—own or main home, second home, rental real estate, land contract holdings—cars, trucks, motor homes, boats, farm or business, stocks, bonds, mutual funds, saving and checking accounts, money market funds, certificates of deposit, government savings bonds, Treasury bills, Individual Retirement Accounts, bond funds, cash value of life insurance policies, valuable collections for investment purposes, and rights in a trust or estate, less mortgage, credit card, and other debt on such assets. The measure does not include wealth in the form of private pensions or expected social security retirement benefits. For the wealth data and the imputation procedures, see appendix A.

3. Dollar amounts are deflated by the Consumer Price Index and reported in 1996 dollars throughout this paper, unless noted otherwise.

Table 1. Wealth Holdings by Asset Type, 1984, 1989, and 1994[a]

1996 dollars, except as indicated

	1984[b]			*1989*[c]			*1994*[d]		
Asset type	*Percent holding asset type*	*Mean*	*Mean conditional on holding*	*Percent holding asset type*	*Mean*	*Mean conditional on holding*	*Percent holding asset type*	*Mean*	*Mean conditional on holding*
Real estate[e]	20.1	10,636	102,913	19.6	29,202	149,062	17.7	25,087	141,788
Wheels	83.2	8,334	10,010	83.1	9,829	11,827	85.4	11,251	13,167
Business[f]	12.2	24,915	204,234	13.4	28,962	216,391	13.2	22,967	173,405
Stock	24.8	10,697	43,119	27.9	16,350	58,538	34.5	29,768	86,347
Transaction accounts[g]	80.8	18,330	22,693	81.2	22,395	27,582	77.8	20,217	25,997
Main home	60.1	43,408	72,269	60.9	51,633	84,832	63.5	46,367	72,961
Other assets	23.4	24,793	105,813	26.3	7,435	28,225	24.5	9,898	40,428
Debt	46.3	2,754	5,962	50.2	3,653	7,279	50.6	6,339	12,525
Net worth		148,364			162,156			159,217	

Source: Authors' calculations using data from the Panel Study of Income Dynamics (PSID) Supplemental Wealth Files for 1984, 1989, and 1994.

a. All data are weighted using PSID weights.

b. $N = 6,918$.

c. $N = 7,114$.

d. $N = 7,416$.

e. Excludes main home.

f. Includes farms.

g. Includes checking, saving, money market, and nonstock individual retirement accounts, and Treasury bills.

1989 and then to $5.3 trillion (or $54,650 per household) in 1994.[4] If families respond to this rise in pension reserves by reducing holdings of household wealth, the latter provides a more limited measure for analysis of overall wealth accumulation.[5]

The evolution of wealth holding patterns suggests responses to changing incentives and asset prices. The upward drift in net equity in cars and other vehicles (that is, net real wheel wealth—"wheels" in table 1) may reflect increased gross wealth in this form, in part due to more purchases and the greater durability of vehicles, but it also represents a shift from vehicles to home equity ("main home") as the preferred source of collateral for households. Despite a rise in the percent of households owning a home, from 60.1 percent in 1989 to 63.5 percent in 1994, and a relatively stable median house price, home equity declined between 1989 and 1994. Such a shift from home equity to wheel wealth is consistent with changes in tax incentives for borrowing against one's home: mortgage interest continues to be tax-deductible, while the ability to deduct interest payments on consumer loans is being phased out.[6] The attraction of borrowing against one's home has led to new financial products based on home equity, which, in turn, encouraged many homeowners to refinance their mortgages to high ratios of loan to house value in the mid-1990s—recent research has focused on the rise in housing debt as a cause of the recent dramatic rise in household financial distress and bankruptcy.[7] In this interpretation, tax incentives may have reduced saving in the form of home equity but increased saving in the form of auto equity, with a corresponding increase in the associated mortgage default risk.

Another notable change over time is the rise in noncollateralized debt ("debt" in table 1), including unpaid balances on credit cards and charge cards, student loans, and medical bills. The mean of $2,754 in

4. See Juster, Smith, and Stafford (1997).

5. In 2000 the PSID may be augmented with pension wealth through employers' reports on the types of benefit plan that they offer.

6. During the 1990s, tax laws have been changed to prohibit the deduction of nonmortgage interest payments. This raises the more general question of the effects of tax incentives for asset holdings, saving, and portfolio composition. Do such incentives increase total saving and wealth or merely alter the form of saving and portfolio composition? For discussion on the effectiveness of saving incentives, see Hubbard and Skinner (1996); Poterba, Venti, and Wise (1996); Engen, Gale, and Scholz (1996).

7. Hurst and Stafford (1998); Fay, Hurst, and White (1998).

1984 rises to $6,339 in 1994, which, assuming that credit and charge card balances are the major components of this debt, implies a strong rise in unpaid balances. Thus there has been a shift to more collateralized borrowing on the main home at the same time as nondeductible interest payments are rising, with the growth of noncollateralized debt.

Table 1 shows declines in transaction account ownership and the value of "other assets" after 1984.[8] Ownership of transaction accounts fell from about 81 percent of families in 1984 to about 78 percent in 1994.[9] It may be that with the deregulation of the industry, banks no longer find it attractive to supply services for low volume accounts without substantial monthly fees, and that banks have lost out to nonbank competition in this market—for example, to check-cashing stores and providers of money orders, some of whom offer this service to promote retail activity. The mean value of transaction accounts is large ($20,217 in 1994), but some families have no such holdings at all. The reason for such a large mean is the broad definition of liquid or transaction accounts, which can include money market bonds, Treasury bills, and nonstock Individual Retirement Accounts (IRAs), as well as traditional checking and saving accounts. We look closely at transaction account ownership below.

In the PSID, the individual components of the wealth data have surprisingly high item response rates (see table A1). For example, 82.2 percent of households report that they do not own real estate other than main home; 15.8 percent provide a dollar value; and 1.2 percent are routed through a series of what have been termed unfolding brackets or range values, first used in the PSID in 1984.[10] Only 0.8 percent of such responses are missing (that is, have no dollar value or bracket range).

8. A check of the data indicates that two families each reported $9,000,000 of other assets in 1984. As far as can be ascertained, these are legitimate values. However, these families became "donors" for five additional cases by means of the "hot deck" imputation procedure (see appendix A). Dropping these five cases reduces the weighted mean of other assets in 1984 to $11,074.

9. Using data from the Federal Reserve's Survey of Consumer Finances (SCF), Kennickell and Starr-McCluer (1994, p. 867) find that the proportion of families with no transaction account fell from 14.9 percent in 1989 to 12.5 percent in 1992. Our results from the PSID suggest the opposite: from a higher initial base percentage of families with no transaction account, we find a rise in the share.

10. Heeringa, Hill, and Howell (1995); Hurd and others (1997).

For other components, not much more than 1 percent of the data are missing, except for checking accounts (2.6 percent) and other assets (1.9 percent).

We believe that the high item response rates indicate good respondent cooperation. It also helps to explain why the 1994 PSID wealth value is more than double the mean of $64,630 for net household assets reported for 1993–94 by the Bureau of Labor Statistics in the 1995 Consumer Expenditure Survey (CEX). In part, the difference in value stems from a difference in concept. The CEX definition of household wealth is restricted to the sum of financial and real estate assets (excluding business properties), less total liabilities. Yet even if, from table 1, one sums stocks, transaction accounts, other assets, and main home, and subtracts other debts, the 1994 value averages $99,911, which is still about 55 percent greater than the CEX value. The Census Bureau's Survey of Income and Program Participation (SIPP) reports median net worth in 1988 as $34,720 ($45,960 in 1996 dollars).[11] Compared with the medians, the wealth means for 1989 (in 1996 dollars) are more disparate between the PSID ($162,156) and the SIPP ($134,700). Both the CEX and the SIPP have limits as sources of household wealth means, for reasons more fully elaborated below.

Shares of overall household wealth and its components by age, marital status, and children present are reported in table 2. A great deal of household wealth, relative to their share of families, is held by preretirement (fifty-five to sixty-four years old) and retired (sixty-five years and older) families. Over three-quarters of all wealth is held by households over forty-five years of age. Noncollateralized debt is mostly concentrated among younger families, whereas home equity is concentrated among older families. One rather unusual pattern is the ownership of nonincorporated businesses. Among mid-career (forty-five to fifty-four years old) and preretirement families, business wealth is much more concentrated in those families with no children present. Does this suggest that one can mind the business, or mind the children, but not both? Almost all stock wealth is concentrated in households with heads over forty-five years of age. For those under forty-five, stock holdings are concentrated among the married.

11. See Oliver and Shapiro (1995).

Table 2. Share of Total Wealth and Wealth Components Held by Selected Demographic Groups, 1994[a]

Percent

Demographic group	Percent of families in group	Percent of wealth component held by group								
		Total net worth	Real estate[b]	Wheels	Business[b]	Stock	Transaction accounts[b]	Main home	Other assets	Debt
Under 35, not married	8.3	1.3	0.5	4.0	1.5	1.2	1.8	1.4	1.8	5.0
Under 35, married	8.1	3.4	2.5	8.1	4.9	1.6	4.2	3.3	7.2	11.3
35–44, not married	10.2	3.2	2.4	6.2	2.6	2.8	3.5	3.4	4.3	5.9
35–44, married	14.6	14.1	11.7	17.2	17.7	13.0	11.0	14.6	20.2	17.4
45–54, no children	11.5	16.8	33.5	15.6	22.1	10.2	11.4	12.7	18.3	24.3
45–54, with children	7.4	8.5	8.4	9.8	11.3	6.2	6.8	9.7	6.7	9.5
55–64, no children	12.3	19.4	12.2	16.0	20.2	20.7	17.9	21.9	21.7	9.7
55–64, with children	1.3	1.1	2.3	1.4	0.2	0.7	0.6	1.2	0.9	0.7
65 and over	26.2	32.3	26.5	21.6	19.5	43.8	42.7	31.8	18.8	16.2
All families	100	100	100	100	100	100	100	100	100	100

Source: Authors' calculations using data from the PSID Supplemental Wealth Files for 1989 and 1994.

a. Sample includes households with the same head in 1989 and 1994; $N = 5, 547$. All data are weighted using PSID weights.

b. For definition of wealth component, see notes to table 1.

Rates of wealth accumulation and active saving relative to family pretax labor income over the period 1989–94 are presented in table 3.[12] The overall average rate of wealth accumulation is 13.8 percent, and the median rate is 5.2 percent. The average of household active saving rates is 6.9 percent, half the average rate of wealth accumulation. We discuss this difference below. Saving and wealth accumulation may be concentrated in certain households, consistent with several models of saving behavior, including those of Angus Deaton and Christopher Carroll.[13] When we compute the active saving rate as average active savings over average family pretax labor income, we obtain a rate of 4.6 percent. This suggests the importance of a few families that have high saving rates by virtue of having low income as the denominator, rather than high saving as the numerator.

Wealth Percentiles

Median household wealth grew modestly over the period 1984–94. As reported in table 4, median wealth (including main home equity) grew from $47,130 in 1984 to $47,742 in 1989 and then to $51,030 in 1994. The median rose about as rapidly as our estimated mean, but as we indicate below, the basic shape of the wealth distribution is complex, and changes occurred unevenly throughout the percentile distribution. In particular, it is striking that mean family wealth for families in the bottom fifth fell from −$3,282 in 1984 to −$6,829 in 1994,

12. Our measures for saving rates differ slightly from those found in the National Income and Product Accounts (NIPA). The income in our measure is the labor income of heads and spouses from all sources (including overtime, bonuses, and commissions), based on a five-year average. Since we do not include interest and dividend income (which can be added from the survey data at a later time), nor employer benefits (which are not included in the survey), our measure of income is understated relative to that from the NIPA. On the other side, we do not take out personal taxes. The other differences relate to how saving is measured. Pension contributions by employers, net of withdrawals, are considered partly as saving under national account definitions (see Bosworth, Burtless, and Sabelhaus, 1991, pp. 228–29), but are not included in income or saving by the PSID. As a first approximation, these inclusions and exclusions may be of about equal importance. We calculate two measures of mean saving rates from the PSID data: the average saving rate across households (A); and the rate derived from an average of aggregate household savings over aggregate household income (B)—a measure consistent with the NIPA use of aggregates. With a skew to saving rates, we might expect a lower value for B than for A.

13. Deaton (1991); Carroll (1994).

Table 3. Wealth Accumulation and Active Saving Rates, Selected Demographic Groups, 1989–94[a]

Percent

	Wealth accumulation rate[b]		*Active saving rate*[b]	
Demographic group	*Mean*[c]	*Median*	*Mean*[c]	*Median*
Under 35, not married	19.1	5.4	3.5	1.6
Under 35, married	19.7	7.7	2.9	0.6
35–44, not married	9.0	1.6	3.2	0.0
35–44, married	31.1	7.3	4.6	0.8
45–54, no children	9.7	6.3	1.8	0.7
45–54, with children	6.1	3.0	7.0	1.2
55–64, no children	−9.7	4.0	17.8	1.0
55–64, with children	25.0	−2.5	2.2	−0.9
65 and over	19.8	4.3	15.6	0.0
All families[c]	13.8	5.2	6.9	0.7

Source: Authors' calculations using data from the PSID Core Surveys and Supplemental Wealth Files for 1989 and 1994.

a. Sample includes only households that meet the following three conditions: same head in 1989 and 1994; permanent (1987–91 average) income greater than $5,000; and 1989–94 wealth change between −$100,000 and $500,000. All data are weighted using PSID weights.

b. Rate calculated as wealth accumulation or active saving, 1989–94, divided by permanent income. For details of active saving calculation, see appendix A.

c. Calculated as the average of individual family rates, rather than as aggregate accumulation or saving divided by aggregate income.

and for families in the lowest tenth, mean family wealth dropped from −$7,777 in 1984 to −$14,494 in 1994.

Table 4 indicates that the share of household wealth held by the top 10 percent of families also declined, from 62 percent in 1984 to 59 percent in 1994. However, household surveys have trouble measuring the very top part of the wealth distribution. The very rich, including those 149 families with $1 billion or more of assets (as identified by *Forbes* magazine), hold a large share of aggregate wealth, but their holdings are hard to capture for three reasons: the sample frame is hard to define, the response rate conditional on interviewing is likely to be very low, and the survey instrument used must accommodate a far more complex asset structure than is sufficient for the typical family.[14] As a

14. This figure for the very rich is from *Forbes*, July 15, 1996, pp. 188–90. Donald Trump, fielding questions from reporters after learning of his impending bankruptcy, is said to have quipped that if you know what your assets are worth, you cannot be worth very much.

Table 4. Distribution of Wealth, 1984, 1989, and 1994[a]

1996 dollars, except as indicated

Year and category	Median	Mean								
		Entire sample	*Bottom fifth*	*2d fifth*	*3d fifth*	*4th fifth*	*Top fifth*	*Bottom 5 percent*	*Bottom 10 percent*	*Top 10 percent*	*Top 5 percent*
1984[b]											
All wealth	47,130	148,364	−3,282	12,151	47,760	114,881	570,050	−15,384	−7,777	918,633	1,467,635
Percent of total			−0.44	1.64	6.44	15.49	76.84	−0.52	−0.52	61.92	49.46
Excluding main home	15,033	104,956	−4,656	4,376	15,719	50,477	458,879	−18,698	−9,604	787,130	1,314,044
Percent of total			−0.89	0.83	3.00	9.62	87.44	−0.89	−0.92	75.00	62.60
1989[c]											
All wealth	47,742	162,156	−4,744	12,094	48,217	128,151	627,140	−20,216	−10,405	991,376	1,524,303
Percent of total			−0.59	1.49	5.95	15.81	77.35	−0.62	−0.64	61.14	47.00
Excluding main home	17,326	110,523	−5.052	4,532	18,169	59,927	475,156	−18,702	−10,250	796,480	1,292,118
Percent of total			−0.91	0.82	3.29	10.84	85.98	−0.85	−0.93	72.06	58.45
1994[d]											
All wealth	51,030	159,217	−6,829	13,381	52,528	131,229	605,830	−27,334	−14,494	940,409	1,416,023
Percent of total			−0.86	1.68	6.60	16.48	76.10	−0.86	−0.91	59.06	44.47
Excluding main home	20,115	112,850	−7,192	4,905	21,046	67,480	477,998	−25,227	−14,430	778,607	1,218,553
Percent of total			−1.27	0.87	3.73	11.96	84.71	−1.12	−1.28	68.99	53.99

Source: Authors' calculations using data from the PSID Supplemental Wealth Files for 1984, 1989, and 1994.

a. All data are weighted using PSID weights.

b. $N = 6,918$.

c. $N = 7,114$.

d. $N = 7,416$.

result, any such data grouping of the top few percent, which includes these mismeasured or nonrespondent families, is suspect.[15]

Because of these problems, it is best to restrict the discussion to the population exclusive of some few percent at the very top, say, those households with above $1 million of wealth (in 1996 dollars).[16] Nevertheless, the top 2 or 3 percent represent a large share of the wealth, and data published in *Forbes* magazine indicate that the growth of the wealth of the very rich has been strong over the period 1989–94.[17] The PSID data show that the household wealth of the family at the ninety-fourth percentile rose from $426,055 in 1984 to $517,727 in 1989 and then to $542,586 in 1994—that is, by 2.5 percent per year or 27 percent overall—while the wealth of the top families, as listed in *Forbes,* rose even more rapidly.

The two panels of figure 1 present the wealth distribution for the period 1984–94 by (weighted) percentile, from the second to the ninety-eighth percentiles. We break the distribution because the range of net worth values is so wide: from −$16,273 for the second percentile to $1,069,291 for the ninety-eighth percentile, in 1994. As noted, extending the chart upward is inherently problematic with household survey data. However, there do not seem to be obvious anomalies, as would be suggested by "irregular" growth patterns for the ninety-sixth and ninety-eighth percentiles. It appears that the majority of the measurement problems in the PSID occur beyond the ninety-eighth percentile, possibly even beyond the 99.5 percentile.[18]

The small upward shift in midrange household wealth between 1984 and 1989 is illustrated by the upper bounds of the lines in the first panel of figure 1. At the second percentile debt (negative wealth) grows by a factor of 3.6, and at the tenth percentile it is zero throughout. The 1984–94 growth ratios of wealth (that is, the ratio of ending 1994 values

15. Another problem with the PSID wealth data is that they are top-coded to amounts no greater than $10 million per wealth component. A listing of all such cases indicates that this was a very minor problem. Starting in 1999, an upper limit of $100 million will be allowed per "large" component.

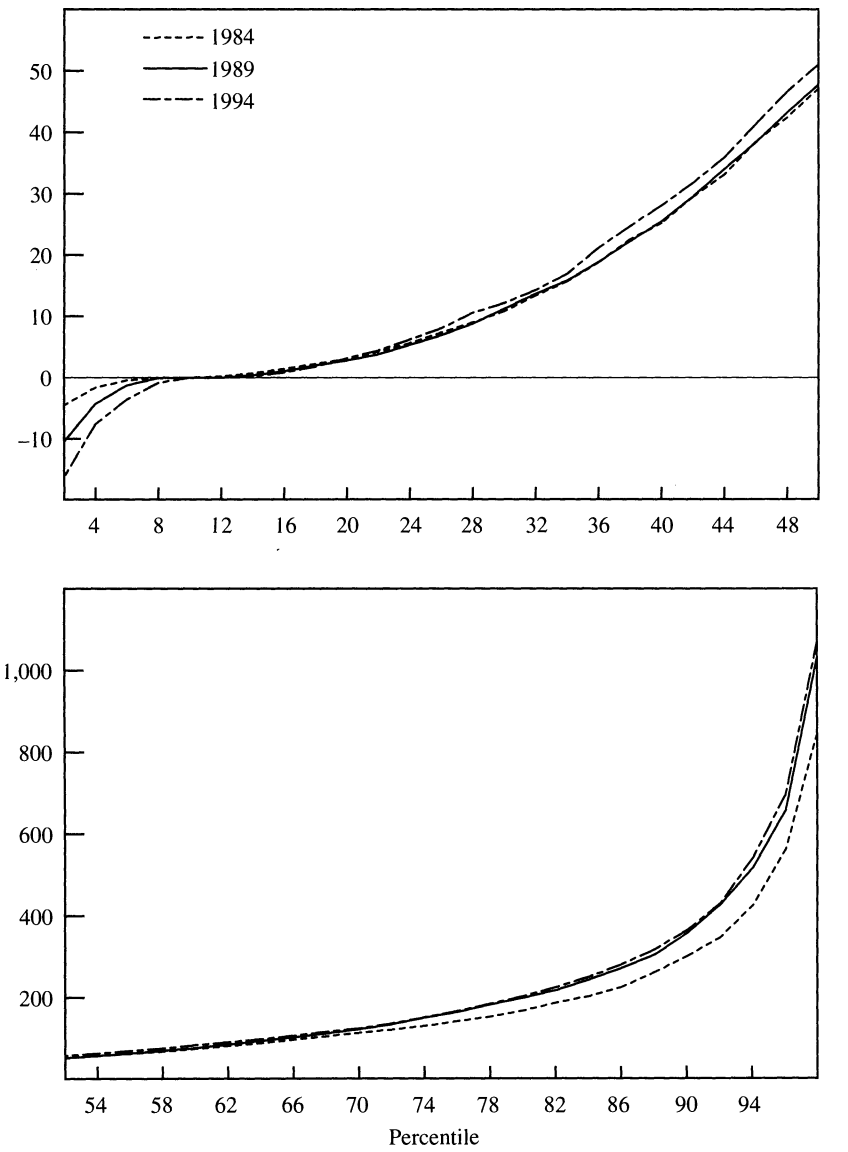
16. Wealth data from the PSID line up reasonably closely through the ninety-eighth percentile with data from the Survey of Consumer Finances, which oversamples high-wealth households; Juster, Smith, and Stafford (1998). Antoniewicz (1996) shows that the SCF data for 1989 line up with those from the Federal Reserve's Flow of Funds.

17. *Forbes* , July 15, 1996, pp. 188–90.

18. Juster, Smith, and Stafford (1998) find that the PSID wealth data for 1989 line up closely with those from the 1989 SCF through the 99.5 percentile.

Figure 1. Distribution of Wealth, 1984, 1989, and 1994

Wealth (thousands of 1996 dollars)



Source: Authors' calculations using data from the PSID Supplemental Wealth Files for 1984, 1989, and 1994.

to beginning 1984 values) at a few other illustrative percentiles across both panels are as follows: fortieth percentile, 1.11; fiftieth percentile, 1.08; seventieth percentile, 1.10; eightieth percentile, 1.21; ninetieth percentile, 1.21; ninety-eighth percentile, 1.27. The greater divergence at the bottom and top of the PSID wealth distribution, combined with the rise in the wealth holdings of the very rich families from *Forbes*, suggest a widening of the overall wealth distribution. The midrange wealth holders appear to have lost ground to those near the top, at least between 1989 and 1994.

One's overall characterization of the distribution of wealth between 1984 and 1994 will depend importantly on one's beliefs about how the top 2 percent "missing" from a household survey did in comparison with the next 5 percent. Data from the *Forbes* billionaire list indicate that over this period the wealth of those above the 99.9999985 percentile—twenty families in 1994 and nineteen in 1989—grew by about 45 percent, net of inflation.[19] This is a far larger increase than for any of the broader groupings captured in our household survey data.

Aggregate Household Wealth

One can estimate the number of families in the United States with household net worth of $1 million or more in 1989 and 1994 from the quantile corresponding to $1 million of wealth for each of those years. In all three years of the PSID wealth data, $1 million (in 1996 dollars) corresponded to the very top of our figures for the second to ninety-eighth percentiles: the 97.70 percentile in 1994, the 97.91 percentile in 1989, and the 98.53 percentile in 1984. The census estimated the numbers of households in 1994 at 97,107,000.[20] Multiplying this total by the estimated 2.30 percent of families with net worth above $1 million, the number of millionaire families in 1994 is estimated to be 2,233,461. Similarly, the number of millionaires in 1989 is 1,935,100. The Internal Revenue Service (IRS) estimates that as of 1989, there were 1,260,000

19. *Forbes*, October 23, 1989; October 17, 1994.

20. The census "household" corresponds approximately to the PSID "family," which, in turn, has a similar definition to the "consumer unit" used by the Bureau of Labor Statistics. As of 1995, the BLS reported 102,539,000 consumer units (Consumer Expenditure Survey, 1995).

families worth $1,000,000 or more in 1989 dollars.[21] Converting our estimate to 1989 dollars gives 1,364,000 millionaires in that year, a number very close to the IRS estimate.

It is obvious from the shape of the wealth distribution in the second panel of figure 1, and the fact that the shape is approximately the same all the way to the top, that much of the wealth is held by those families worth over $1 million—the upper 2.30 percent of wealth holders in 1994. To estimate the total wealth holdings of those families worth less than $1 million, we take the integral of the wealth distribution portrayed in each panel of figure 1 up to the 97.70 percentile point and normalize by the number of families in 1994. We find that household wealth held by families worth $1 million or less accounted for $10.75 trillion (in 1996 dollars). This is about three-fifths of total wealth of all families.[22]

For 1989, the household wealth for those with net worth under $1 million was $9.94 trillion (in 1996 dollars). The ensuing rise to $10.75 trillion represents an increase of 8.2 percent over the five-year period. Including the rise in pension fund reserves between 1989 and 1994, there was an aggregate increase of $1.79 trillion in net worth for the bottom 98 percent of the wealth distribution.[23] This increase has clearly been boosted further by financial market gains from 1994 to 1998, and it has the potential to stimulate spending by households through a wealth effect on consumption, currently and over the next several years.

Table 5 pieces together aggregate household wealth for 1989, using data from the PSID up to the 98.6 percentile, from the IRS wealth data for the 98.6 to 99.96 percentiles, and from *Forbes* for the balance, that is, the thirty-two most wealthy families. The 1989 total for household wealth (excluding pension wealth) of about $12 trillion derived from these household-level data is in the same ballpark as estimates available from Federal Reserve balance sheet data using similar definitions.

21. *Statistical Abstract of the United States*, 1994.

22. Flow of Funds data aligned to SCF definitions (which are not quite those of the PSID) provide an estimate of total household wealth in 1992 of $15.28 trillion (in 1992 dollars); Antoniewicz (1996). For 1994, taking into account inflation over 1992–96 and assuming a 10 percent greater real value of household sector assets from 1992 to 1994, this represents $18.71 in 1996 dollars—or 57.5 percent of the total.

23. Board of Governors of the Federal Reserve System, Flow of Funds Section, *Balance Sheets for the U.S. Economy*, release C.9 (1996).

Table 5. Distribution of Wealth, Including Top Families, 1989
Units as indicated

	Aggregate wealth held by group	
Wealth group	*Billions of 1996 dollars*	*Percent of total wealth*
Bottom 50 percent	381	3.2
Top 25 percent	9,954	82.9
Top 10 percent	7,354	61.2
Top 5 percent	5,684	47.3
Top 1 percent	3,079	25.6

Source: Authors' calculations using data from the PSID Supplemental Wealth Files for 1989; *Statistical Abstract of the United States*, 1994; *Forbes*, October 23, 1989.

Wealth Dynamics and Transitions

One strength of the PSID wealth data is that they come from a long-term panel with annual reinterview rates in the range of 97 to 98 percent, so that one can directly examine wealth mobility over an extended period.[24] Tables 6, 7, and 8 present wealth transitions, based on households with the same head of family in both years shown. A few points from these tables are worth noting. From table 7, those in the bottom tenth in 1994 had negative to zero net worth. In the second tenth, net worth ranged from zero to $6,219, and in the third tenth, from $6,219 to $15,668. The lower limit of the top tenth was $427,915, and the median is $70,090. That this is somewhat higher than the median of $51,030 for the cross-sectional snapshot in table 4 is a consequence of family stability, which facilitates the accumulation of financial wealth. The 1989 median of $54,292 from table 7 is smaller than the 1989 median of $67,947 from table 6 because among 1989 families, those that were also in the sample in 1984 are on average older and have more life-cycle wealth accumulation.

From table 7, those in the lowest tenth in 1989 also had negative to zero net worth. In the second tenth net worth ranged from zero to $4,219, and in the third tenth, from $4,219 to $15,084. The top decile is $378,912, and the median is $54,292. Once again, the median is

24. The PSID follows young adults as they leave home and form their own families. In this way, the panel regenerates a new sample and, with weights, can provides national estimates of income, wealth, and saving. The design is outlined in Stafford, Hofferth, and Brown (1995).

Table 6. Transition Probabilities, Family Wealth between 1984 and 1989[a]

Percent

1984 wealth group		*1989 wealth group*										*Percent changing wealth group, 1984–89*	
Dollar range[b]	*Percentile range*	*≤$123 <10*	*To $7,828 10–20*	*To $23,177 20–30*	*To $44,593 30–40*	*To $67,947 40–50*	*To $106,109 50–60*	*To $159,096 60–70*	*To $239,590 70–80*	*To $424,510 80–90*	*>$424,510 >90*	*Falling*	*Rising*
≤$12	<10	49.32	24.73	9.72	7.26	2.51	2.66	1.40	1.50	0.48	0.42	0.00	50.68
To $4,652	10–20	24.70	32.97	21.14	9.66	6.51	1.44	1.52	2.06	0.00	0.00	24.70	42.33
To $15,033	20–30	10.80	21.25	28.10	16.73	9.68	7.50	2.35	1.80	0.95	0.83	32.05	39.84
To $31,721	30–40	6.53	12.45	22.00	24.03	15.74	8.86	5.06	3.11	0.77	1.44	40.98	34.98
To $54,722	40–50	3.07	3.94	10.31	23.51	25.58	16.77	10.33	3.29	0.84	2.38	40.83	33.61
To $84,188	50–60	1.99	3.45	4.98	10.39	23.84	21.62	18.46	6.85	5.55	2.87	44.65	33.73
To $123,276	60–70	1.16	0.81	3.30	3.27	7.64	24.30	28.10	17.92	9.96	3.55	40.48	31.43
To $183,711	70–80	0.22	0.60	0.80	2.85	3.23	11.16	21.21	30.69	22.19	7.04	40.07	29.23
To $315,707	80–90	0.95	0.36	0.28	1.12	2.75	3.57	9.33	26.49	36.31	18.84	44.85	18.84
>$315,707	>90	0.01	0.32	0.01	0.65	1.76	2.54	2.58	6.26	22.36	63.52	36.49	0.00

Source: Authors' calculations using data from the PSID Supplemental Wealth Files for 1984 and 1989.

a. Sample includes households with same head in 1984 and 1989. All data are weighted using PSID weights.

b. 1996 dollars.

Table 7. Transition Probabilities, Family Wealth between 1989 and 1994[a]

Percent

1989 wealth group		*1994 wealth group*										*Percent changing wealth group, 1989–94*	
Dollar range[b]	*Percentile range*	*≤$0*	*To $6,219*	*To $15,668*	*To $43,212*	*To $70,090*	*To $105,396*	*To $155,989*	*To $239,125*	*To $427,915*	*>$427,915*	*Falling*	*Rising*
		<10	*10–20*	*20–30*	*30–40*	*40–50*	*50–60*	*60–70*	*70–80*	*80–90*	*>90*		
≤0	<10	48.81	19.27	11.06	10.45	4.23	1.54	2.00	0.64	1.27	0.74	0.00	51.20
To $4,219	10–20	26.59	25.28	15.28	17.03	6.54	4.00	3.22	0.18	0.30	0.59	26.59	47.14
To $15,084	20–30	16.91	18.72	19.58	24.22	8.27	4.04	3.75	2.88	1.17	0.46	35.63	44.79
To $32,462	30–40	9.95	7.73	14.18	31.24	12.63	9.15	6.47	4.25	2.32	2.07	31.86	36.89
To $54,292	40–50	3.78	4.67	5.80	22.68	23.15	19.03	11.02	5.74	3.13	1.01	36.93	39.93
To $88,177	50–60	2.47	4.19	3.10	11.56	26.30	19.49	15.33	9.15	5.77	2.65	47.62	32.90
To $136,675	60–70	2.32	2.38	3.03	3.70	12.59	25.28	26.62	13.20	8.28	2.59	49.30	24.07
To $214,145	70–80	0.73	1.71	0.42	2.00	5.42	9.28	20.43	28.46	22.13	9.44	39.99	31.57
To $378,912	80–90	0.03	0.34	0.70	3.72	1.94	3.84	11.88	25.42	35.39	16.73	47.87	16.73
>$378,912	>90	0.70	0.00	0.70	0.54	1.02	2.27	1.79	9.40	19.96	63.61	36.38	0.00

Source: Authors' calculations using data from the PSID Supplemental Wealth Files for 1989 and 1994.

a. Sample includes households with same head in 1989 and 1994. All data are weighted using PSID weights.

b. 1996 dollars.

Table 8. Transition Probabilities, Family Wealth between 1984 and 1994[a]

Percent

1984 wealth group		*1994 wealth group*										*Percent changing wealth group, 1984–94*	
Dollar range[b]	*Percentile range*	*≤$111*	*To $11,303*	*To $32,988*	*To $57,968*	*To $90,220*	*To $127,532*	*To $187,818*	*To $284,574*	*To $495,370*	*>$495,370*	*Falling*	*Rising*
		<10	*10–20*	*20–30*	*30–40*	*40–50*	*50–60*	*60–70*	*70–80*	*80–90*	*>90*		
≤$300	<10	39.90	26.02	11.03	6.82	4.26	4.56	2.82	1.70	1.47	1.42	0.00	60.10
To $6,765	10–20	24.30	27.58	19.35	10.39	6.75	5.54	2.48	2.12	1.36	0.12	24.30	48.11
To $18,040	20–30	14.65	15.99	24.40	12.90	11.83	7.15	5.28	3.28	1.89	2.64	30.64	44.97
To $36,231	30–40	9.80	9.17	18.97	21.34	13.39	12.33	5.49	4.28	2.46	2.77	37.94	40.72
To $59,713	40–50	2.75	8.97	8.30	23.66	17.19	14.55	9.17	5.33	6.19	3.91	43.68	39.15
To $90,803	50–60	0.97	5.08	8.71	12.94	18.75	16.84	18.40	8.53	6.71	3.06	46.45	36.70
To $128,538	60–70	2.81	4.31	3.19	6.12	16.99	17.42	16.74	16.69	10.45	5.27	50.84	32.41
To $189,274	70–80	2.09	1.25	4.07	1.12	5.18	12.94	17.22	27.42	19.58	9.14	43.87	28.72
To $324,727	80–90	1.16	0.75	1.03	1.92	5.02	6.41	15.20	17.49	31.88	19.15	48.98	19.15
>$324,727	>90	0.65	0.81	1.38	1.16	2.14	3.22	6.39	12.50	18.40	53.34	46.65	0.00

Source: Authors' calculations using data from the PSID Supplemental Wealth Files for 1984, 1989, and 1994.

a. Sample includes households with same head in 1984, 1989 and 1994. All data are weighted using PSID weights.

b. 1996 dollars.

somewhat higher than for the cross-sectional snapshot presented in table 4 ($47,742) and indicates a relation between family stability and the accumulation of financial wealth. About half, or 48.8 percent, of those with low net worth—that is, below the tenth percentile—in 1989 persisted at low net worth five years later. Table 6 shows that this pattern also holds over 1984–89 (49.3 percent). Table 8, which reports the transition of family wealth between 1984 and 1994, shows that about two-fifths, or 39.9 percent, of those with low net worth in 1984 persisted at low net worth ten years later. This sample of still more stable and, on average, older families displays the familiar pattern of higher medians: $90,220 for 1994 and $59,713 for 1984.

The extent of wealth transitions across deciles can be assessed by the Shorrocks index, a measure of the off-diagonal elements relative to the on-diagonal elements in tables such as tables 6 to 8.[25] The index ranges from 0, denoting no mobility, to 1.11, which denotes no stability in the upper limit, in the case of deciles. From the data in table 8, the Shorrocks index for household wealth mobility in the United States over the ten years 1984–94 is 0.804. By comparison, for Sweden over the nine-year period from 1983–84 to 1992–93, the index has been estimated as 0.870.[26] While this might suggest that there has been more wealth mobility in Sweden than in the United States, it should be remembered that these are measures across deciles. If the deciles are wider apart in the United States and spreading over time, one cannot conclude that this is so. For the United States, the Shorrocks measure rises modestly from 0.733 over 1984–89 to 0.754 over 1989–94. Since it appears that the absolute spread on the wealth distribution has been rising, it seems safe to conclude that there is rising wealth mobility in the United States—which parallels the rising income mobility found by Peter Gottschalk and Robert Moffitt.[27]

Much of the decile wealth mobility occurs across the midrange deciles. By contrast, the top and bottom tenths are characterized by substantial persistence. Of the families above the top wealth decile in 1984, over three-fifths (63.5 percent) are above the top decile in 1989, and a

25. The Shorrocks measure, S, is given by $S = [N - \text{tr}(P)]/(N - 1)$, where N is the number of groups (ten, if we divide the sample using deciles) and $\text{tr}(P)$ is the trace of the $N \times N$ transition matrix P; $0 < S < N/(N - 1)$. See Shorrocks (1978).

26. Bager-Sjögren and Klevmarken (1995).

27. Gottschalk and Moffitt (1994).

full decade later, in 1994, over half (53.3 percent) are still above the top decile.[28] At the other end of the spectrum, of those families below the bottom decile in 1984—which include many with negative household net worth—about half are below the bottom decile in 1989 and about two-fifths are below the bottom decile a decade later, in 1994. This finding is particularly important given that the bottom 10 percent of families in 1994 had much larger negative wealth than did the bottom tenth in 1984. Despite the overall drift toward greater wealth mobility, there are some families with persistently low and negative net worth.

The Persistence of Illiquidity

As the above tables indicate, at any given point in time in recent years, about 10 percent of families have had net worth of zero or less.[29] Table 9 provides results of probit regressions that examine which families are below the bottom wealth decile in 1989, and which families stay or fall below the bottom decile in 1994. Five factors are important in determining the probability of falling below the bottom decile over 1989–94: permanent income, race, age, and marital status of household head, and number of children. Most of these variables are also important determinants of staying below the bottom decile over this period. And, consistent with the standard consumption function, high permanent income plays a major role in keeping families above the bottom decile.[30]

One way to think of the impact of income from the probit models in table 9 is to characterize the bottom tenth as an absorbing state for those with very low permanent income. That is, a family with low permanent income is more likely to be below, stay below, or fall below the bottom decile. We have used this type of characterization elsewhere, for other aspects of household behavior. For example, entering the state of fi-

28. Families that are intact over a ten-year span are overrepresentative of stable families. See below for further discussion of the relation between family stability and wealth.

29. For 1953, the SCF data indicate that 15 percent of families had a net worth of zero or less; Katona and Lansing (1964, p. 5). However, the extent of substantially negative net worth was not reported. In addition, descriptive statistics on the 1950 Federal Reserve Board–Michigan Survey Research Center Survey of Consumer Finances are available in Friend and Schor (1959).

30. On the standard consumption function, see Friedman (1957); Holbrook and Stafford (1971).

Table 9. Probit Regressions Predicting Low Wealth[a]

	Dependent variable					
	Being below bottom decile, 1989[b]		*Falling below bottom decile, 1989–94*[c]		*Remaining below bottom decile, 1989–94*[d]	
Independent variable	*Marginal effect*	*t statistic*	*Marginal effect*	*t statistic*	*Marginal effect*	*t statistic*
Permanent income[e]	-0.003	-7.2	-0.001	-3.7	-0.020	-6.1
African American dummy[f]	0.004	0.5	0.023	2.5	-0.049	-0.8
Age of head	-0.003	-1.3	0.002	1.1	2.3×10^{-4}	0.1
Age squared	-7.1×10^{-6}	-0.3	-4.8×10^{-5}	-1.9	-7.4×10^{-5}	-0.3
Education of head[g]	0.002	1.6	-4.4×10^{-5}	-0.3	0.048	4.1
Married dummy	-0.027	-2.9	-0.015	-1.8	0.151	1.9
Number of children	-4.1×10^{-4}	-0.1	-0.005	-1.6	-0.030	-1.2
Male dummy[h]	-0.008	-0.9	0.001	0.2	-0.058	-0.9
Summary statistic						
Pseudo R^2	0.074		0.058		0.111	
Mean of dependent variable	0.122		0.047		0.325	

Source: Authors' regressions using data from the PSID Core Surveys, 1987–94, and Supplemental Wealth Files for 1989 and 1994.

a. All regressions are weighted using 1994 PSID weights. Each marginal effect represents the change in the probability of the event caused by a one unit change in a given independent variable. *t* statistics are given in parentheses. Samples include only households with the same head in 1989 and 1994, where the head is aged between twenty-five and sixty-five in 1989. All regressions include a constant.

b. For all included households, probability of being below the bottom decile in 1989; $N = 4,497$.

c. Given households above the bottom decile in 1989, probability of being below the bottom decile in 1994; $N = 4,101$.

d. Given households below the bottom decile 1989, probability of being below the bottom decile in 1994; $N = 396$.

e. Total pretax labor income, 1987–91, in tens of thousands of 1996 dollars.

f. Race of head.

g. Years.

h. Gender of head.

nancial distress is positively predicted by homeownership.[31] One interpretation is that homeowners are given the opportunity to get into trouble because their home provides collateral and is used as an indicator of financial management. Some do get into trouble; but as an index of long-term asset management, homeownership also predicts subsequent exit from financial distress.[32]

In a similar analysis (not reported), we have examined movement in and out of the sixtieth to eightieth percentile range, from both above and below. Upward mobility is more probable with higher permanent income and greater education. Persistence above the eightieth percentile is also positively related to education and income. This is evidence of the link between the widening of income differentials through education and the subsequent widening of wealth differentials.

The Trailing Edge: Wealth Holding and Transitions of the Senior Baby Boomers

There has been a great deal of public discussion of the presumed lack of life-cycle saving by the baby boomers, the cohorts born between 1945 and 1964. Throughout the early 1990s, the popular press portrayed the baby boom generation as a low-saving cohort, destined to have inadequate resources during retirement unless they promptly change their ways. Despite this media attention, there has been relatively little scholarly work addressing the adequacy of the saving and wealth of the soon-to-be-retired.[33]

Many analysts have taken the optimistic position that as the baby boom generation matures, aggregate savings will return to earlier levels.[34] There are two potential arguments for this optimism. First, as the baby boomers reach their peak earning and saving years, aggregate saving will increase with this large cohort's rising share of national income. Second, baby boomers who spent freely and saved little in

31. A special supplement to the PSID in 1996 asked about financial distress and bankruptcy. For other applications using these data, see Fay, Hurst, and White (1998); Hurst and Stafford (1998).

32. See Hurst and Stafford (1996).

33. As discussed below, notable exceptions include Bernheim (1991); Bernheim and Scholz (1993); Engen and Gale (1997); William G. Gale, "Will the Baby Boom Be Ready for Retirement?", *Brookings Review*, Summer 1997, pp. 4–9.

34. See, for example, Cantor and Yuengert (1994).

their early years will increase their rates of saving aggressively as they find themselves unprepared for retirement.

Douglas Bernheim and John Scholz attempt to provide an absolute measure of saving adequacy that takes into account the particular economic circumstances of the baby boom generation.[35] Using a simulated model that generates a target level of nonhousing wealth for a head of a household at a given age, Bernheim finds that in 1991 and 1992 baby boomers were saving at roughly 34 percent of the recommended rate. Bernheim and Scholz together obtain similar results by comparing saving rates from the Federal Reserve's Survey of Consumer Finances (SCF) for 1986 with their target rates, but they reveal that undersaving is concentrated among individuals without a college education—a result parallel to that observed using other household survey data.[36]

Richard Cantor and Andrew Yuengert examine data from the 1989 SCF and find that for household heads between the ages of thirty-five and forty-four, the median ratio of accumulated wealth to the Bernheim-Scholz target level is 0.95.[37] Nearly half of the sample reports nonhousing assets greater than the Bernheim-Scholz targets. That is, compared with the Bernheim-Scholz measures, wealth accumulation appears on target while individual active saving rates appear low (as is further supported empirically below). Using the 1983 and the 1989 SCFs, Cantor and Yuengert show that baby boomers have managed to accumulate more wealth than did their parents at the same ages. Barring a major reduction in social security benefits, the evidence that baby boomers are not saving adequately for retirement is unconvincing. They conclude that policymakers concerned about low saving rates should not rely on the aging of the baby boom cohort to restore aggregate savings to earlier levels.

Table 10 presents the household wealth holdings of selected age cohorts in 1984, 1989, and 1994 . In 1984, the "senior" baby boomers—born between 1945 and 1954—were thirty to thirty-nine years old and the "junior" baby boomers—born between 1955 and 1964—were twenty to twenty-nine. As the senior boomers aged, their median wealth grew to $63,446 (the mean was $155,278) by 1994. By comparison, those born 1935–44 held a median of $79,380 (mean $188,466) at the

35. Bernheim (1991); Bernheim and Scholz (1993).
36. See Juster, Smith, and Stafford (1997).
37. Cantor and Yuengert (1994).

Table 10. Wealth and Income by Age, 1984, 1989, and 1994[a]
1996 dollars

	Wealth		*Income*		*Number of*
Year and age	*Median*	*Mean*	*Median*	*Mean*	*observations*
1984					
20–29	5,423	23,034	30,202	34,638	1,966
30–39	36,150	103,701	45,356	51,336	1,935
40–49	79,380	188,466	54,213	64,339	870
50–59	112,969	319,853	49,012	61,942	869
1989					
24–34	12,747	44,540	40,572	42,853	2,229
35–44	52,008	140,027	48,030	61,108	1,749
45–54	92,512	316,718	43,261	71,252	804
1994					
20–29	6,873	48,269	27,526	33,992	1,213
30–39	24,321	84,032	40,328	48,911	2,202
40–49	63,446	155,278	47,767	61,128	1,673
50–59	129,007	321,428	45,312	59,619	764

Source: Authors' calculations using data from the PSID Core Surveys and Supplemental Wealth Files for 1984, 1989, and 1994.

a. All data are weighted using PSID weights. Total family income is used for the income measure.

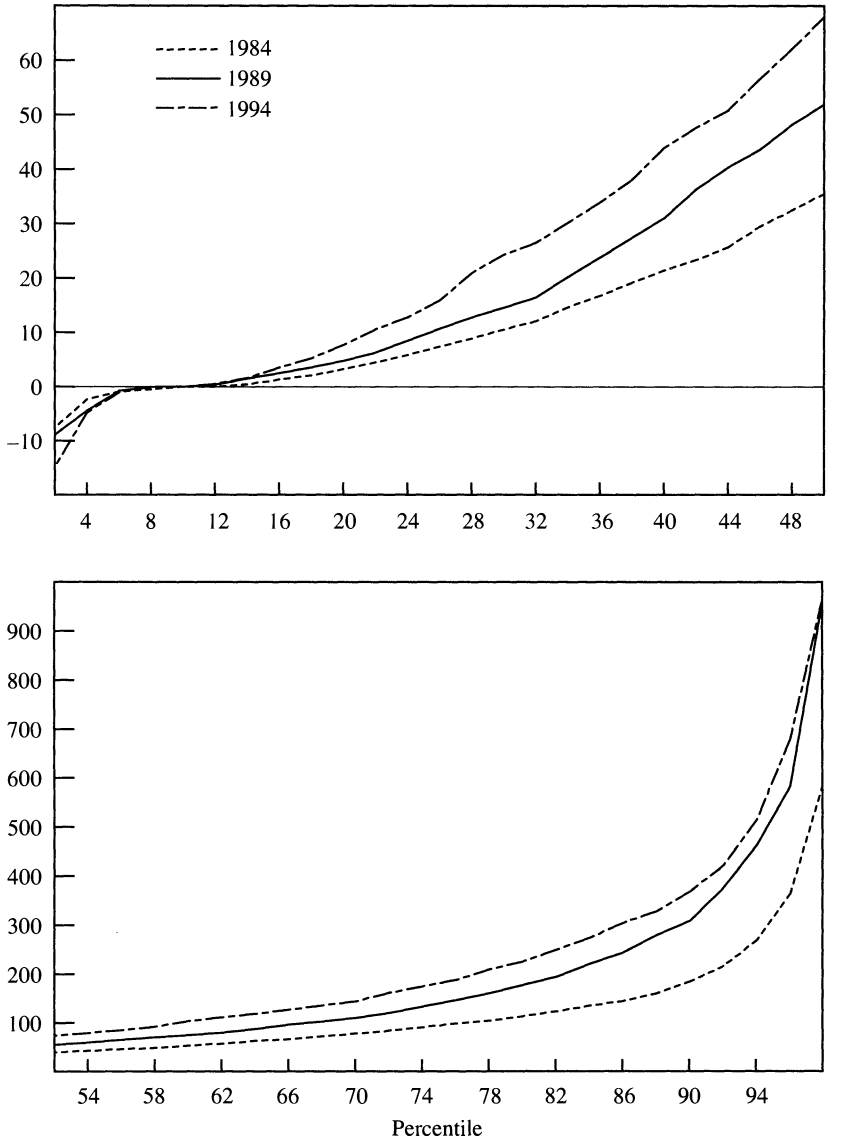
same point in their life cycle—that is, in 1984. The patterns in table 10 also indicate that the junior baby boomers have accumulated even less. As of 1994, the household wealth of junior boomers was smaller than that held in 1984 by the senior baby boomers. Against these findings on household wealth, there is evidence of a general upward drift in pension values over time.[38] Because private pensions and social security are not counted in household wealth, the baby boomers may still end up with as much wealth as earlier cohorts.[39]

The two panels of figure 2 show the lower and upper halves of the wealth distribution for the senior baby boomers in 1984, 1989, and 1994. About one-third of the way up the percentile distribution (thirty-second percentile), senior baby boomer net worth doubled from $12,081 in 1984 to $26,468 in 1994. Wealth at the ninetieth percentile

38. On the drift in pension values, see Juster, Smith and Stafford (1997).

39. Another issue in the discussion about baby boomers' saving is the return on the assets which they accumulate when they are retired. Some analysts belieive that the large asset holdings will tend to drive down the expected return. This argument appears to ignore the fact of the international financial market: even a large demographic boom in one country may be a mere ripple in the world economy.

Figure 2. Distribution of Wealth for Senior Baby Boomers, 1984, 1989, and 1994[a]



Source: See figure 1.

a. Senior baby boomers are those born between 1945 and 1954.

also approximately doubled between 1984 and 1994, from $184,535 to $368,535. Another way to judge the persistence of low wealth is to examine the wealth transitions of senior boomers across deciles over time, as we do for the full sample in tables 6 to 8. Table 11 reports the results of this exercise. For senior boomers below the bottom decile in 1984, there are, as for the full sample, many households with nonexistent life-cycle wealth accumulation over the full ten years, and there is substantial persistence below the bottom decile. Moreover, the decile values do not spread out much.[40]

Whatever the average wealth accumulation of the baby boom cohort, it is evident that there are large disparities in wealth accumulation within the generation. Like Bernheim, we feel that important policy implications follow from analyzing the adequacy of preretirement savings. Should social security become less generous, retirees will be more dependent on private savings, in the form both of financial wealth and of private pensions. Those with little or no private wealth accumulation could become an old age poverty population.

Wealth Holding by Race, 1984–94

The sharply differing wealth distributions of African American and other families are presented in the two panels of figure 3. As in the overall wealth distribution shown in figure 1, there was modest growth in the median for white families between 1984 and 1989—from $58,030 to $59,129—and then stronger growth from 1989 to $63,522 in 1994. For African American families, median wealth rose from $3,608 in 1984 to $6,256 in 1989 and $8,470 in 1994. Overall, between 1984 and 1994, median family wealth grew at 0.9 percent per year for white and other families and 8.9 percent per year for African American families. The higher growth rate for black families implies the narrowing of the gap between the median wealth of blacks and whites from 16.1 to 1 in 1984 to 9.5 to 1 in 1989 and then to 7.5 to 1 in 1994, although the absolute gaps are so large that this narrowing is not readily evident

40. William Gale, using 1992 SCF data, concludes: "Roughly speaking, a third of [baby boomers are] doing well by any measure [in terms of adequacy of preretirement household wealth], a third [are] doing poorly by any measure, and the middle third [are] (or may be) just hanging in there." ("Will the Baby Boom Be Ready for Retirement?", *Brookings Review*, Summer 1997, p. 9.)

Table 11. Transition Probabilities, Family Wealth of Senior Baby Boomers between 1984 and 1994[a]

Percent

1984 wealth group		*1994 wealth group*										*Percent changing wealth group, 1984–94*	
Dollar range[b]	*Percentile range*	*≤$105*	*To $9,528*	*To $27,738*	*To $48,700*	*To $79,402*	*To $115,398*	*To $164,099*	*To $249,324*	*To $407,601*	*>$407,601*	*Falling*	*Rising*
		<10	*10–20*	*20–30*	*30–40*	*40–50*	*50–60*	*60–70*	*70–80*	*80–90*	*>90*		
≤$0	<10	33.41	30.58	11.15	5.53	4.89	6.51	3.13	0.20	0.93	3.67	0.00	66.59
To $7,173	10–20	25.97	26.66	11.38	13.60	9.12	3.06	2.02	1.77	4.98	1.43	25.97	47.36
To $15,554	20–30	8.94	17.78	28.53	17.59	8.45	6.30	6.89	3.57	0.00	1.95	26.72	44.75
To $27,559	30–40	13.41	4.75	20.94	17.03	14.29	10.86	10.32	3.57	2.45	2.40	39.10	43.89
To $43,793	40–50	6.77	5.25	6.08	15.41	20.46	23.55	8.64	7.36	2.85	3.63	33.51	46.03
To $63,046	50–60	2.20	5.43	7.48	13.73	21.65	10.90	12.56	8.90	13.69	3.47	50.49	38.62
To $86,982	60–70	1.03	7.49	5.97	4.79	12.43	8.56	28.28	20.69	6.26	4.50	40.27	31.45
To $123,828	70–80	3.34	0.10	1.77	3.39	5.46	12.89	15.84	24.59	19.77	12.84	42.79	32.61
To $191,783	80–90	2.46	0.25	4.97	4.87	3.20	10.13	7.77	18.79	22.58	24.99	52.44	24.99
>$191,783	>90	0.91	0.77	3.49	3.06	1.44	6.89	5.22	10.53	25.41	42.30	57.72	0.00

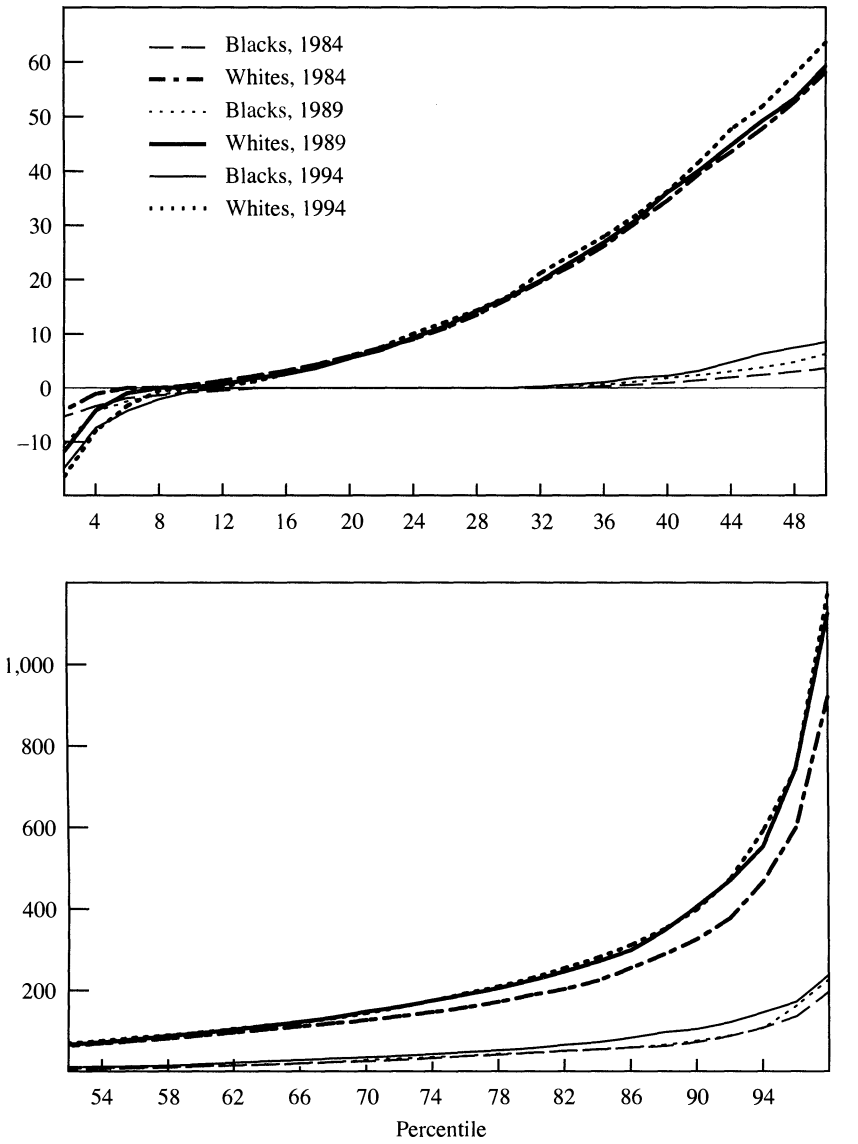
Source: Authors' calculations using data from the PSID Supplemental Wealth Files for 1984, 1989, and 1994.

a. Sample includes households with head born between 1945 and 1954, and the same head in 1984, 1989, and 1994. All data are weighted using PSID weights.

b. 1996 dollars.

Figure 3. Distribution of Wealth for Blacks and Whites, 1984, 1989, and 1994

Wealth (thousands of 1996 dollars)



Source: See figure 1.

in figure 3. This pattern of a very large but narrowing black-white wealth gap is also observed in the Survey of Consumer Finances data.[41]

Another way to characterize the disparities in wealth between blacks and whites is to examine the charts as cross-sectional snapshots. In the first panel of figure 3, the median black wealth of just under $10,000 in 1994 corresponds to the twenty-second percentile of the white distribution for 1994. In the second panel of figure 3, the $261,914 wealth at the ninety-eighth percentile of the black distribution corresponds with approximately the eightieth percentile on the white distribution. A full list of the two percentile increments of the wealth distribution is given in table A2. A selection of percentile points in the wealth distribution for African American and other families is set out in table 12.

Table 13 provides the wealth transitions across eight percentile breaks for 1984 to 1994.[42] At the bottom, seven out of ten of the African American households with no wealth (that is, zero or negative in the table) in 1984 had no wealth ten years later, despite their aging through the life cycle. Throughout the distribution, relative wealth mobility, as measured by the Shorrocks index, is higher for African American households than for the full sample: 0.849 compared with 0.804, as reported in table 9. As with the apparent greater wealth mobility for Sweden, however, the higher Shorrocks index could be the result of much narrower wealth brackets in the African American distribution, producing greater relative mobility for a given dollar change in wealth.

Asset Ownership and Wealth Transitions by Race

This section examines household participation in different aspects of financial markets, including transaction accounts, stock ownership, and noncollateralized debt. In doing so, we focus on differences between African American and other households.

41. Wolff (1996) reports a rise in the ratio of the median wealth of non-Hispanic whites to that of nonwhites from 0.09 in 1983 to 0.20 in 1992. From our data, the ratios of the medians are 0.062 in 1984 and 0.135 in 1994.

42. Given the large concentration of families with zero and negative net worth and the small number of families with net worth greater than $100,000, we construct nine wealth groupings for each of 1984 and 1994.

Table 12. Wealth Holdings by Race, 1984, 1989, and 1994[a]

1996 dollars

Year	*Race*	*Mean*	*Median*	*20th percentile*	*40th percentile*	*60th percentile*	*80th percentile*	*Number of observations*
1984	African American	28,720	3,608	0	950	12,493	45,714	2,576
	White and other	165,892	58,030	5,938	34,487	88,454	188,673	4,342
1989	African American	35,577	6,256	0	1,826	13,109	46,104	2,609
	White and other	172,567	59,129	5,542	36,026	94,853	224,852	4,505
1994	African American	37,457	8,470	0	2,234	17,469	57,170	2,268
	White and other	177,952	63,522	5,611	36,208	96,342	230,374	4,181

Source: Authors' calculations using data from the PSID Core Surveys and Supplemental Wealth Files for 1984, 1989, and 1994.

a. All data are weighted using PSID weights.

Table 13. Transition Probabilities, African American Family Wealth between 1984 and 1994[a]

Percent

1984 wealth group		*1994 wealth group*									*Percent changing wealth group, 1984–94*	
Dollar range[b]	*Percentile range*	*< $0* <9.9	*$0* 9.9–31	*$1–$2,644* 31–40	*To $10,786* 40–50	*To $23,898* 50–60	*To $42,297* 60–70	*To $68,204* 70–80	*To $121,605* 80–90	*>$121,605* >90	*Falling*	*Rising*
<$0	<13	12.67	27.94	11.37	17.22	9.99	6.66	2.84	7.64	3.66	0.00	87.32
$0	13–32	13.87	55.31	13.70	3.13	6.21	1.79	0.89	0.17	4.92	13.87	30.81
$1 to $1,356	32–40	6.98	25.96	13.70	16.86	8.56	10.14	3.82	13.57	0.40	32.94	53.35
To $4,519	40–50	19.31	13.73	19.85	16.42	4.40	10.62	3.22	10.94	1.50	52.89	30.68
To $13,406	50–60	3.86	8.65	9.28	13.76	22.31	11.68	11.37	4.48	14.60	35.55	42.13
To $27,113	60–70	16.24	1.58	2.11	12.97	21.10	14.77	16.77	9.60	4.85	54.00	31.22
To $51,213	70–80	1.28	12.42	2.36	2.68	7.71	28.69	22.81	17.02	5.03	55.14	22.05
To $78,325	80–90	2.17	2.07	0.41	10.25	7.56	7.14	28.78	18.94	22.67	58.38	22.67
>$78,325	>90	5.35	4.72	0.63	1.05	1.57	2.31	16.46	24.11	43.82	56.20	0.00

Source: Authors' calculations using data from the PSID Supplemental Wealth Files for 1984, 1989, and 1994.

a. Sample includes households with the same African American head in 1984, 1989, and 1994. All data are weighted using PSID weights.

b. 1996 dollars.

Transaction Accounts

As noted above, a substantial share of households have no transaction account. Table 14 describes patterns of ownership of transaction accounts for all households, and separately for African American and other households. As of 1994, 20 percent of American families did not own a checking or saving account, up by 4 percentage points from 1989. One can see that for all families with the same head in 1984 and 1989, about 8 percent became transaction account holders and 6 percent lost their transaction accounts between 1984 and 1989. Between 1989 and 1994, the corresponding rates were 6 percent and 9 percent, respectively. This excess of exits over entries, by definition, explains the drop in bank account ownership over 1989–94 from 83.6 to 79.8 percent. The exodus from account ownership is especially pronounced for African Americans, with a net decline to only 45.4 percent of families.[43] Using a multivariate probit analysis, we find that more educated, higher income, and older households are more likely to have a bank account, and African American families are much less likely to have an account, even conditional on income and demographic variables.

We find that the transitions to and from ownership are dependent on the same variables. There appear to be strong differences in account ownership and account transitions by race, over and above income and age of head. This suggests that the similar large differences in account ownership observed in other studies are dependent on factors other than the most obvious economic variables. Such differences raise the question of how lack of experience with account ownership may influence a family's longer term participation in financial services of other sorts, such as home mortgages, stocks for IRAs, and other portfolio components.

Previous research has suggested that families that have low income and expect to become eligible for asset-tested benefit programs face a potential marginal tax rate on their savings of 100 percent.[44] The strong effect of income on net worth is to be expected, but the eligibility tests for benefits could further strengthen the relationship between income and net worth at low levels of permanent income. As the current welfare

43. This result is consistent with Oliver and Shapiro (1995, p. 106), who report that 42.8 percent of black households maintained an interest-bearing bank account as of 1988.

44. See Hubbard, Skinner, and Zeldes (1995).

Table 14. Share of Families Holding Transaction Accounts, 1984–94[a]

Percent

Race	*Families with same head, 1984–89*[b]				*Families with same head, 1989–94*[c]			
	Share holding accounts, 1984	*Entry rate*	*Exit rate*	*Share holding accounts, 1989*	*Share holding accounts, 1989*	*Entry rate*	*Exit rate*	*Share holding accounts, 1994*
All families	82.3	7.7	5.8	84.2	83.6	5.9	9.1	79.8
African American	46.1	13.3	10.0	49.4	52.4	9.2	16.3	45.4
White and other	87.7	6.8	5.2	89.3	88.5	5.4	8.6	85.3

Source: Authors' calculations using data from the PSID Core Surveys and Supplemental Wealth Files for 1984, 1989, and 1994.

a. All data are weighted using PSID weights. For definition of a transaction account, see table 1, note g.

b. Includes only households with head aged between twenty-five and sixty-five in 1984. For all households, N = 4,215; for African Americans, N = 1,532; for whites and others, N = 2,683.

c. Includes only households with head aged between twenty-five and sixty-five in 1989. For all households, N = 4,562; for African Americans, N = 1,597; for whites and others, N = 2,965.

system is revised in the near future, it will be interesting to see whether changes in asset-testing and the duration of benefits influence net worth accumulation and other saving behaviors.

Stock Ownership

The percentage of all stable families owning stocks rose from 29 percent in 1984 to 41 percent in 1994. But stock ownership and patterns of use were very different for African American and other households. Table 15 shows that only 8.5 percent of stable African American families held stocks as of 1984, and with entry and exit, this had risen modestly to 14.3 percent by 1994.

A probit analysis explaining stock ownership and transition into stock ownership, reported in table 16, shows that there are substantial differences for African Americans, even after income, age, and other life-cycle factors are taken into account. Given the large initial disparity in ownership, one might have expected an effect from there being more room for entry, but regression equation 3 shows that this is not the case. Family effects are quite important. Married families are more likely to own and to become owners, but having children present holds back stock ownership, presumably because this gives rise to claims other than wealth accumulation on income flows.

Noncollateralized Debt

The pattern of use of noncollateralized debt shown in table 1 has two features worth noting. Both the share of families with noncollateralized debt and the mean debt balance of those with such debt rose between 1984 and 1989. Over the next five years, the share of families with noncollateralized debt leveled off, while the mean balance rose sharply faster. A probit analysis (not reported) comparable to that described above for stock ownership refines this picture in several ways. Other things equal, African American households are less likely to use noncollateralized debt, whereas younger, more educated, and married households are more likely to do so.

Dividing families with noncollateralized debt into two groups, those with high permanent income (greater than or equal to $30,000) and those with low permanent income (less than $30,000), we find that the high-income group is more likely to hold some noncollateralized debt.

Table 15. Share of Families Holding Stock, 1984–94[a]

Percent

Race	*Families with same head, 1984–89*[b]				*Families with same head, 1989–94*[c]			
	Share holding stock, 1984	*Entry rate*	*Exit rate*	*Share holding stock, 1989*	*Share holding stock, 1989*	*Entry rate*	*Exit rate*	*Share holding stock, 1994*
All families	29.2	13.9	8.8	34.3	32.2	16.3	7.8	40.6
African American	8.5	4.3	4.9	8.0	8.3	14.3	8.3	14.3
White and other	32.3	15.4	9.4	38.3	36.0	17.4	8.6	44.8

Source: Authors' calculations using data from the PSID Core Surveys and Supplemental Wealth Files for 1984, 1989, and 1994.

a. All data are weighted using PSID weights.

b. Includes only households with head aged between twenty-five and sixty-five in 1984. For all households, $N = 4,215$; for African Americans, $N = 1,532$; for whites and others, $N = 2,683$.

c. Includes only households with head aged between twenty-five and sixty-five in 1989. For all households, $N = 4,562$; for African Americans, $N = 1,597$; for whites and others, $N = 2,965$.

Table 16. Probit Regressions Predicting Stock Ownership[a]

	Dependent variable					
	Owning stock, 1989[b]		*Owning stock, 1994*[c]		*Becoming a stock owner, 1989–94*[d]	
Independent variable	*Marginal effect*	*t statistic*	*Marginal effect*	*t statistic*	*Marginal effect*	*t statistic*
Permanent income[e]	0.007	12.4	0.009	14.2	0.007	10.0
African American dummy[f]	−0.186	−7.6	−0.193	−7.4	−0.104	−4.4
Age of head	−0.001	−0.1	−0.015	−2.2	-5.3×10^{-4}	−0.3
Age squared	8.2×10^{-5}	1.4	2.1×10^{-4}	3.1	2.6×10^{-5}	0.1
Education of head[g]	0.042	12.6	0.053	14.6	0.030	10.4
Married dummy	0.069	3.1	0.081	3.3	0.027	2.4
Number of children	−0.023	−2.9	−0.012	−1.3	−0.013	−2.0
Male dummy[h]	0.010	0.4	−0.050	−1.8	−0.021	−0.4
Summary statistic						
Pseudo R^2	0.172		0.181		0.129	
Mean of dependent variable	0.323		0.405		0.237	

Source: Authors' regressions using data from the PSID Core Surveys, 1987–94 and Supplemental Wealth Files for 1989 and 1994.

a. All regressions are weighted using 1994 PSID weights. Each marginal effect respresents the change in the probability of the event caused by a one unit change in a given independent variable. *t* statistics are given in parentheses. Samples include only households with the same head in 1989 and 1994, where the head is aged between twenty-five and sixty-five in 1989. All regressions include a constant.

b. For all included households, probability of owning stock in 1989.

c. For all included households, probability of owning stock in 1994.

d. Given households that do not own stock in 1989, probability of owning stock in 1994.

e. Total pretax labor income, 1987–91, in tens of thousands of 1996 dollars.

f. Race of head.

g. Years.

h. Gender of head.

Within each income group there is a substantial share of families whose ratio of noncollateralized debt to permanent income is over 25 percent. Between 1989 and 1994 this share rose slightly, from 9.0 to 9.7 percent, for low permanent income families, and rose from 5.0 to 6.9 percent for families with high permanent income. We also find a substantial negative relationship between being African American and accumulating noncollateralized debt for low-income families and a substantial positive relationship for high-income families.

Looking at the factors that led families to increase their noncollateralized debt by more than $1,000 between 1989 and 1994, we find that noncollateralized debt can be regarded as a normal good, in that higher permanent income leads to increases in such debt, particularly if the family has more human capital, as indexed by education of the head. This suggests that noncollateralized debt has both convenience and consumption smoothing dimensions. The newly married are more likely to add to noncollateralized debt, in contrast to recently separated and older households, both of which tend to reduce their holdings.

We also examine the predictors of accumulation of noncollateralized debt over 1989–94 in each of our two subpopulations, those with high and those with low permanent income. While many of the main patterns continue to hold, the effect of permanent income in the high group is reduced. This could indicate that the income effect becomes attenuated at high levels, given the wide range of permanent income in this group.

Wealth Accumulation

This section analyzes the relationship between wealth and saving, focusing on the effects of portfolio, race, region, income, and persistence.

Long-Term Income Dispersion

Throughout the 1980s, the U.S. economy was characterized by a growing dispersion in permanent income and wages.[45] General equilibrium models of the labor market, with technical change facilitating the substitution of skilled for less skilled workers, have been used to explain the persistently strong earnings of college graduates in spite of increased

45. See Bound and Johnson (1992).

Table 17. Average Family Income by Education of the Head, 1984, 1989, and 1994
1996 dollars

	1984		*1989*		*1994*	
Education	*Median*	*Mean*	*Median*	*Mean*	*Median*	*Mean*
High school dropout	20,291	28,078	19,479	26,978	17,918	25,094
Completed high school	34,569	39,865	33,264	39,711	31,648	38,869
Some college	41,794	48,932	41,945	51,352	42,160	53,246
College degree	56,798	71,525	61,866	80,643	64,294	82,646
All families	35,529	44,890	36,477	47,458	35,204	49,255

Source: Authors' calculations using data from the PSID Core Survey, 1984 and 1989, and PSID early release files for the survey year 1995, which report family income earned in 1994.

relative supply.[46] Here we offer some evidence that as of the mid-1990s, the long-term dispersion of income—as distinct from the rising income variability outlined by Gottschalk and Moffitt—has continued.[47]

Table 17, which uses early release data from the 1995 PSID (that is, income for the 1994 calendar year), shows that income dispersion by educational group has continued to rise. Another approach is to examine annual wage income in a simple earnings equation. The standard cross-sectional annual earnings equation for men aged twenty-five to sixty-five in 1992 and 1995 reported in table 18 provides some additional support for the view that earnings dispersion continued into the mid–1990s.[48] Each of the three college education coefficients shows an increase relative to the excluded category of high school graduate: from 0.56 to 0.59 for more than college, 0.45 to 0.49 for college, and 0.13 to 0.17 for some college. The coefficient on less than high school declines slightly, from −0.24 to −0.25. Given that the U.S. economy was well into a strong recovery by 1995, the continued widening of the gap between skilled and other workers is all the more dramatic.

Additional support for this thesis is provided by the rise in the return to initial experience from 0.037 in 1992 to 0.040 in 1995. There is only

46. See Johnson and Stafford (1998). It is commonly forgotten that there was an oversupply of college graduates in the mid-1970s, when the wages of various high-skill occupational groups, such as college faculty, fell sharply; see Laitner and Stafford (1995). The mid-1990s have not seen a strong relative supply increase of educated workers, as did the 1980s (Lawrence Katz, personal communication).

47. Gottschalk and Moffitt (1994).

48. For a discussion of this type of cross-sectional earnings equation, see Mincer (1974).

Table 18. Regressing Log Income on Race, Education, and Experience, 1992 and 1995[a]

	1992[b]		*1995*[c]	
Independent variable	*Coefficient*	*t statistic*	*Coefficient*	*t statistic*
Constant	9.80	117.3	9.72	118.4
Years of experience[d]	0.04	6.3	0.04	7.0
Experience squared[d]	-4.9×10^{-4}	−4.8	-5.0×10^{-4}	−4.9
Dummy variables[e]				
African American	−0.22	−5.6	−0.21	−5.6
Other nonwhite	−0.05	−0.7	0.06	0.9
More than college	0.56	16.1	0.59	17.5
College degree	0.45	14.6	0.49	16.3
Some college	0.13	4.6	0.17	6.0
High school dropout	−0.24	−6.8	−0.25	−7.2
Summary statistic				
$\bar{R}^2$	0.20		0.24	
Mean of dependent variable	10.5		10.5	

Source: Authors' regressions using data from the PSID Core Survey 1992, 1993, 1995, and 1996.

a. The dependent variable is the log of the household head's pretax labor income. Sample includes all male heads aged between twenty-five and sixty-five in the given year who earned labor income between $6,000 and $300,000. Regressions include region dummies and are weighted using PSID weights.

b. N = 2,910.

c. N = 2,963.

d. Experience is calculated as the head's age less years of schooling.

e. Refer to characteristics of head.

a modest narrowing of net differences between black and white households (the excluded group), and there are some regional shifts (not reported). If wealth is shaped by income and income dispersion continues to grow, one would expect this growth to be a factor underlying the growth in wealth dispersion described above.

Permanent Income and Levels of Wealth

The factors explaining wealth holdings in 1989 and 1994 are examined in tables 19 and 20, respectively. From column 1, levels of wealth can be seen to depend on permanent income (coefficient is 0.13), life-cycle factors, race, and region.[49] Most findings are similar for both years. African Americans had on average $25,514 less wealth than

49. See appendix B for means and standard deviations for all regressions; the states included in each region; and computation of "active saving" and "capital gains." Because of missing values, sample sizes differ slightly across regressions, depending on which variables are included. Due to the use of early release PSID data, some missing values have yet to be imputed, but such cases are rare.

Table 19. Regressions Explaining Wealth Holdings, 1989[a]

	OLS[b]		*Quantile regression*[c]		*OLS*[b]		*Quantile regression*[c]	
Independent variable	*Coefficient*	*t statistic*	*Coefficient*	*t statistic*	*Coefficient*	*t statistic*	*Coefficient*	*t statistic*
Constant	−198,369	−8.6	−68,335	−2.8	−185,682	−8.3	−67,089	−3.0
Permanent income[d]	0.13	11.1	0.29	35.9	0.09	7.7	0.22	28.6
African American dummy[e]	−25,514	−6.0	-8,800	−2.0	−19,901	−4.8	-3,723	−0.9
Age of head	3,329	3.1	-3,668	−3.3	3,443	3.4	-2,096	−2.1
Age squared	4.34	0.4	88.2	6.9	0.07	0.1	63.9	5.5
Education of Head[f]	6,384	10.3	4,566	7.3	4,830	8.0	2,667	4.5
Married dummy	40,710	9.7	13,685	3.1	38,683	9.5	16,140	4.0
Number of children	−2,010	−1.5	2,415	1.8	−1,156	−0.8	947	0.8
Male dummy[g]	9,722	2.2	1,574	0.3	10,265	2.4	1,652	0.4
Holding stock dummy					52,454	16.4	55,114	17.5
Region dummies[h]								
New England	37,057	5.5	40,401	5.7	40,519	6.2	32,561	5.0
North Atlantic	16,509	3.7	15,026	3.1	19,904	4.6	14,204	3.2
Southeast	−1,000	−0.2	5,680	1.3	3,207	0.7	8,152	2.0
East South Central	−6,999	−1.3	−4,699	−0.8	−5,259	−1.0	−3,803	−0.7
Oil states	−10,777	−2.0	−3,892	−0.7	-4,652	−0.9	−2,191	−0.4
Plains states	−2,212	−0.4	5,883	1.1	1,220	0.2	7,931	1.6
Mountain states	−11,209	−1.6	-921	−0.1	−10,393	−1.5	2,474	0.4
West	12,761	2.7	22,237	4.6	16,951	3.7	25,101	5.6
Summary statistic								
$\bar{R}^2$	0.33		0.14		0.37		0.15	

Source: Authors' regressions using data from the PSID Core Surveys, 1987–94, and Supplemental Wealth Files for 1989.

a. The dependent variable is 1989 wealth, in 1996 dollars. Sample includes households with same head in 1989 and 1994, where the head is aged between twenty-five and sixty-five in 1989. *t* statistics are shown in parentheses. All regressions are weighted using 1989 PSID weights.

b. Ordinary least squares: includes only households with 1989 wealth between −$50,000 and $500,000; $N = 4{,}314$. Mean wealth of sample is $88,316.

c. $N = 4{,}534$; median wealth of sample is $51,930. Quantile regressions minimize the sum of absolute deviations from the median.

d. Total pretax labor income of household over 1987–91, in 1996 dollars.

e. Race of head.

f. Years.

g. Gender of head.

h. Excluded region is Great Lakes (see appendix B).

Table 20. Regressions Explaining Wealth Holdings, 1994[a]

	OLS[b]		*Quantile regression*[c]		*OLS*[b]		*Quantile regresion*[c]	
Independent variable	*Coefficient*	*t statistic*	*Coefficient*	*t statistic*	*Coefficient*	*t statistic*	*Coefficient*	*t statistic*
Constant	−193,711	−6.3	−75,130	−1.8	−182,895	−6.2	−59,731	−2.2
Permanent income[d]	0.22	16.9	0.43	37.1	0.16	12.8	0.34	45.3
African American dummy[e]	−27,408	−6.0	−2,815	−0.4	−19,449	−4.5	885	0.2
Age of head	2,960	2.4	−3,434	−2.0	3,586	3.0	−3,267	−2.9
Age squared	5.06	0.4	75.06	4.3	−4.00	−0.3	70.94	6.2
Education of head[f]	6,787	10.1	5,145	5.7	4,012	6.1	3,110	5.2
Married dummy	38,013	8.4	18,041	2.9	33,575	7.8	12,723	3.0
Number of children	−1,376	−0.8	−1,744	−0.9	−938	−0.7	184	0.1
Male dummy[g]	−1,139	−0.2	−2,038	−0.3	2,862	0.6	4,034	0.8
Holding stock dummy					66,237	20.4	65,776	21.3
Region Dummies[h]								
New England	867	0.1	9,399	0.9	−1,009	−0.2	1,747	0.3
North Atlantic	−1,330	−0.2	−11,322	−1.6	261	0.0	−5,901	−1.3
Southeast	−2,510	−0.5	1,413	0.2	145	0.0	6,875	1.6
East South Central	−4,317	−0.7	−4,205	−0.5	−1,086	−0.2	−357	−0.1
Oil states	−28,590	−4.8	−20,845	−2.6	−22,133	−3.9	−12,338	−2.4
Plains states	211	0.1	3,093	0.4	1,987	0.4	8,486	1.6
Mountain states	−7,147	−0.9	5,525	0.5	−4,459	−0.6	−400	−0.1
West	3,694	0.7	5,478	0.8	5,440	1.1	11,945	2.6
Summary statistic								
R^2	0.31		0.16		0.37		0.17	

Source: Authors' regressions using data from the PSID Core Surveys, 1987–94, and Supplemental Wealth Files for 1994.

a. The dependent variable is 1994 wealth, in 1996 dollars. Sample includes households with same head in 1989 and 1994, where the head is aged between twenty-five and sixty-five in 1989. *t* statistics are shown in parentheses. All regressions are weighted using 1994 PSID weights.

b. Ordinary least squares: includes only households with 1994 wealth between −$50,000 and $500,000; N = 4,203. Mean wealth of sample is $107,075.

c. N = 4,502; median wealth of sample is $72,434. Quantile regressions minimize the sum of absolute deviations from the median.

d. Total pretax labor income of household over 1987–91, in 1996 dollars.

e. Race of head.

f. Years.

g. Gender of head.

h. Excluded region is Great Lakes (see appendix B).

other families, net of the effects of "permanent" (five-year average labor) income and demographic factors. This is very close to the coefficient of $27,075 obtained by using SIPP data for 1988.[50] Portfolio choice is importantly related to wealth: from column 3, households with stock as a portfolio element have, on average, $52,454 more wealth than those without. Including stock ownership in the wealth equation noticeably reduces the estimated African American differential, consistent with the combined effect of the high returns to equity and differential participation in equities between African American and other families set out in table 15. Conditional on income and demographic factors, there appears to be some additional barrier to African American stock ownership that leads to a larger wealth differential.

Columns 2 and 4 of table 19 report median wealth holdings as estimated by quantile regressions.[51] The sample is more inclusive, since the mean regressions are based on the truncation of extreme cases (see notes to table). In these median regressions, the net difference between African American and other families narrows considerably: $8,800 in column 2 and $3,723 in column 4. The lower values in the quantile regressions suggest that a good part of the net wealth differences between blacks and whites are the result of the lower representation of African American families at very high levels of wealth, a pattern consistent with the descriptive wealth percentiles in figure 3. From *Forbes* data, as of the mid-1980s the top 400 wealth holders in the United States included only a single African American.[52] Since that time, Bill Cosby and Oprah Winfrey have joined the *Forbes* roster, but the share of African Americans among the top wealth holders remains very small. Table 20 shows that stock ownership had a somewhat larger impact in 1994—a differential of $66,237—than in 1989. However, conditional on income and stock ownership, the African American wealth differential is of the same order of magnitude as in 1989, with a large gap in the mean regression and a small gap in the median regressions.

Regional differences in wealth changed markedly between 1989 and 1994. Comparison of tables 19 and 20 reveals a large initial regional wealth advantage for the Northeast (New England and the North Atlan-

50. Oliver and Shapiro (1995, p.130).
51. On the quantile regression method, see Koenker and Bassett (1978).
52. *Forbes*, October 19, 1984.

tic region) relative to the excluded Great Lakes region, which had disappeared by 1994. The regional erosion raises questions about the nature of wealth. Our conjecture is that wealth has become generally more volatile and is more related to intangible factors and new technology. Variable returns across and within asset categories are more common, and some of this variability has a regional dimension, as the application of technologies to regional industries plays out unevenly over time. We explore these and other aspects of "transitory wealth" below.

Permanent Income and Transitory Wealth

The fledgling postwar household consumer panels presented analysts with an opportunity to apply simplifying theories to impose order on the rich variety of behavior and make sense of what was regarded as a plethora of detailed microeconomic data. In the process, a fair number of interesting empirical patterns were swept into the background. Writing before the ascendance of the permanent income and life-cycle models, however, James Morgan summarized a pattern with a contemporary ring: heterogeneity in saving behavior across families. "At high income levels," he noted, "spending units with large amounts of liquid assets tend to save more than those with fewer assets. We have interpreted this as follows: given a certain degree of continuity of income and behavior through time, those with large amounts of liquid assets now are likely to have been saving more in the past than those with few liquid assets. Given continuity of behavior, they will save more in the future as well."[53]

There appear to be spenders and savers, for reasons beyond those readily observable to the researcher, and this factor will contribute to wealth dispersion beyond that derived from income dispersion. Such heterogeneity has been given little attention in the main dialogue over evidence for the permanent income hypothesis and the life-cycle view. Neither did variability of returns receive much theoretical or empirical attention. In fact, up to 1970 most household saving was in the form of savings accounts, the home, and a very limited set of other assets. Even in the "go-go" stock market of the early 1960s, less than 20 percent of families held any publicly or privately traded stocks or stock mutual

53. Morgan (1954, p. 185).

funds.[54] In this setting, wealth accumulation was generally modeled as the consequence of an orderly active saving flow that yielded predictable returns, with returns based on a stationary process relating returns and risk. The distinction between active saving and realized saving took a back seat. The consensus estimate, supported by numerous empirical studies, was an average propensity to save actively equal to the marginal propensity to save actively of about 0.11.[55]

MARGINAL PROPENSITIES TO SAVE AND MARGINAL WEALTH ACCUMULATION. A new view of saving argues that behavior can be shaped by liquidity restrictions, that heterogeneity is important, and that there are highly dispersed ex post returns to saving by asset component across the decades.[56] Realized savings, defined as changes in the market value of assets—arising from both types of active saving: returns on prior saving and interim returns on recent active saving—or changes in what we have referred to as household wealth, can differ sharply from active savings. The PSID data show active saving rates falling between 1984 and 1989, as do data from the National Income and Product Accounts. Dividing mean household active saving by our measure of mean pretax labor income, we find that rates of active saving out of permanent income fell from 7.6 for the period 1984–89 to 4.6 for 1989–94.

Despite the low rates of active saving by U.S. families, rates of realized marginal saving out of permanent income remained fairly constant over this period, and are in line with active saving rates found in studies conducted three decades earlier. In table 21 we use regressions to explain realized saving over the period 1989–94. We use total pretax household labor income over 1987–91 (in 1996 dollars) as a measure of permanent income. The realized marginal propensity to save is about 14.4 percent per year, a rate somewhat above the earlier estimate of 11 percent for the active propensity to save, cited above. From a similar regression (not reported) explaining the change in wealth between 1984 and 1989, the estimated realized marginal propensity to save out of permanent income is about 15 percent per year. While active saving rates have fallen during the past fifteen years, the average propensity

54. According to the 1970 Survey of Consumer Finances, 16 percent of families held stocks in 1962, and 19 percent did so in 1964.

55. See Holbrook and Stafford (1971).

56. On the effect of liquidity restrictions, see Flavin (1981); Zeldes (1989); Deaton (1991); Carroll (1994). On ex post returns, see Juster, Smith, and Stafford (1997).

Table 21. Regressions Explaining Wealth Accumulation, 1989–94[a]

	OLS[b]		*OLS*[b]		*OLS*[b]		*Quantile regression*[c]	
Independent variable	*Coefficient*	*t statistic*	*Coefficient*	*t statistic*	*Coefficient*	*t statistic*	*Coefficient*	*t statistic*
Constant	3,838	1.9	5,872	2.7	−25,230	−1.3	10,751	1.3
Permanent income[d]	0.144	17.1	0.136	16.1	0.121	11.2	0.111	40.0
African American dummy[e]			−7,549	−2.2	−4,081	−1.1	1,163	0.8
Age of head					−238	−0.3	−643	−1.6
Age squared					6.2	0.6	6.1	1.4
Education of head[f]					2,899	5.3	416	1.9
Married dummy					5,334	1.3	−3,681	−2.2
Number of children					−2,279	−1.9	−1,672	−3.5
Male dummy[g]					−1,064	−0.3	−2,933	−1.6
Region dummies[h]								
New England					−30,467	−4.9	−34,479	−13.8
North Atlantic					−18,742	−4.9	−12,699	−7.4
Southeast					−1,002	−0.3	−3,482	−2.2
East South Central					−1,671	−0.4	1,866	0.9
Oil states					−17,408	−3.7	−5,663	−2.8
Plains states					3,662	0.8	4,569	2.3
Mountain states					6,546	1.1	2,245	0.9
West					−6,414	−1.6	−5,353	−3.1
Summary statistic								
R^2	0.07		0.07		0.09		0.02	

Source: Authors' regressions using data from the PSID Core Surveys, 1987–94, and Supplemental Wealth Files for 1989 and 1994.

a. The dependent variable is household wealth in 1994 less wealth in 1989, both expressed in 1996 dollars. Sample includes households with same head in 1989 and 1994, where the head is aged between twenty-five and sixty-five in 1989. *t* statistics are shown in parentheses. All regressions are weighted using 1994 PSID weights.

b. Ordinary least squares: includes only households with 1989 wealth between −$50,000 and $500,000; and 1989–94 wealth change between −$100,000 and $500,000; N = 4,030. Mean wealth change for sample is $30,847.

c. N = 4,502; median wealth change for sample is $5,959. Quantile regressions minimize the sum of absolute deviations from the median.

d Total pretax labor income of household over 1987–91, in 1996 dollars.

e. Race of head.

f. Years.

g. Gender of head.

h. Excluded region is Great Lakes (see appendix B).

to accumulate wealth appears to have remained roughly constant. In the spirit of modified life-cycle effects, one can see from column 2 that race does have an impact, which becomes smaller with family and demographic controls. Since race is also correlated with permanent income, the coefficient on permanent income falls to 13.6 percent per year, a modest decline.

A simple way to focus on variable returns is to look at the regional aspects of the 1991 recession. It is generally agreed that New England and California were most affected by this recession. In New England, while personal income per capita fell from $26,283 to $26,185 in constant dollars between 1990 and 1993, tables 19 and 20 show that between 1989 and 1994 relative per family wealth fell by about $36,000 (that is, the difference between the coefficients predicting wealth in these years, from column 1 in each table).[57] The cross-sectional differences for New England in tables 19 and 20 are in line with the coefficients on change in wealth in columns 3 and 4 of table 21. Other regions fared better, in the sense that they experienced a smaller loss relative to the excluded Great Lakes region. The main point of interest, however, is the wide regional dispersion in wealth change over this period.[58]

THE ROLE OF SAVING PERSISTENCE AND CAPITAL GAINS. We have presented evidence in support of variation in returns by region, rising cross-sectional wealth dispersion, and rising wealth mobility. To initiate a more structural approach to understanding wealth dynamics, we ask to what extent wealth dispersion depends on behavioral persistence, along the lines suggested by Morgan; to what extent the informed or fortuitous selection of portfolio (either in terms of initial composition or component inflows) plays a role; and to what extent there is reversion to the mean, such that families who realize large transitory wealth gains in one period, on average, move downward in the next period. Table 22 explores these issues.

Column 1 of the table shows that the effect of prior (1989) wealth on wealth accumulation over the period 1989–94 is essentially zero—

57. Per capita income for New England is from Duke Tran, "Total and Per Capita Personal Income by State and Region," *Survey of Current Business* 76(5), 1996, pp. 94–101.

58. When we repeat the analysis, omitting housing wealth, the change in the regional dummies between 1989 and 1994 is markedly different. In this case, there is no decline in New England wealth, indicating that all of the decline noted in the text was due to housing prices. For the North Atlantic region and the oil states, in contrast, we find that only about half of the relative wealth decline comes from changes in housing wealth.

Table 22. Regressing Wealth Accumulation, 1989–94, on Initial Holdings and Active Saving[a]

Independent variable	*Coefficient*	*t statistic*	*Coefficient*	*t statistic*	*Coefficient*	*t statistic*
Permanent income[b]	0.114	10.3	0.127	11.5	0.110	10.2
African American dummy[c]	−3,110	−0.9	−3,125	−0.9	−1,136	−0.3
Age of head	−352	−0.4	−352	−0.4	−360	−0.4
Age squared	5.7	0.5	8.4	0.8	8.5	0.8
Education of head[d]	2,666	4.9	2,599	4.8	2,278	4.3
Married dummy	3,817	1.0	6,101	1.5	5,623	1.5
Number of children	−2,191	−1.8	−1,746	−1.5	−1,796	−1.6
Male dummy[e]	−1,278	−0.3	−2,144	−0.5	−2,553	−0.7
Wealth holdings, 1989						
Total	0.045	3.0				
Stock			0.357	7.0	0.305	6.2
Business			0.331	6.9	0.256	5.5
Transaction accounts			−0.024	−0.5	−0.065	−1.3
Main home			−0.115	−4.5	−0.130	−5.2
Active saving inflows, 1989–94						
Stock					0.643	10.4
Annuities					−0.176	−2.7
Business					0.218	4.5
Nonhome real estate					0.699	7.8
Other net inflows					0.124	1.1
Proceeds from inheritences					0.620	8.9
Summary statistic						
R^2	0.09		0.11		0.18	

Source: Authors' regressions using data from the PSID Core Surveys, 1987–94, and Supplemental Wealth Files for 1989 and 1994.

a. Dependent variable is household wealth in 1994 less wealth in 1989, both expressed in 1996 dollars. Sample includes households that meet the following four conditions: same head in 1989 and 1994; head aged between twenty-five and sixty-five in 1989; 1989 wealth between −$50,000 and $500,000; and 1989–94 wealth change between −$100,000 and $500,000; N = 4,030. Mean wealth change for sample is $30,847. Regressions include region dummies and a constant, and are weighted using 1994 PSID weights. t statistics are shown in parentheses.

b. Total pretax labor income of household over 1987–91, in 1996 dollars.

c. Race of head.

d. Years.

e. Gender of head.

that is, less than 1 percent per year. The positive effect is in part a consequence of scale, since those with a larger initial net worth will accumulate more, notwithstanding small capital losses. In part, it could also embody the persistence highlighted by Morgan, as noted above. In short, this may be the result of a persistence effect across the decades combined with more volatility in returns and mean reversion in wealth holdings, both statistically and behaviorally. We also note, from columns 2 and 3, that initial asset holding and active saving in stocks and business equity were strong contributors to wealth accumulation, as were active saving in real estate other than own home and proceeds from inheritances. These results reflect the higher return to equities during this period. The coefficients, such as the 0.643 on stock inflow in column 3, can be thought of as indexing the returns relative to money going into other portfolio elements. Net intrafamily inflows arising from departures and arrivals—that is, a family member leaving or entering with assets or debts—lead to more household wealth: 0.124 per dollar of net inflow in column 3.

In table 23 we ask whether strong returns in one period lead people to save more in the next, or there are "target" wealth effects, which can potentially be derived from a formal life-cycle model. From column 1, wealth accumulation over 1989–94 is a negative function of wealth accumulation over 1984–89, indicating potential mean reversion. To see whether this reversion is the net result of positive persistence and negative wealth effects, in columns 2 and 3 we decompose the gain in wealth over 1989–94 into an active saving component and a capital gain component. In both the ordinary least squares regression and the quantile regression, prior inflows and capital gains have substantial negative impacts, suggesting a wealth effect but no persistence.

From the first column of table 21, the rate of realized saving out of permanent income is about 14 percent per year. Earlier estimates of the active saving rate are on the order of 11 percent. Table 24 explains active saving over 1989–94, as a function of five-year labor income. The marginal propensity to save actively is 7.3 percent per year—about half the 14 percent per year estimated using realized saving. This rate of active saving is not far off the approximate values of the "personal saving" rates for 1989–94 in the Flow of Funds data.[59]

59. See Juster, Smith, and Stafford (1998).

Table 23. Regressing Wealth Accumulation, 1989–94, on Initial Holdings and Previous Gains[a]

	OLS[b]		*OLS*[b]		*Quantile regression*[c]	
Independent variable	*Coefficient*	*t statistic*	*Coefficient*	*t statistic*	*Coefficient*	*t statistic*
Constant	−30,206	−1.5	−29,096	−1.4	−16,151	−1.4
Permanent income[d]	0.130	11.5	0.130	11.5	0.152	11.5
African American dummy[e]	−2,025	−0.6	−1,963	−0.6	2,909	0.6
Age of head	29	0.1	5	0.1	96	0.1
Age squared	3.5	0.3	3.7	0.3	2.0	0.3
Education of head[f]	2,430	4.4	2,390	4.3	432	4.3
Married dummy	3,180	0.8	3,141	0.8	1,519	0.8
Number of children	−642	−0.6	−662	−0.6	−1,797	−0.6
Male dummy[g]	−1,023	−0.3	−1,066	−0.3	−4,012	−0.3
Wealth holdings, 1989						
Stock	0.403	7.6	0.407	7.7	0.455	136.2
Business	0.413	8.0	0.411	7.9	−0.818	−412.4
Transaction accounts	0.044	0.8	0.021	0.3	0.034	2.4
Main home	−0.051	−1.8	−0.045	−1.6	−0.258	−32.0
Wealth accumulation, 1984–89						
Total	−0.102	−4.0				
Active saving			−0.071	−2.0	−0.019	−4.4
Capital gains			−0.113	−4.1	−0.032	−33.0
Summary statistic						
R^2	0.12		0.12		0.11	

Source: Authors' regressions using data from the PSID Core Surveys, 1987–94, and Supplemental Wealth Files for 1984, 1989, and 1994.

a. Dependent variable is household wealth in 1994 less wealth in 1989, both expressed in 1996 dollars. Sample includes households with same head in 1989 and 1994, where head is aged between twenty-five and sixty-five in 1989. Regressions include region dummies and are weighted using 1994 PSID weights. *t* statistics are shown in parentheses.

b. Ordinary least squares: includes only households with 1989 wealth between −$50,000 and $500,000; and 1989–94 wealth change between −$100,000 and $500,000; N = 3,751. Mean wealth change for sample is $29,080.

c. N = 4,502; median wealth change for sample is $5,959. Quantile regressions minimize the sum of absolute deviations from the median.

d. Total pretax labor income of household over 1987–91, in 1996 dollars.

e. Race of head.

f. Years.

g. Gender of head.

Table 24. Regressing Active Saving, 1989–94, on Capital Gains and Previous Saving[a]

	OLS[b]		*Quantile regression*[c]		*OLS*[d]		*OLS*[d]	
Independent variable	*Coefficient*	*t statistic*	*Coefficient*	*t statistic*	*Coefficient*	*t statistic*	*Coefficient*	*t statistic*
Constant	10	0.1	−900	−2.3	1,850	1.4	−135	−0.1
Permanent income[e]	0.073	12.4	0.033	25.7	0.068	12.4	0.079	14.9
Wealth, 1984					-9.1×10^{-5}	−0.1	3.6×10^{-4}	0.2
Stock accumulation[f]								
Active saving, 1984–89					0.108	1.0		
Capital gains, 1984–89					−0.063	−0.9		
Capital gains, 1989–94					0.083	3.9		
Business equity accumulation[f]								
Active saving, 1984–89							0.148	1.2
Capital gains, 1984–89							0.281	5.0
Capital gains, 1989–94							0.081	2.4
Summary statistic								
$\bar{R}^2$	0.04		0.02		0.07		0.05	

Source: Authors' calculations using data from the PSID Core Surveys, 1987–94, and Supplemental Wealth Files for 1984, 1989, and 1994.

a. Dependent variable is active saving over 1989–94, in 1996 dollars. Sample includes households with same head in 1989 and 1994, where head is aged between twenty-five and sixty-five in 1989. All regressions are weighted using 1994 PSID weights. *t* statistics are shown in parentheses.

b. Ordinary least squares: includes only households with 1989 wealth between −$50,000 and $500,000; and 1989–94 wealth change between −$100,000 and $500,000; N = 4,030. Mean active saving for sample is $13,426.

c. N = 4,543; median active saving for sample is $3,486. Quantile regressions minimize the sum of absolute deviations from the median.

d. Sample includes only households that meet the following five conditions: same head in 1984, 1989, and 1994; head aged between twenty-five and sixty-five in 1989; 1989 wealth between −$50,000 and $500,000; 1984–89 and 1989–94 wealth changes between −$100,000 and $500,000; and 1984–89 and 1989–94 active saving between −$50,000 and $100,000. N = 3,168 and 3,066, respectively.

e. Total pretax labor income of household over 1987–91, in 1996 dollars.

f. 1996 dollars.

As an initial exploration of whether capital gains reduce subsequent savings—whether savers are persistent—we consider savings and assets in the form of stocks and farm and family-owned business. The results are presented in columns 3 and 4 of table 24, respectively. There is some suggestive evidence of prior (1984–89) capital gains from stocks reducing additional total active saving through all assets over 1989–94. Those who were active savers in stocks in the earlier period were more likely to actively save in the following period. Once again, the statistical results are only suggestive. Those with large contemporaneous stock gains were also saving more actively, but this is to be expected as a consequence of the scale of their active savings and wealth. Those who have more dollars flowing into the stock market should realize more dollar capital gains, given the strong rise in equity prices.

Business (including farm) equity provides an interesting contrast to stocks. External observation of collateral value may be difficult, depending on person-specific intangibles or on what has been referred to as tacit knowledge.[60] This creates a type of investment indivisibility over time. From column 4 of table 24, prior inflows to the business weakly predict additional active savings—that is, persistence—and capital gains, especially prior capital gains, strongly predict subsequent active savings.

This initial exploration does not clarify the role of high realized returns, even on publicly traded equities, in depressing saving. To study this question would require more systematic modeling and some critical additional data. Persistent savers may be attracted to pension plans. In this way they would commit to regular saving, regardless of short-term exigencies.[61] But to test this possibility, data on pension plan holdings are necessary. Also, defining capital gains as the change in wealth less active saving raises problems from an errors-in-variables perspective. Not only are wealth and active saving subject to measurement error, but the identity for capital gains creates an automatic error covariance. Future work with these data should incorporate exploration of the sensitivity of parameter estimates to measurement error.

60. Eliasson (1990).

61. The theory of saving commitments has recently been expanded by the application of hyperbolic discounting models, as reported in the paper by David Laibson, Andrea Repetto, and Jeremy Tobacman in this volume.

Conclusion

In this paper we offer a descriptive overview of the main patterns of change in wealth for American families from 1984 to 1989 and 1989 to 1994. We also highlight a few of the elements of this change that can be analyzed using wealth data from the Panel Study of Income Dynamics. Our main finding is that wealth dispersion increased at the same time as median wealth grew substantially, boosted by the rising stock market and the growing share of households owning stock over the period 1989–94. Combined with growing pension fund reserves, the $1.8 trillion increase in net worth over 1989–94 is potentially large enough to initiate a sizable wealth effect on aggregate consumption that could extend over the period 1995–2000.

Our analysis shows that a large share of families have negative net worth at a given point in time and that about 40 percent of such households still have negative net worth five years later. Nonetheless, as measured by the Shorrocks index, there was a modest rise in wealth decile mobility across the two five-year segments of the period, 1984–89 and 1989–94. We find strong compositional effects on wealth holdings, with a shift toward the use of the household's main home as a source of collateral and also a rise in noncollaterialized debt, in particular, for households with low equity positions in their homes. This suggests that a sharp decline in house prices could have a more adverse effect on consumer liquidity in the late 1990s than was the case ten years ago.

In regard to the ownership of transaction, or bank, accounts (checking, saving, and other), we find that exits exceeded entries over the period, so that by 1994, over 20 percent of American families did not own any transaction account. This net exit was more pronounced for African American families. We find persistence of illiquidity for those households below the bottom decile of the wealth distribution. There also remains a persistently large gap between the financial wealth of African American and other households, although the gap did narrow proportionately over the period 1989–94. Data from the Survey of Consumer Finances yield a similar result.[62] In multivariate analysis of the wealth differential between black and white households, we show

62. Wolff (1996).

that much of the gap appears to be the result of differences in permanent income and asset composition. Quantile analysis indicates that a large part of the average wealth gap can be attributed to the disproportionately small share of African American households with very high wealth holdings.

There was also a substantial and persistent rise in the financial wealth of those born between 1945 and 1954—the senior baby boomer cohort—over the period 1984–94. By contrast, those born between 1955 and 1964—the junior baby boomers—do seem to lag in accumulation of wealth for their point in the life cycle. Within the senior boomer cohort, through, there is a large subset of families with continuing low levels of household wealth. Unless these families have private pensions, they will be very ill prepared for retirement.

The later sections of the paper offer an initial exploration of the factors that shape asset holdings. This is an important issue, since the returns to different assets are so variable and the functions of different portfolio components are so diverse, from noncollateralized debt as a consumer convenience and buffer stock to equity in a business. This diverse set of assets is shaped by income flows. Our analysis confirms the continued widening of income by educational group. We find that despite low rates of saving flows, returns have been sufficiently high that realized saving rates are effectively higher than were flow saving rates in the 1960s, but there has been substantial variability across regions. Even though the average propensity to save actively out of household income has been falling over the past fifteen years, the average propensity to accumulate wealth has remained roughly constant. We show that growth in household wealth differs across regions, and that the wealth advantage enjoyed by New England as of 1989 had almost entirely disappeared by 1994.[63]

This study of dispersion in returns represents an initial look at a subject that deserves longer term assessment. One of the current limitations of the PSID data, and of most other data on household asset holding, is the absence of private pension information. Future work would benefit from inclusion of such measures and knowledge of the underlying components in the pension plans. It is possible that some of

63. Most of this was due to the deterioration of house prices in New England, but in other regions assets other than own home also played a role in wealth changes.

the households that appear to have persistently low savings and wealth accumulation in fact have substantial pension accruals and feel no need to save out of current income flows—they may be persistent savers interested in deferring income taxes. Finally, we offer some suggestions that wealth processes may be mean reverting over time. Households with large wealth gains between 1984 and 1989 were less likely to accumulate wealth between 1989 and 1994. There would be substantial benefit from a thorough theoretical and empirical study of the existence of such transitory wealth.

APPENDIX A

Wealth Data, Imputation Procedures, and Item Response Rates

GRANTS FROM the National Institute on Aging have made possible an important supplemental module on wealth in the Panel Survey of Income Dynamics. This module was first implemented in 1984 and was expanded in the 1989 and 1994 questionnaires. The 1994 wealth data are included in the 1994 early-release family file, available via the Internet. For the most part, the wealth questions in 1989 and 1994 parallel those used in 1984. Questions added in 1989 and 1994 provide information on active investments (so that capital gains can be derived as a residual), as well as wealth brought into or taken out of the household by entering or departing family members within each five-year period. In combination with information on wealth holdings in 1984, these additional questions provide data on household saving over each five-year period.

The wealth supplements for 1984, 1989, and 1994 all include the following data:

—net value of real estate other than main home;

—net value of vehicles;

—value of shares of stock in publicly held corporations, mutual funds, or investment trusts, including stocks in IRAs;

—value of checking and saving accounts, money market funds, certificates of deposit, savings bonds, Treasury bills, and IRAs;

—value of other investments in trusts or estates, bond funds, life insurance policies, and special collections;

—value and years of pension accumulations;

—value of debts other than mortgages, such as credit cards, student loans, medical and legal bills, and personal loans;

—inheritance of money or property, with year and value at time of inheritance.

Note that the PSID asks the value of equity in main home in every interview year.

The 1989 and 1994 wealth supplements include the following additional data:

—amount of money put aside in private annuities in past five years;

—value of pensions or annuities cashed in past five years;

—amount of money invested in any real estate other than main home in past five years;

—value of additions or improvements worth $10,000 or more to main home or other real estate in past five years;

—amount of money invested in a business or farm in past five years;

—amount of money realized from sale of farm or business assets in past five years;

—amount and net value of any stocks in publicly held corporations, mutual funds, or investment trusts, bought or sold in past five years;

—value of assets over $5,000 removed from family holdings by someone leaving the family in past five years;

—value of assets over $5,000 added to family holdings by someone joining the family in past five years;

—value of any gifts or inheritance of money or property worth $10,000 or more in past five years.

The extent of item nonresponse in the PSID is quite low. Item response rates for ownership of selected portfolio components, for example, are reported in table A1. We believe that these high response rates are due to the fact that respondents have confidence in the interviewers and have been interviewed on numerous occasions. Ferber

Table A1. Response Rates for PSID Questions about Asset Holdings, 1994

Percent

Asset type	Response: no holdings	Response: some holdings				Response missing
		Total	Exact amount given	Exact amount imputed through brackets	Exact amount missing	
Real estate	82.18	17.65	15.80	1.20	0.65	0.17
Wheels	14.55	85.45	81.55	3.04	0.86	0.00
Business	86.71	13.24	10.39	1.99	0.86	0.05
Stock	65.26	34.43	30.51	2.86	1.06	0.31
Transaction accounts	22.08	77.33	71.55	3.76	2.02	0.59
Other assets	75.04	24.31	19.84	3.22	1.25	0.65
Debt	49.25	50.47	49.28	0.72	0.47	0.28

Source: Authors' calculations using data from the PSID Supplemental Wealth Files for 1994.

(1959) underscores the importance of repeated interviews in gathering measures of family wealth.

Nevertheless, to work with these data, it is necessary to process values that are not provided in dollar amounts (the "unfolding brackets") in a consistent fashion in all three years. Consider the following example of a standard series of unfolding bracket questions: (1) "Do you (or your family living there) have any real estate other than your main home?" (2) If "yes" to question 1, "If you sold all that and paid off any debts on it, how much would you realize on it?" (3) If respondent gives a valid value, move to next series of wealth components. Respondents who do not report an exact amount are asked a further series of three or four questions—for example, "Would it amount to $50,000 or more?"—that ultimately define the sum in terms of the categories $1 to $999; $1,000 to $24,999; $25,000 to $99,999; and over $100,000. Some respondents answer only in terms of partial brackets, such as below $25,000 or above $25,000. Still others will not respond in this manner at all.

Assuming that respondents who cannot or will not specify an amount do have holdings in the same distribution as respondents who give an exact amount, the "hot deck method" is used to impute the missing values. The imputation process consists of three levels. First, respondents who answer "don't know," are noted "refusal," or who have missing data for question 1 are assigned to "yes" or "no." Those whose answer is imputed "yes" are considered not to have bracket information in the second level.

Second, respondents who give a partial bracket or no bracket are randomly assigned to one of the four brackets, with probability according to the bracket distribution of respondents who report an exact bracket. At the completion of the second level, each respondent is considered to belong to a specific bracket.

Third, respondents who do not give exact amount, including those with reported exact brackets and those with imputed brackets, are assigned a value, with probability according to the amount distribution of respondents within the same bracket who report exact values. Table A2 presents the resulting wealth distribution for the full sample, 1984–94.

APPENDIX B

Description of Wealth Accumulation Regressions

THIS APPENDIX describes the data that we use in the wealth accumulation regressions.

We compute *active saving* as net inflows into the stock market + change in vehicle equity + net change in transaction account balances + net inflows to business + net inflows to annuities + home improvements + net inflows into real estate other than main home − increases in noncollaterallized debt. Note that while our total wealth change measure includes all changes in main home equity, our active saving calculation includes only those changes in equity classified as home improvements.

We compute *capital gains* as change in wealth less active saving.

Regional analyses are based on the following groupings of states:

New England Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont;

North Atlantic New Jersey, New York, Pennsylvania;

Southeast Delaware, District of Columbia, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, West Virginia;

East South Central Alabama, Kentucky, Mississippi, Tennessee;

Oil states Arkansas, Louisiana, Oklahoma, Texas;

Plains states Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, South Dakota;

Mountain states Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, Wyoming;

West Alaska, California, Hawaii, Oregon, Washington;

Great Lakes (excluded region) Illinois, Indiana, Michigan, Ohio, Wisconsin.

Table B1 presents characteristics of the samples used in these regressions.

Table A2. Distribution of Wealth, 1984, 1989, and 1994[a]

1996 dollars

	1984			*1989*			*1994*		
Percentile	*Total*	*Black*	*White*	*Total*	*Black*	*White*	*Total*	*Black*	*White*
2	−4,510	−5,261	−4,134	−10,455	−10,455	−11,707	−16,273	−14,822	−16,410
4	−1,594	−3,383	−1,112	−4,282	−4,282	−4,156	−7,623	−7,411	−7,940
6	−443	−1,890	0	−1,259	−2,500	−982	−3,568	−4,235	−3,282
8	0	−1,398	8	−61	−1,247	0	−847	−2,117	−508
10	0	−826	529	0	−503	100	0	−635	0
12	192	−511	1,353	0	−148	680	0	0	423
14	705	−60	2,225	377	0	1,763	212	0	1,165
16	1,451	0	3,195	1,039	0	2,582	847	0	2,647
18	2,248	0	4,420	2,000	0	3,779	1,810	0	4,235
20	3,036	0	5,938	2,815	0	5,542	3,176	0	5,611
22	4,290	0	7,517	3,816	0	7,054	4,447	0	7,623
24	5,649	0	9,020	5,358	0	9,321	6,246	0	10,058
26	7,355	0	11,050	6,928	0	11,400	8,067	0	12,175
28	9,016	0	13,530	8,817	0	14,234	10,587	0	14,372
30	10,824	0	16,462	11,236	0	16,753	12,175	0	16,939
32	13,400	0	19,544	13,667	62	19,776	14,293	244	21,174
34	15,700	38	22,551	15,834	377	23,394	16,939	635	24,521
36	18,800	308	26,159	18,876	629	26,831	21,174	1,059	27,897
38	22,520	601	30,368	22,233	1,158	30,862	24,668	1,906	31,761
40	25,181	950	34,487	25,445	1,826	36,026	28,056	2,234	36,208
42	29,481	1,413	39,472	29,539	2,393	40,057	31,761	3,176	41,660
44	33,111	1,966	43,447	34,011	3,073	44,718	35,890	4,764	47,642
46	38,471	2,405	47,807	38,319	3,779	49,253	41,289	6,352	51,877

48	42,395	3,000	52,618	43,181	4,786	53,221	46,583	7,464	57,699
50	47,130	3,608	58,030	47,742	6,256	59,129	51,030	8,470	63,522
52	51,790	4,961	63,141	51,422	6,928	65,906	57,170	10,375	69,345
54	56,526	6,113	69,155	56,559	8,565	71,801	62,464	11,116	75,168
56	61,638	7,690	75,168	62,480	9,675	78,855	68,816	12,492	83,108
58	66,899	9,171	81,182	68,904	11,337	87,547	74,639	13,763	88,931
60	73,740	12,493	88,454	75,746	13,109	94,853	83,002	17,469	96,342
62	80,732	14,131	96,077	84,272	15,141	103,293	89,852	21,174	104,812
64	87,616	16,461	103,732	93,090	17,257	112,421	97,401	24,880	113,281
66	96,215	18,792	110,948	102,033	19,915	122,062	105,870	27,950	121,433
68	104,183	22,520	118,622	111,429	22,926	132,770	115,399	31,761	131,301
70	112,752	24,309	126,283	121,936	27,964	147,382	123,868	34,514	143,984
72	120,419	27,963	136,055	134,155	31,433	159,349	136,044	38,113	158,806
74	129,891	32,322	145,827	150,405	35,270	174,591	151,395	42,348	174,686
76	141,317	37,133	157,854	164,324	37,916	189,770	166,746	47,339	192,684
78	152,802	40,872	171,534	182,905	43,080	205,516	184,744	52,088	209,571
80	167,625	45,714	188,673	199,376	46,104	224,852	203,271	57,170	230,374
82	187,169	50,814	203,107	217,924	49,748	246,644	225,504	65,435	254,936
84	202,954	53,983	224,002	243,747	54,166	270,830	250,701	71,780	280,557
86	225,505	58,631	254,821	272,090	59,204	298,795	281,404	82,706	311,788
88	261,586	61,939	288,647	304,841	65,251	346,789	317,611	96,448	350,431
90	301,575	72,162	326,231	358,378	75,343	405,931	365,253	104,494	399,132
92	346,827	87,195	377,346	427,030	88,429	469,859	430,363	121,327	473,241
94	426,055	107,942	467,097	517,727	107,072	552,998	542,586	146,101	590,492
96	562,711	136,055	598,341	658,811	162,498	744,469	698,110	172,039	742,152
98	844,893	196,190	920,062	1,031,675	226,741	1,124,010	1,069,291	238,209	1,169,868

Source: Authors' calculations using data from the PSID Supplemental Wealth Files for 1984, 1989, and 1994.
a. All data are weighted using PSID weights.

Table B1. Characteristics of Samples Used in Regressions[a]

	Sample of families with same head, 1989–94[b]					
	All[c]		*Excluding extreme wealth values*[d]		*Excluding extreme wealth values and changes*[e]	
Variable[a]	*Mean*	*Standard deviation*	*Mean*	*Standard deviation*	*Mean*	*Standard deviation*
Wealth accumulation, 1989–94	21,318	482,514	39,575	235,537	30,847	77,032
Permanent income[f]	43,378	45,385	39,540	29,803	38,457	28,397
Education of head[g]	13.2	2.6	13.1	2.5	13.0	2.5
Number of children	0.879	1.141	0.894	1.130	0.896	1.134
Age of head	42.5	11.5	41.9	11.3	41.7	11.2
Active saving, 1984–89	23,155	179,532	10,599	70,121	7,609	51,225
Active saving, 1989–94						
Total	24,488	298,610	15,436	135,363	14,042	54,363
Annuities	842	18,402	730	17,268	638	17,092
Real estate	1,981	30,133	1,307	20,223	986	12,470
Business	4,074	114,072	2,987	114,229	1,085	23,057
Stock	13,362	272,072	3,869	23,631	3,773	18,958

Net inflow of assets, 1989–94						
Inheritances	3,736	28,523	3,204	25,607	2,509	16,289
Other	−786	18,144	−638	11,877	−320	9,726
Dummy variables						
African American head	0.138		0.148		0.156	
Married head	0.629		0.610		0.598	
Male head	0.779		0.767		0.757	
New England	0.050		0.047		0.044	
North Atlantic	0.168		0.165		0.161	
Southeast	0.172		0.172		0.174	
East South Central	0.074		0.078		0.081	
Oil states	0.081		0.083		0.081	
Plains states	0.098		0.100		0.099	
Mountain states	0.045		0.045		0.046	
West	0.128		0.120		0.118	

Source: Authors' calculations using data from the PSID Core Survey 1984–95, and Supplemental Wealth Files for 1984, 1989, and 1994.
a. Unless otherwise indicated, variable refers to 1989 cross-section. All dollar amounts are in 1996 dollars. All means are weighted using PSID weights.
b. Head aged between twenty-five and sixty-five in 1989.
c. $N = 4,534$.
d. Includes households with 1989 wealth between −$50,000 and $500,000; $N = 4,314$.
e. Includes households with 1989 wealth between −$50,000 and $500,000, and 1989–94 wealth change between −$100,000 and $500,000; $N = 4,030$.
f. Average, 1987–91.
g. Years.

Comment and Discussion

William G. Gale: Information on how the wealth and saving of particular families evolves over time is an important missing link in empirical analyses of saving and wealth. With the exception of the Retirement History Survey, used by Michael Hurd and Douglas Bernheim, among others, there is very little recent analysis of how families' wealth actually evolves over significant periods of time.[1]

This paper offers a new data source for tracking changes in household saving and wealth, by utilizing wealth supplements to the Panel Study of Income Dynamics in 1984, 1989, and 1994. The authors present a variety of cross-sectional and panel results. In addition to developing new knowledge concerning wealth trends, these results provide a large new set of data points that economists can use to test their theories.

Before turning to specific results, it is useful to begin with some caveats. First, as the authors are aware, their data set has two omissions: information on households at the very top of the wealth distribution and data on accrued pension and social security benefits. Of these, the absence of data on pensions is the bigger problem, both because the recent rise of 401(k) plans has been quite large relative to other forms of saving and because pensions represent a large share of household wealth and recent net personal saving.[2] Data on social security ought to be available, or calculable, given the long wage histories in the data set. Finally, while information on households at the top of the wealth distribution would be useful for many purposes, the lack of such data

1. Hurd (1987, 1989); Bernheim (1987).
2. Sabelhaus (1997).

does not stand in the way of analysis of a variety of interesting issues, as the authors show.

A second caveat is that the extent to which particular data patterns are time-specific, age-specific, or cohort-specific is never quite clear. Of course, it is impossible to disentangle the three components without making identifying assumptions. While it would be desirable to observe "pure" age effects, for example, it is clear that there could be important cohort or time effects during the period that would influence the data patterns. Specifically, between 1984 and 1994 there were several reforms of the income tax, which featured significant changes in the treatment of capital gains, saving incentives, and the high-income tax rate. There was also a reduction in inflation, a booming stock market, a shift in the form of pension plans from defined benefit toward defined contribution, and a shift within defined contribution plans toward 401(k)s. Further issues concern whether the baby boomers have different expectations and saving patterns from other generations.

The paper presents several interesting results. Average wealth in the cross-sections rose over the period, as expected, but median wealth also rose. Despite this rise in median wealth, the results show a widening cross-sectional distribution of wealth over time, as families in the bottom 20 percent in later years had lower wealth than corresponding families in earlier years, and families in the upper 20 percent in later years had higher wealth than corresponding families in earlier years. The data also show that families that are older and families that do not have children have higher amounts of wealth.

The authors document a fall in housing equity over 1984–94 that presumably was sparked by an increase in mortgage borrowing. The results also show an increase in vehicle equity. The authors interpret this rise as a response to the incentives of the tax reform act of 1986, which ruled out the tax-deductibility of interest on auto loans and induced a shift in the composition of borrowing toward mortgage debt.[3] An interesting extension of both the housing and vehicle equity results would be to separate trends in the asset price and outstanding loans over time.

Another important finding is that the difference between wealth accumulation and what the authors call active saving is quite large.

3. Maki (1995).

Table 3, for example, shows that the mean real wealth accumulation rate was almost 14 percent between 1989 and 1994 among households with the same head in both years, but the mean active saving rate of 6.9 percent only accounts for half of this growth.

The data in table 3 also indicate substantial heterogeneity in saving behavior. The median rate of wealth accumulation was about 5.2 percent, while the median active saving rate was only 0.7 percent. Thus the table can help to reconcile the observation that on the one hand there was significant wealth accumulation during this period (a mean rate of 14 percent), but on the other hand, the typical household did not actively save very much.

Tables 6 to 8 examining wealth transitions among stable families raise a number of important issues. Wealth transition is somewhat limited at the extremes of the distribution. Among families in the bottom 10 percent of the distribution in 1984, almost two-thirds were still in the bottom 20 percent in 1994. Among families in the top 10 percent in 1984, over 70 percent were still in the top 20 percent in 1994. Nonetheless, this implies that almost one-third of families in both the top and the bottom 10 percent have crossed more than one decile of the wealth distribution over the ten-year period. There is more variation in the middle of the distribution. Of families in the middle 20 percent in 1984, only a third were still in the middle 20 percent in 1994.

Consistent with other research, the results presented in this paper indicate that many baby boomers are accumulating significant amounts of wealth, but some are doing quite poorly. Such heterogeneity in saving and wealth outcomes is important in interpreting the popular debate about the adequacy of boomers' saving for retirement.

In terms of asset ownership, the paper documents the rise in the proportion of households that hold stock, as found by other recent studies.[4] But it also shows that 20 percent of "stable" households (that is, those with the same head in 1989 and 1994) did not have a bank account in 1994, including 55 percent of stable African American households. These figures identify a troubling policy problem.

The authors present some admittedly preliminary analysis of the role of capital gains and wealth accumulation on subsequent saving behavior, with few strong results. Such analysis is complicated by having to

4. See, for example, Poterba and Samwick (1995).

sort out heterogeneity issues, distinguish between temporary and permanent shifts in wealth and the rate of return, and distinguish between anticipated and unanticipated returns, all at the same time.

The data set described in this paper will be useful for a wide range of future research. One such research target would be a precise estimate of the role of wealth or capital gains on saving behavior, provided that the ancillary issues noted above can be resolved. Another possibility would be to examine the adequacy of saving and trajectories of saving by various groups—in particular, the baby boomers—and to relate these findings to labor market effects, changes in family composition, or other factors. The data could also contribute to understanding the causes and dimensions of the decline in personal saving that occurred during the sample period.

General discussion: Robert Hall commented on the observation that people are getting wealthy without saving. He distinguished between two notions of wealth: the market value of assets, as used in this paper and elsewhere, measures how much one could consume today by liquidating one's entire portfolio; an alternative, the annuity value of those assets, measures the even consumption stream they could support over the rest of one's life. If stock market wealth rises due to a decrease in the discount rate rather than an increase in profit flows, as appears to be the case today, its annuity value would be unaltered. In this case, it would be a nonevent for households owning stocks, and one should not expect any change in their saving behavior.

William Brainard remarked that in their regressions for active saving, the authors had no possibility of differentiating between two plausible effects—saving leading to capital gains for a household and consumption out of capital gains leading to a reduction in saving—within the same five-year period. George Perry added that although the positive coefficient on contemporaneous gains in these regressions does not rule out some consumption out of gains, the effect of lagged stock gains is free of this commingling of effects and indicates a negligible consumption response to stock gains, at least in the subsequent five-year period. The effect of lagged gains on private business, which probably are poorly measured, indicates that gains actually increase saving, even when prior period saving is in the regression to account for persistence effects.

Lawrence Katz suggested that the authors' access to good panel information on labor earnings, wealth, and saving rates for the same households might allow them to answer intriguing questions about the distribution of wealth. In particular, it should be possible to see how much of the distribution of wealth and changes in that distribution are associated with human wealth and labor market success, how much are from idiosyncratic differences in saving rates, and how much come from being smart or lucky in investment choices. Stafford replied that a start at such an analysis had been made in another paper, with some striking results. Looking at the wealth of families in the top 10 percent of the income distribution, those near the bottom had trivial amounts of wealth, and most were nearing retirement age. So, either these people have great pensions or they are very myopic and in terrible shape financially, relative to their accustomed life style. Michael Kremer observed that tax incentives could be important for determining the different propensities to consume out of capital gains and out of labor income, since unrealized capital gains are not taxed. These unrealized capital gains could be left as bequests or distributed as gifts. Stafford agreed that the importance of taxes was worth exploring and noted that Kremer's tax effect could be tested with the PSID data, since they contain information on interfamily flows, as well as on inheritances.

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