The Decline in Household Saving:
What Can We Learn From Survey Data?

by
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Abstract
        We examine the saving decline from the perspective of microeconomic survey data on the wealth position of American households. Can the surveys provide information on the nature and causes of the saving decline that are not evident in the macroeconomic information? The analysis concentrates on data obtained from six Surveys of Consumer Finances (SCF) covering the period of 1983-2001. The SCF had a panel dimension only in the 1983-89 period.
        We conclude that the 1983-89 panel survey is a very valuable, but often ignored, exercise in measuring saving behavior. It is particularly instructive in demonstrating the heterogeneous nature of saving behavior and the dominant role of high-income households. Unfortunately, the panel component of the survey was discontinued after 1989. We conclude that cohort-based estimates of saving that can be derived from successive rounds of the SCF cross-section are not effective substitutes for a panel survey. The most substantial opportunity to improve our knowledge of the reasons for the decline in household saving would be to repeat the 1989 exercise by re-interviewing a portion of the households in each SCF survey.

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In a global economy characterized by some as being awash in saving, Americans stand out for their devotion to consumption. The rate of private saving in the United States has declined precipitously over the past two decades. While the corporate component has surged during the current economic expansion, the household saving rate has continued to fall. Household saving has fallen from ten percent of disposable income in the first half of the 1980s to less than two percent in the first half of the current decade. This development should strike us as all the more surprising given the large number of baby-boomers who are in their peak saving years. Despite considerable empirical research, the source of the saving decline remains controversial; primarily because it's one-time nature makes the question of the causes difficult to resolve on the basis of macroeconomic correlations.

In this paper we examine the saving decline from the perspective of microeconomic survey data on the wealth position of American households. Can the surveys provide information on the nature and causes of the saving decline that are not evident in the macroeconomic information? It is an extension of a prior paper that focused more on the macroeconomic characteristics of the saving decline and provided some preliminary evidence from the microeconomic data (Bosworth, 2004). Unfortunately, the availability of panel data that could have been used to track the change in saving within specific subgroups of the population is extremely limited. Our analysis concentrates on data obtained from six Surveys of Consumer Finances (SCF) covering the period of 1983-2001. The SCF had a panel dimension only in the 1983-89 period. Thus, a primary objective of this study is to determine whether the construction of information on synthetic cohorts from successive cross-sectional surveys provides a useful substitute for panel data.

We conclude that the 1983-89 panel was a valuable addition to the empirical analysis of saving. It is particularly instructive in demonstrating the heterogeneous nature of saving

behavior and the dominant role of high-income households. Unfortunately, the panel component of the survey was discontinued after 1989. Despite our use of a variety of different adjustments to the cohort-based wealth data, we conclude that it is not an effective substitute for a panel survey. The most substantial opportunity to improve our knowledge of the reasons for the decline in household saving would be to repeat the 1989 exercise by re-interviewing a portion of the households in each SCF survey.

The following section provides a brief overview of the major macroeconomic features of the saving decline, as reported in the 2004 paper. The remainder of the paper is devoted to an analysis of the Survey of Consumer Finances (SCF) which is the primary data source for the microeconomic analysis. It includes an overview and evaluation of the six surveys that have been produced since 1983. The SCF is a survey of wealth, not saving; so it is necessary to explain our methods for obtaining measures of saving from consecutive wealth surveys. The subsequent analysis is divided into two portions. The first focuses on a panel of households that participated in both the 1983 and 1989 SCFs. Only the 1989 survey had a panel dimension with a link back to 1983.[1] We use the 1983-89 panel to explore some of the characteristics of the households that account for the bulk of the saving. However, because the panel does not exist over multiple surveys, it cannot be used to explore the change in the saving of a specific household over time. The second section reports on estimates of the wealth change and saving of synthetic cohorts as constructed from the six independent wealth surveys. As a result, we can observe changes in saving over an 18-year period that includes the years of largest decline in the aggregate household saving rate.

A Macroeconomic Perspective

The magnitude of the post-1980 collapse of household (personal) saving is most evident in figure 1. In the three decades of 1950-80, the saving rate displayed a modest upward trend with a standard deviation of less than one percentage point. Since the early 1980s, the rate has declined from 10.4 percent of disposable income to an average of only 1.8 percent in 2000-2004.

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[1] A re-interview of a portion of the 1983 sample was undertaken in 1986. However, its brevity and the fact that it was done by telephone led many researchers to question its accuracy. Thus far, we have made very little use of the 1986 survey. The 1986 survey covered 2,822 respondents out of a total of 4,262 surveyed in 1983. The 1989 survey included 1,479 re-interviews from 1983 as well as 1,662 new respondents. There were 1,215 households who participated in all three surveys (1983, 1986, and 1989).

The broader measure of private saving, inclusive of corporate saving, has a very similar pattern - - but for a large surge of profits and retained earnings in the current recovery. In addition, data from the flow of funds make possible a separation of saving into a contractual component, composed largely of retirement accounts, over which individuals have only limited short-term control, and more discretionary forms of saving. In the 1980s, the retirement accounts provided some offset to the fall in other forms of saving; but over the past decade, pension saving has also fallen substantially. However, the inclusion of IRA accounts, into which many workers transfer accrued pension assets upon job terminations, suggests that most of the decline in saving is outside of the retirement accounts. Over the past two decades, the total saving rate has fallen by 8.6 percent of income, with a 3.8 percentage point drop in pension saving, an offsetting 1.3 percentage point rise in IRAs, and a 6.1 percentage point fall in non-contractual saving. The flow of funds accounts would suggest that the overall decline is an even larger 10 percent of income.

The lower portion of table 1 provides some alternative measures of saving and some macroeconomic indicators that have been used in efforts to explain the saving decline. The inclusion of consumer durables appears to be a minor factor, but the adjustment of nominal income from interest-bearing assets for its overstatement during periods of high inflation is of some potential significance – particularly because the household sector shifts from a net creditor to a net debtor status for interest-bearing assets during the period of declining inflation (Perozek and Reinsdorf, 2002).

Capital gains have been a very large and volatile component of household wealth.[2] Capital gains on real estate and corporate equities have been responsible for a substantial rise in the wealth-income ratio from about four in the early 1980s to five times income today. If the propensity to consume out of wealth is assumed to be 0.05, the increase in wealth could account for about 5 percentage points of the decline in the saving rate.[3] However, the rise in the wealth ratio is concentrated in the years after 1994, whereas figure 1 shows a sustained deterioration in

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[2] A substantial portion of the long-term rise in real capital gains of the household sector can be traced to the exclusion of the reinvested earnings of corporations. Those reinvested earnings are included in private saving, but are not part of personal income or personal saving. In addition, the market value of corporations reflects investments in intellectual property and intangibles, even though their accumulation is not part of saving (personal or private) and investment.

[3] See Lettau and Ludvigson (2004), Ludvigson and Steidel (2000), Parker (1999), Peach and Steindel (1999), and Poterba (200) for discussions of the wealth-consumption link.

the saving rate over the past two decades. Aggregate wealth changes do not appear to be a reasonable explanation for the decline prior to 1995.

Finally, there has been considerable discussion of the importance of mortgage refinancing as a mechanism that allows the withdrawal of homeowners' equity to finance consumption. The measure shown in the table is based on a broader concept that includes the sale of homes by older households with small mortgages to younger households (Catte and others, 2004). As with the wealth measures it rises substantially in the late 1990s, but does little to explain the saving declines of earlier years. There is a surplus of potential explanations for the post-1995 developments; whereas the puzzle is in the prior decade. Still, most macroeconomic studies continue to focus on the role of wealth and mortgage refinancings.

The Survey of Consumer Finances

The SCF is the dominant source of information on the wealth holdings of Americans. Other surveys, such as the Survey of Income and Program Participation (SIPP), do not have a sample that is representative of wealth holders (Czajka and others, 2003). The PSID is a valuable resource because it does follow the same individuals over time and the estimates of wealth are somewhat closer to those of the SCF than the SIPP, but it under-represents households at the top of the distribution and provides less detail on the components of wealth.[4] Growing problems of measuring households' diverse expenditures in the Consumer Expenditure Survey results in its failure to conform to the pattern of declining rates of saving shown in the aggregate statistics.[5]

As was discussed in a prior paper (Bosworth, 2004), the SCF is the only survey that comes close to capturing the magnitude of wealth reported in the aggregate statistics of the flow of funds. In addition, the six survey rounds from 1983 to 2001 span much of the period of decline in the household saving rate. The major innovation in the design of the SCF was the use of a dual-frame sample design (Kennickell, 2000). The first component consists of a national area-probability sample designed to be representative of the total population. However, given the concentrated nature of wealth holdings, such a sample would have to be very large in order to

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[4] A comparison of the SCF and PSID is provided in Juster, Smith, and Stafford (1999). Hurst and others (1998) used the PSID to examine wealth changes over the 1984-94 period. An analysis covering the period of 1984 to 1999 is reported in Juster and others (2004).

[5] As illustrated most recently in Garner and others (2003), a deteriorating ability to measure consumer expenditures relative to the aggregates of the national accounts, results in a declining trend in the expenditure to income ratio and a rise in the estimated saving rate, the opposite of the pattern in the national accounts.

obtain accurate estimates of some wealth components. Thus, it is supplemented by a special list sample compiled from tax return data.[6]

As a source of information on saving, however, the SCF raises two major problems. First, except for the 1989 survey, it contains no direct information on saving or the change in wealth. Its focus is on estimating the stock of wealth at a single point in time. Thus, after 1989 we can only obtain estimates of wealth change for stable aggregate groups in the population, such as specific age cohorts. The lack of a panel dimension is a major limitation on its value in the analysis of saving.

Second, the measurement of saving from wealth data requires that we have some means of removing the effects of pure valuation changes (capital gains). These valuation changes are most pronounced for real estate, corporate equities and unincorporated business equity. We can make use of aggregate price indexes for both real estate and equity, but it requires that we assume a uniform composition of the equity portion of household portfolios and a uniform pattern of real estate price change. Obviously, the adjustment for price change will introduce large measurement error at the level of individual households, and we can only argue that the error is relatively random at the individual level and will be of less importance in the aggregation of groups. In addition, there is no available index of the value of noncorporate businesses. The best that can be done is to assume that their value is equal to the replacement value of their tangible assets plus net financial assets. That is the approach used in the Flow of Funds (F/F).[7]

Two prior studies have used the SCF to explore the decline in the U.S. saving rate. Maki and Palumbo (2001) use the SCF to distribute the components of asset holdings as reported in the F/Fs among household groups. They then assume that the net flows from the F/Fs can be distributed in proportion to the stocks. That allows them to conclude that the saving decline is concentrated among the highest-income and best-educated families who are large holders of

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[6] A second important feature of the data set is the incorporation of a multiple imputation procedure for missing data that is designed to maintain the mean and variance of the original responses. Each observation is replicated 5 times in the cross-section surveys and 3 times for the 1983-89 panel.

[7] The difficulties of deriving estimates of saving from changes in wealth have led some researchers to rely on the Survey of Consumer Expenditures. However, as illustrated most recently in Garner and others (2003), a deteriorating ability to measure consumer expenditures relative to the national accounts, results in the failure to capture the declining trend of saving in the survey.

corporate equities.[8] However, their finding rests on the assumption that the distribution of the flows is proportionate to that of the stocks.

Sabelhaus and Pence (1999) use the SCFs of 1989, 1992, and 1995 to measure the wealth accumulation of specific age cohorts over the 1989-1995 period. They use the SCF to assign the wealth components of the F/Fs to household groups, but then use the level and flow data of the F/Fs to separate the change in wealth between two survey dates between holding period gains and net purchases. These aggregate rates of capital gains are then applied to the comparable asset categories for the SCF. They use the adjusted SCF measures to track the change in wealth due to net investment and capital gains for broad age cohorts. Sabelhaus and Pence find a much stronger life-cycle impact on saving than is typical in other studies, with very large rates of dissaving among the oldest cohorts even after adjusting for bequests.

In the following analysis, we use the methodology employed by Sabelhaus and Pence of matching successive surveys by age cohort, but extend the analysis to cover a longer time span of 1983-2001. We also make use of a special portion of the SCF in which a subgroup of households were surveyed twice, once in 1983 and again in 1989, about their wealth holdings.

 If survey data are to be used to explore macroeconomic phenomenon, we need to ensure that the survey encompasses the relevant information. The quality of the SCF can be evaluated by comparing the data with available economy-wide totals from the Flow of Funds. Table 2 presents such an assessment of the major components of the household balance sheet for each of the six available surveys.[9] Some wealth items that are part of household wealth in the F/Fs, such as defined-benefit pension accounts, are not included within the SCF. However, in most years, the SCF estimate of total wealth is a fairly good match to a comparable definition from the F/Fs, ranging from 94 to 99 percent in the 1983-98 surveys, but there is a large 20 percent overestimate in 2001 when asset prices were undergoing sharp changes. The discrepancies are greatest for closely-held and other equities, where the SCF exceeds the F/Fs.

Table 3 provides a comparison for 2001 of the SCF income estimates to the aggregate data on personal income in the national accounts and to a comparable estimate from the Current Population Survey (CPS), which is the most commonly used source of micro survey data on

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[8] The household sector has long been a large net seller of equities as an offset to the corporate repurchase of equity issues and purchases by other sectors.

[9] The data are based on the procedures outlined in Antoniewicz (2000) and are discussed in more detail in Bosworth (2004).

household income.[10] The CPS is known to under-estimate capital income, but it is not clear whether the under-estimate is due to inadequate coverage of high-wealth families or to a systematic understatement of capital income. Since the SCF appears to be representative of the holders of capital, any continued pattern of underestimation of capital income should be largely due to the second factor. As we might anticipate, the SCF does yield a substantially larger estimate of self-employment income--twice that of the CPS--and it reports a much higher level of income from rent, royalties and trusts. However, the estimates of interest and dividend income are not significantly larger than those of the CPS. Overall, the SCF provides a very good estimate of income that is closer in several respects to that of the national accounts than is the CPS.

Finally, as mentioned above, we use aggregate asset price indexes to adjust the individual components of household wealth for valuation changes. For equities and real estate we used two direct measures of asset prices: the S&P 500 index for equity prices and the real estate price available from the Office of Federal Housing Enterprise Oversight.[11] For other asset components, we constructed implicit price indexes from the reconciliation tables of the Flow of Funds. These tables decompose the change in components of wealth between net purchases and valuation changes. These implicit price indexes were used for noncorporate business assets, mutual funds and defined-contribution pensions.[12] The reconciliation tables are constructed from macroeconomic data, but individual households may change their asset allocation between survey years. We made a partial adjustment, by computing the valuation change first on the basis of initial period assets and then for the terminal period values, and we used an average of the two estimates to compute saving.

The adjusted wealth measures are used to construct two estimates of saving from the SCF. The first makes use of the 1983-89 panel data to compute saving at the level of individual households. This allows us to focus on identifying some of the characteristics that distinguish high and low-saving households. The second is based on the construction of synthetic cohorts to

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[10] The comparison to the national accounts was done for each of the survey years, and the results for each income component are similar to that for 2001. Guidance in linking components of income as defined in the surveys with the income definitions in the national accounts was provided by Roemer (2000) and Ruser and others (2004).

[11] The change in the equity price is measured as the change in the average of the December close for the current and prior year. The change in housing prices is measured using the 4th quarter average for the current and prior year.

[12] Closely-held equities were also deflated with the index for noncorporate capital because most of these assets have no established market value.

estimate saving from the change in wealth in repeated cross-section surveys. Both of these estimates are discussed in turn in the following sections.

The 1983-86 Wealth Panel

The 1989 SCF was based on a sample of 3,143 households of which 1,479 were drawn from the 1983 survey participants (Kinnekell and Starr-McClure, 1997). Thus, the panel portion is quite small, but it matches the cross-sectional surveys for 1983 and 1989 surprisingly well.[13] This is illustrated in figure 2 by comparing the age distribution of net worth, total assets and liabilities between the panel and the cross-sections. The aggregate value of net worth in the panel is about 10 percent below that of the cross-section in both 1983 and 1989; but in both years, it is actually closer to the F/F values. It is particularly similar in maintaining the age profile of wealth shown in the cross-section.

Table 4 provides some detail on the match between the panel and the F/Fs for net worth, the change in net worth, and our estimate of saving exclusive of capital gains. At the most aggregate level, the panel provides a very good match to the F/Fs: the estimate of the change in net saving equals $1.5 trillion over the six years, compared to $1.3 trillion in the F/Fs. However, the errors are more substantial for some of the components. There is a large overestimate of the change in noncorporate business equity and an offsetting discrepancy in the estimate of the change in real estate assets. In both cases, the discrepancies are the result of substantial differences in the estimate of the levels of wealth components for 1983. They may be due in part to the redesign of the sample questionnaire in 1989, which creates some ambiguities in the matching of categories between the 1983 and 1989 surveys. For example, we can only distinguish between own residence and other properties that are not part of a business in 1983, whereas the 1989 survey provides much more detail. We included the other properties as part of residential real estate believing that they were largely second homes. It appears that a substantial portion should have been included with business property.

At the household level, the most notable feature of the estimated saving is its extreme diversity. Two percent of the population had measured saving over the 1983-89 period in

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[13] Using the SCF definitions, there were 83.9 million households in 1983, 93 million in 1989, and 81.8 million who survived from 1983 to 1989. We use a weighting variable, WGT0296, which is described in the documentation as most appropriate for measuring wealth change in the panel data set. With multiple imputation for missing values, we actually work with a data set of 4437 observations.

excess of $500 thousand and about 1.5 percent had saving of less than -$500 thousand. A very large proportion of the variation is due to the imperfect nature of the adjustment for valuation changes because we only have a measure of the average price change. As a result, the measures are of limited value for the analysis of individual households. However, the excess variability should cancel out in analyses of various socioeconomic groups.

Table 5 reports the dollar value of saving and the rate of saving out of income for subgroups of the estimated population classified by various household characteristics. The SCF also provides information on inheritances received over the six years between 1983 and 1989.[14] No adjustment was made for inheritances in the comparison to the aggregate F/Fs in table 4, treating them as inter-household transfers. However, we do tabulate inheritances for the individual groups of table 5, because it is a source of wealth increase independent of a household's own saving. Thus, the measure of saving shown in the table is redefined to exclude the receipt of inheritances. As shown at the bottom of the table, about 11 percent of households are estimated to have received $378 billion in inheritances in 1983-89. It is also noteworthy that the distribution of the inheritances is heavily concentrated among households which already account for most of the nation's wealth: three-fourths of the inheritances were received by households in the top third of the wealth distribution.

In the top panel, the saving and inheritances are distributed by the age of the household head. The panel data indicate a very strong influence of age on saving, as households whose head is age 40 to 60 account for over three-fourths of all saving and their rate of saving is twice the average. In addition, there is a substantial volume of dissaving among households over age 60.

It is also noteworthy that the saving is highly concentrated among high-income households. In fact, the saving of the top third of the income distribution exceeds the total, due to the negative saving in the bottom third of the income distribution. Most notably, the *rate of saving* out of income is much higher for those who were at the top of the income distribution at the beginning of the period. The skewdness is nearly as pronounced if we use education as a proxy for income. Households whose head had a college degree saved at nearly twice the rate of those with a high school education. We have also cross-classified the data by age and income;

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[14] Complete information on inter-vivos transfers is not available in the SCF. They are grouped with other large and unusual expenditures. We have also made no adjustment for charitable contributions, treating them as a form of consumption.

and, although the number of observations limits the reliability, saving rates within age categories rise sharply with income. In contrast, there is less evidence of consistent age affects on saving once we control for income or education. The college-educated, for example, save at a high rate prior to age 40 and do not dissave after age 60.

There is a weaker association between beginning of period wealth and saving. Saving rates are higher for households with low beginning of period wealth, and the inverse correlation is even stronger in the comparisons that control for age (not shown). There is also strong positive association between the household's initial wealth and the likelihood of receiving an inheritance: in this instance wealth begets wealth.

In the macroeconomic analysis, considerable attention has focused around the role of the wealth-income ratio, as the rise in the wealth-income ratio is seen as the most plausible explanation for the higher consumption-income ratio. Thus, we also classified households in the panel by their initial wealth-income ratio. Saving rates are high for the lower two-thirds of the distribution and negative for the top third. This conclusion held even if we adjusted for the age of the household head. Saving rates were low at all ages for those whose initial wealth-income ratio was in the top third of the distribution. Similarly, if we cross-classify by wealth and income, the saving rate in the highest third of the wealth distribution is much lower at all income levels, but the strong correlation of saving and income still yields 10 percent saving rates for those with the highest income and the highest wealth. The small sample size in some of the cells also is a concern.[15] Finally, households who owned a home at the beginning of the period accounted for a very substantial proportion of the aggregate saving, but there is not a large a difference between the saving rates of homeowners and non-homeowners.

Overall, these results from the panel seem very plausible. They highlight the extreme heterogeneity of saving behavior, and the difficulty of interpreting changes in aggregate saving in the context of a model of a representative consumer or a single homogeneous class of consumers. They also draw attention to the dominant role of high-income households in accounting for aggregate saving. In this case, we are interested in the behavior of the average 'dollar,' not the average consumer, and the two are quite different.

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[15] One important aspect of the panel data set is that it has an above-average representation of households in the top portions of the income and wealth distribution. Contrary to normal expectations, these households have the lowest weight in the sample.

Saving and Synthetic Age Cohorts.

On balance, we believe that the above analysis of the 1983-89 wealth panel is encouraging about the ability to use panel data to construct meaningful measures of saving. Such a longitudinal survey would have provided information on what socioeconomic groups account for the sharp deterioration in saving over the past two decades. Unfortunately, the Federal Reserve abandoned the panel component of the SCF after 1989. It has continued to produce only cross-section surveys of household wealth holdings on a 3-year cycle. From the perspective of research on saving, the PSID is the only available panel survey that can be used to track the decline in U.S. saving over the 1990s at the microeconomic level, but it lacks the primary advantage of the SCF to capture a representative sample of high wealth holders.

Lacking a longitudinal data set, many researchers have tracked economic behavior through the construction of synthetic age cohorts from successive cross-sectional surveys. The approach has become quite common for estimating age-wealth profiles.[16] However, the U.S. wealth data do not tell us much about saving in recent years because of the overwhelming importance of capital gains as the primary determinant of saving. For example, between 1983 and 2001, the net worth of the household sector rose by $29 trillion. Valuation changes accounted for $22 trillion of the change.

The importance of the valuation effects is illustrated in figure 3. We array all of the data in the six SCF surveys by the age of the household head in 1983, and calculate the wealth of ten-year age cohorts. The cohort's wealth is divided by the number of households in the survey year and adjusted for general inflation using the research version of the consumer price index to express all values in prices of 2001.[17] On that basis, it is clear that younger households are doing surprisingly well as they are accumulating wealth at a faster pace than earlier cohorts at a comparable age. The cohort aged 35-44 in 1983, for example, was age 53-62 in 2001 and had a wealth per household of $665 thousand. That is 75 percent above the average wealth of the 45-54 age group when they were at a comparable age in 1992. The wealth of the 25-23 age cohort in 2001 was one-third higher than the 45-54 age cohort in 1983.

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[16] Recent examples are provided by Japelli (1999) and Alessie and others (2005), and an early example is that of Shorrocks (1975).

[17] Available at: http://www.bls.gov/cpi/cpiurstx.htm.

In contrast, the lower panel shows the net worth of each cohort after removing the real holding gains between 1983 and 2001.[18] Without the high rate of capital gains, wealth accumulation of the younger cohorts seems very similar to that of prior experience. We might have expected some upward drift because the younger cohorts have a higher expected lifetime income. Thus, the finding that the wealth accumulation is so similar across age cohorts is consistent with a view that the younger cohorts are saving at a slightly lower rate out of income. The jump in wealth in the last period is due to the large discrepancy between the SCF and Flow of Funds measures in 2001.

Despite the reasonableness of the cohort-based estimates of wealth, our efforts to construct estimates of saving by cohort from the SCF have been largely unsuccessful. The measure of saving requires a comparison of a cohorts' wealth between two successive surveys. Although the wealth data accord well with the F/Fs, the discrepancies are large enough relative to the change in wealth to have a substantial effect on the estimate of saving. The result was highly erratic saving estimates.

Alternatively, we explored the use the SCF for a more limited purpose of providing some underlying micro structure to the analysis of aggregate saving from the F/Fs. The methodology paralleled that of Sabelhaus and Pence (1999). Thus, we proportionately adjusted the categories of assets shown in tables 2 and 4 to align the SCF with the F/Fs in each survey year. In effect, the SCF is assumed to accurately represent the ownership structure of the F/Fs data. The estimates of wealth by age cohort are shown in table 6.

Second, we used the same procedures as in the panel analysis to distinguish between holding period gains and net purchases between the dates of each of the six SCF surveys. That is, we used publish price indexes to measure the capital gain in equities and housing, and the reconciliation tables of the flow of funds for other components. For each survey, we can compute two measures of wealth that are adjusted for holding period gains. The first increases the initial period wealth for the percentage holding period gain in subsequent years until the next survey. The second measure adjusts the wealth estimate down to remove the capital gains

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[18] The capital gains adjustment for total net worth is constructed directly for the reconciliation table of the flow of funds. Over the prior 18-year period, real gains, as measured in the F/Fs were a negative one percent, and for the period 1950-83, they averaged 0.3 percent. Thus, the assumption of no real holding gains for the 1983-2001 periods seems to be a reasonable counter case.

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estimated to have accrued over the period since the prior survey. Therefore, for each period between the wealth surveys, our estimate of the distribution of the holding period gain across households is based on the average of the distribution of assets at the beginning and end of the period. Saving in each period is :

(1) $\quad S_i = \left(W_i^{'} - W_{i-1}\right) * .5 + (W_i - W_{i-1}^{''}) * .5$

where W´ is wealth adjusted for prior holding period gains, and W˝ is adjusted for future gains.

Third, all of the respondents are arrayed by their age in 1983. The result is an estimate of the change in wealth, holding period gains and net saving by age cohort. Except for some adjustments of timing to reflect the dates of the survey, the aggregate change in saving is the same as that of the F/Fs, but it can be distributed by age cohort.

The basic data are arrayed in table 7 by 10-year age cohorts. Again, all of the estimates are adjusted to 2001 dollars using the CPI research series as the measure of price inflation. The top panel shows the annual change in wealth holdings by age cohort for the 5 sub-periods. The changes are clearly dominated by the varying magnitudes of capital gains, with 1995-98 being a period of particularly large increases in asset prices. The fluctuations in capital gains dominate any inference about the underlying saving behavior of the various cohorts.

The second panel presents the estimated saving of each cohort after excluding the capital gains. The gains are particularly large and volatile for equities. Since the holdings of equities are concentrated among households in the middle of the age distribution, they have the largest adjustment. The adjusted data clearly capture the decline in aggregate saving. The amount of saving in the 1998-2001 period is near zero. The data also show sharp differences in saving across the age cohorts, with negative saving estimates for the older cohorts.

The negative saving in the older age groups is a reflection of a high mortality rate as well as any propensity to dissave in retirement. Unlike the situation with the prior panel analysis, we have no way to adjust the data to follow a common group of people in the older ages. There is a surprising negative estimate of saving for the age 40-49 cohort in 1992-95 when the oldest member is only age 61, and the period-to-period changes for all of the age groups are quite variable.

One potential method of adjusting for mortality is illustrated in the third panel where saving is computed on a household basis-- the change in adjusted wealth per household. This is equivalent to an assumption that individuals who died within the period had a level of wealth

equal to the average for their cohort. The assumption conflicts with evidence that individuals with low wealth and low income die at a younger age. The extent of that possible influence on the saving data is very evident in the table where the saving of the older cohorts sometimes changes sign. This occurs whenever the percentage decline in the number of households is larger than the decline in adjusted wealth. The conversion to a measure of saving on a per household basis also changes the pattern of changes for younger cohorts because of some unexpected volatility in the number of household head in each cohort.

Some of the volatility in the synthetic cohort data results from problems in classifying the age of a household. In the SCF, wealth data are collected for the primary economic unit in the household. Couples are classified by the age of the husband, or the oldest member for same-sex couples. The reporting unit for other households is the economically-dominant member. Thus, there is a substantial increase in the number of male households up to about age 30, as they move from living with their parents or in a group home to forming their own household.   The number is then very stable until it declines in older age due to death. On the other hand, younger females would not appear in the statistics to the extent that they are part of a couple household. As a result, the number of female-headed households is more volatile and rises sharply in the older ages, presumably due to divorce or the death of the husband. As a result, the age of a household can change with changes in its composition. The number of household heads by age cohort is reported in table 8 for each of the survey years. It is evident that there is enough variation to significantly alter the pattern of cohort saving.

Overall, the analysis of the cohort data yields very little insight into the sources of the decline in saving. This is true even though the analysis occurs within a structure that subsumes the decline in aggregate saving and looks only for some compositional changes. There is a large decline in wealth among the older age cohorts, but we cannot distinguish between the portion due to dissaving versus death.

Conclusion

After this review of the fall in the U.S. saving rate over the past two decades, we are struck by how little is known about why it has occurred or among what socioeconomic groups the decline is concentrated. The U.S. has an extensive set of economic surveys designed to monitor an extraordinary range of economic behavior of both firms and households. Yet, we

collect almost no information of saving behavior. Without direct information on the behavior of individual households or socioeconomic groups, it is doubtful that we will ever provide a convincing explanation of why saving has declined or provide a convincing perspective on the prospects for a recovery.

Much of the rationale for the lack of survey information on saving behavior is tied to the presumed difficulties of collecting meaningful data. Certainly, that would seem justified by prior attempts to use survey data from sources such as consumer expenditure surveys. It is also a problem because saving patterns are known to be very heterogeneous across household groups. Furthermore, if our interest is derived from concerns about trends in aggregate economy-wide saving, we know that it is dominated by a relatively small number of high-income households that are notoriously hard to capture in the surveys.

However, our review of the data obtained from the Survey of Consumer Finances leads us to conclude the assessment of the problems is overly pessimistic. The Federal Reserve has made a major step forward in developing a survey technique that has been consistently successful in obtaining cross-section estimates wealth that conform closely with the aggregate wealth estimates of the Flow of Funds. Furthermore, our evaluation of the panel portion of the 1983-89 SCF suggests that it provides meaningful measures of saving at the level of major groups of households. The difficulties of adjusting for capital gains and losses suggests that measures of saving at the level of individual households will always be very erratic, but most of the interest is in the saving of specific socioeconomic groups where the volatility of the valuation adjustment can be mitigated by aggregation. We can show, for example, that high-income, highly-educated households account for the bulk of the aggregate saving, even if we do not know if they are responsible for the decline.

We also conclude that efforts to substitute for panel-based measures of saving through the construction of synthetic cohorts is severely limited. There is too much variation in the composition of the age cohorts, and too little information on the characteristics of household that disappear from successive cross-sections of the population through death. In the cohort data, dissaving and death have comparable impacts on the change in wealth, but their implications are much different. To distinguish the two, we need direct observation of the active saving behavior of surviving households.

There is an opportunity to increase substantially our knowledge of the fall in saving if the next SCF repeated the pattern of the 1989 survey, and devoted half of the sample to a re-interview of households who participated in the prior survey. It is undoubtedly difficult to induce households to participate a second time, but the problems would seem to be less severe than convincing them to participate initially. In addition, the expanded role of computer-assisted interviewing has the potential to greatly improve the quality of the data by assuring greater consistency with the prior interview.

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Figure 1. Private and Personal Saving, 1950-2004

percent of income
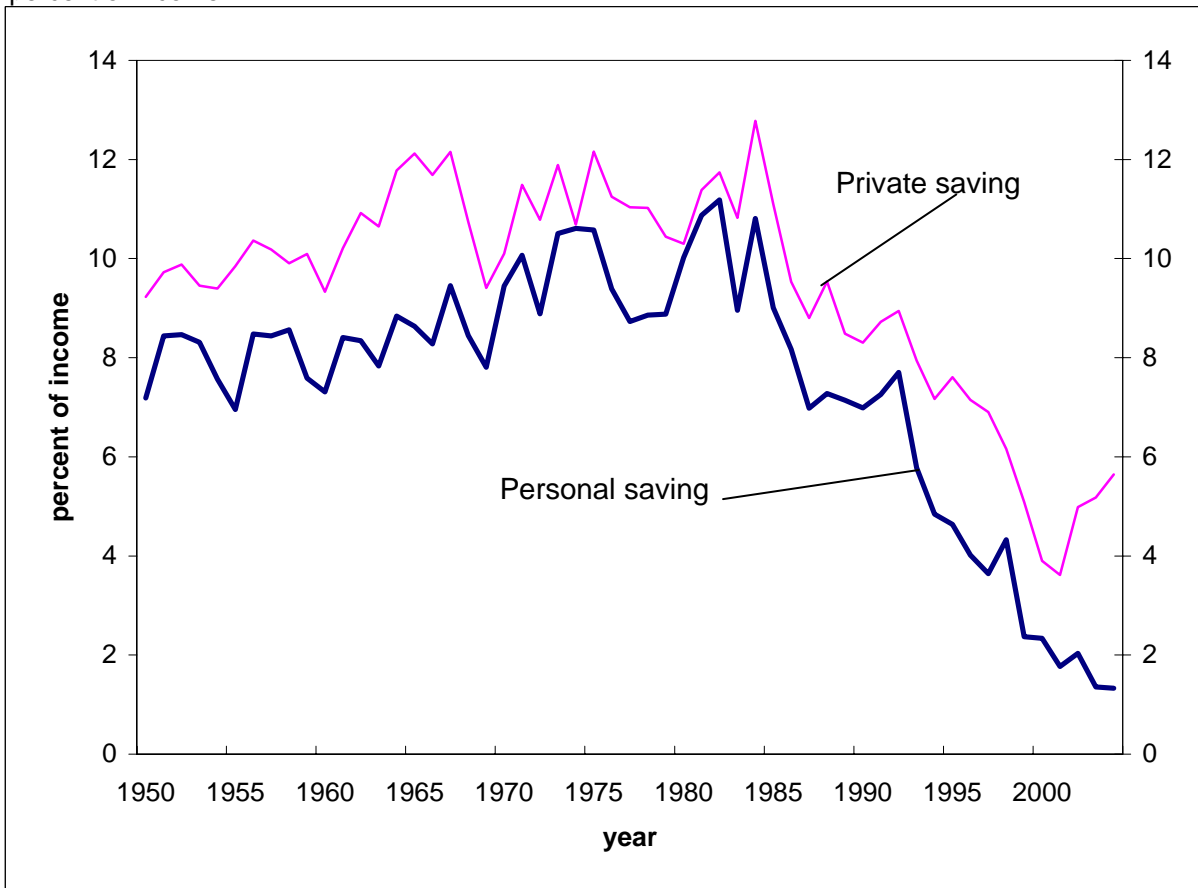
Source National Income and Product Accounts.
Personal saving is measured as a percent of disposable income
Private saving is measured as a percent of national income.

Table 1. Components of Personal Saving, 1952-2003

Component	Period						Change
	1950-79	1980-84	1985-89	1990-94	1995-1999	2000-2004	
	(1)	(2)	(3)	(4)	(5)	(6)	(6)-(2)
Household saving	8.6	10.4	7.7	6.5	3.8	1.8	-8.6
Pension saving	3.0	5.9	6.3	4.9	2.7	2.1	-3.8
Individual retirement accounts	0.0	1.0	1.8	1.7	2.2	2.3	1.3
Other saving	5.6	3.5	-0.3	-0.2	-1.2	-2.6	-6.1
NIPA-FFA (discrepancy)[a]	-2.2	-1.7	-2.6	-2.3	-0.9	0.3	2.0
FFA other	7.8	5.2	2.3	2.1	-0.2	-2.9	-8.1
Pension fund reserve accumulation	3.0	5.9	6.3	4.9	2.7	2.1	-3.8
State and local gov't retirement funds	0.7	1.4	1.8	1.2	0.9	0.1	-1.3
Federal government retirement funds	0.3	0.5	1.0	0.9	0.8	0.6	0.1
Life insurance companies	0.5	1.4	1.6	1.3	1.2	1.9	0.5
Private pension funds	1.4	2.6	1.9	1.5	-0.2	-0.5	-3.1
Defined benefit			0.3	0.5	-0.8	-0.8	
Defined contribution			1.0	1.0	0.6	0.2	
Addenda:							
Percent of disposable income:							
Consumer durables	2.4	1.2	2.7	1.4	2.3	2.7	1.4
Inflation adjustment	2.4	3.0	2.4	1.9	1.0	0.6	-2.5
Realized capital gains	3.4	4.1	5.6	2.8	5.9	4.7	0.6
Real capital gains	10.6	8.6	15.5	0.8	44.3	2.7	-5.9
net equity withdrawal	-2.0	-0.9	0.4	-0.5	-0.9	2.1	3.0
Wealth-income ratio (excl. cons. durables)	4.3	4.1	4.4	4.4	5.2	5.1	1.0

Source: National Income and Product Accounts, Flow of Funds Accounts (June 2005 release), and authors'
estimates. The estimates of realized capital gains were obtained from U.S. Treasury (2002), and updated with
information from the Congressional Budget Office.

Table 2. Survey of Consumer Cross-Section vs. Flow of Funds, 1983-2001
billions of nominal dollars

Wealth Component	1983		1989		1992		1995		1998		2001	
	SCF Cross-Section	FFA	SCF Cross-Section	FFA	SCF Cross-Section	FFA	SCF Cross-Section	FFA	SCF Cross-Section	FFA	SCF Cross-Section	FFA
Assets - matching components	**11,223**	**9,821**	**17,900**	**16,470**	**18,982**	**19,164**	**22,137**	**22,339**	**31,542**	**30,027**	**43,395**	**35,752**
Deposits	1,106	1933	2,132	3083	2,164	3135	2,294	3108	2,869	3621	4,029	4398
Credit market instruments	394	417	850	935	774	1274	797	1502	785	1644	1,158	1836
Mutual funds	134	78	491	466	808	704	1,679	1173	2,897	2288	4,334	3056
Corporate equity	2,223	788	2,500	1540	2,796	2393	3,584	3127	6,242	5813	8,425	6003
Publicly Traded	931	542	944	1050	1,087	1599	1,420	2040	3,130	4319	4,360	4349
Closely Held	1,291	245	1,556	490	1,709	794	2,164	1087	3,112	1494	4,065	1655
Noncorporate business equity	993	2436	3,778	3001	4,004	3107	3,656	3468	4,753	4153	6,158	4786
Trusts	309	303	457	506	359	650	528	751	1,229	972	2,206	1,028
Pension assets (DC only)	353	261	827	650	940	917	1,535	1293	2,059	2081	2,799	2332
Real estate	5,426	3363	6,496	5939	6,733	6551	7,417	7373	9,835	8764	13,210	11463
Life insurance reserves	285	242	369	351	404	433	648	543	873	692	1,075	850
Liabilities - matching components	**1,675**	**1,503**	**3,128**	**2,947**	**3,390**	**3,604**	**3,896**	**4,388**	**5,072**	**5,398**	**5,949**	**6,992**
Housing Debt	1,370	1080	2,583	2162	2,865	2772	3,206	3272	4,130	3983	4,949	5144
Credit/Other Debt	305	423	545	785	524	832	690	1117	942	1415	1,000	1848
Net Worth - matching components	**9,548**	**8,318**	**14,772**	**13,523**	**15,593**	**15,560**	**18,241**	**17,950**	**26,470**	**24,630**	**37,446**	**28,760**

Source: Survey of Consumer Finances and Flow of Funds Accounts, various years, and authors' calculations.

Table 3. Components of Household Income, Alternative Sources, 2000
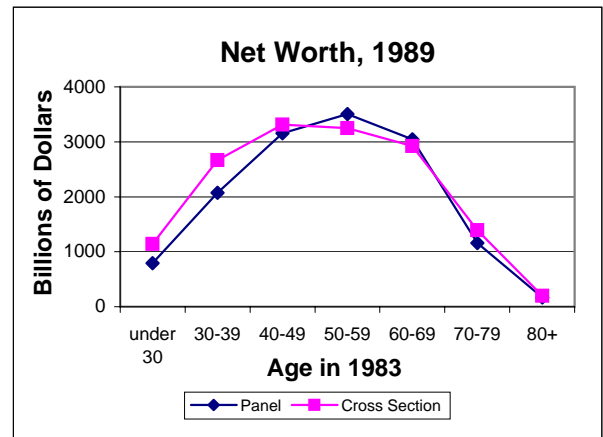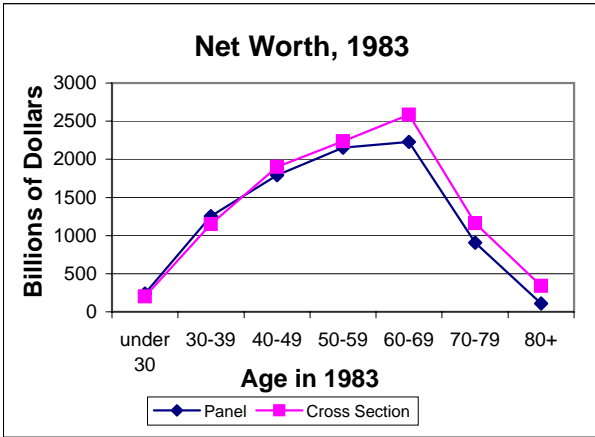billions of dollars

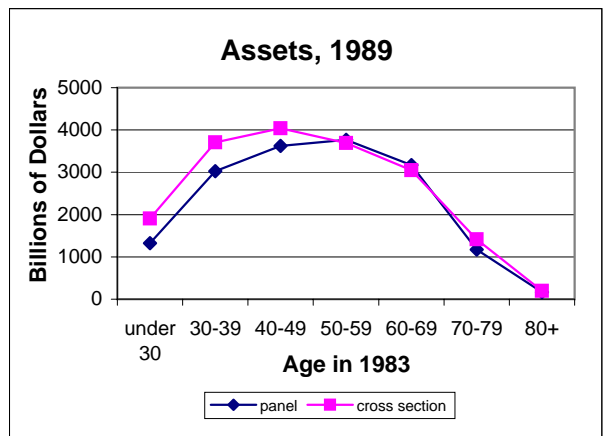| Component	Survey of Consurmer Finances (1)	Current Population Survey (2)	National Income and Product Accounts (3)	(1)/(3) (4)	(2)/(3) (5)
Earnings	5,664	5,306	5,558	101.9	95.5
Wages	4,997	4,978	4,829	103.5	103.1
Self Employment Income	667	328	728	91.5	45.0
Capital Income	490	241	804	61.0	30.0
Interest income	195	188	277	70.4	67.8
Dividends	108	88	376	28.6	23.3
Rents, royalties, and trusts	187	53	150	124.6	35.3
Transfers	619	772	815	76.0	94.7
Workers and unemployment compensation	15	35	31	48.5	112.7
Child support, alimony, inheritances, and gifts	28	30	.		
Welfare, TANF, food stamps, SSI, other	19	78	48	40.3	161.5
Retirement benefits, social security, other disability, etc	556	629	735	75.6	85.5
Other income	51	8	.		
Total Income	6,825	6,327	7,177	95.1	88.2

Source: authors' calculations

Figure 2. Survey of Consumer Finances, Panel versus Cross Section by Age
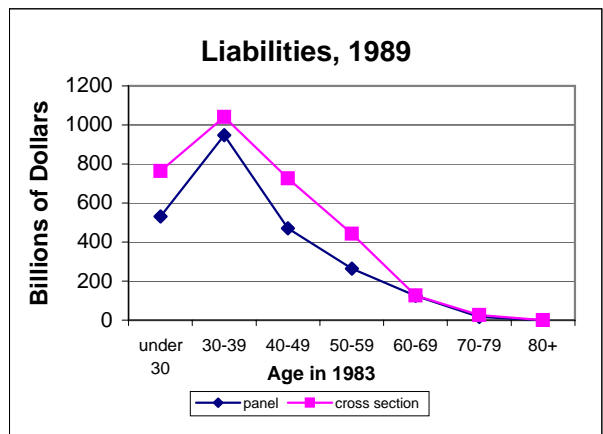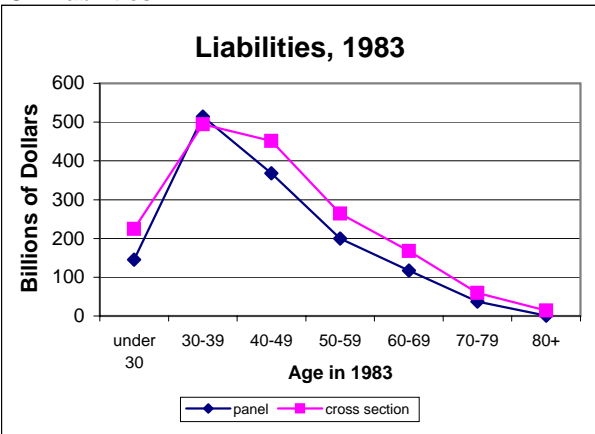
A. Net Worth

Net Worth, 1983

Net Worth, 1989

B. Assets

Assets, 1983

Assets, 1989

C. Liabilities

Liabilities, 1983
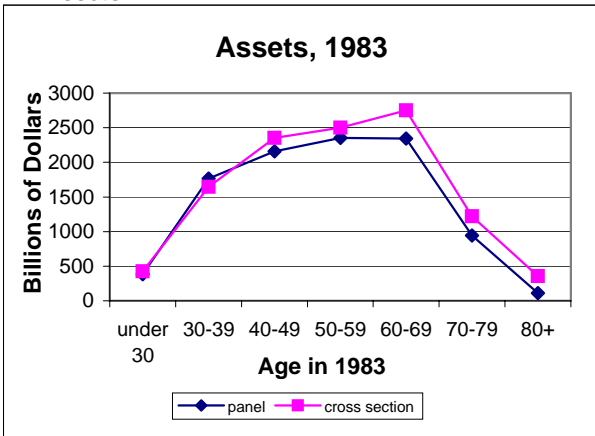
Liabilities, 1989

Source: Author's calculations based on SCF data sets.

Table 4. Comparison of Survey of Consumer Finances and Flow of Funds Accounts
billions of nominal dollars

Wealth Component	1983 Levels		Wealth Change (1983-89)		Saving (1983-89)	
	SCF Panel	FFA	SCF Panel	FFA	SCF Panel	FFA
Assets - matching components	10,027	9,821	6,112	6,648	2,029	2,719
Deposits	970	1,933	1,016	1,150	1,016	1,288
Credit market instruments	343	417	472	518	472	506
Mutual funds	109	78	280	388	210	328
Corporate equity	2,285	788	280	752	-948	-633
Publicly Traded	995	542	8	508	-866	
Closely Held	1,290	245	273	245	-81	
Noncorporate business equity	826	2,436	2,320	564	1,858	-161
Trusts	225	303	8	203	-56	72
Pension assets (DC only)	318	261	352	389	170	192
Real estate	4,736	3,363	1,249	2,576	-721	1,018
Life insurance reserves	216	242	135	108	28	108
Liabilities - matching components	1,382	1,503	974	1,444	974	1,447
Housing Debt	1,054	1,080	871	1,082	871	1,099
Credit/Other Debt	327	423	102	362	102	348
Net Worth - matching components	8,645	8,318	5,139	5,205	1,056	1,271

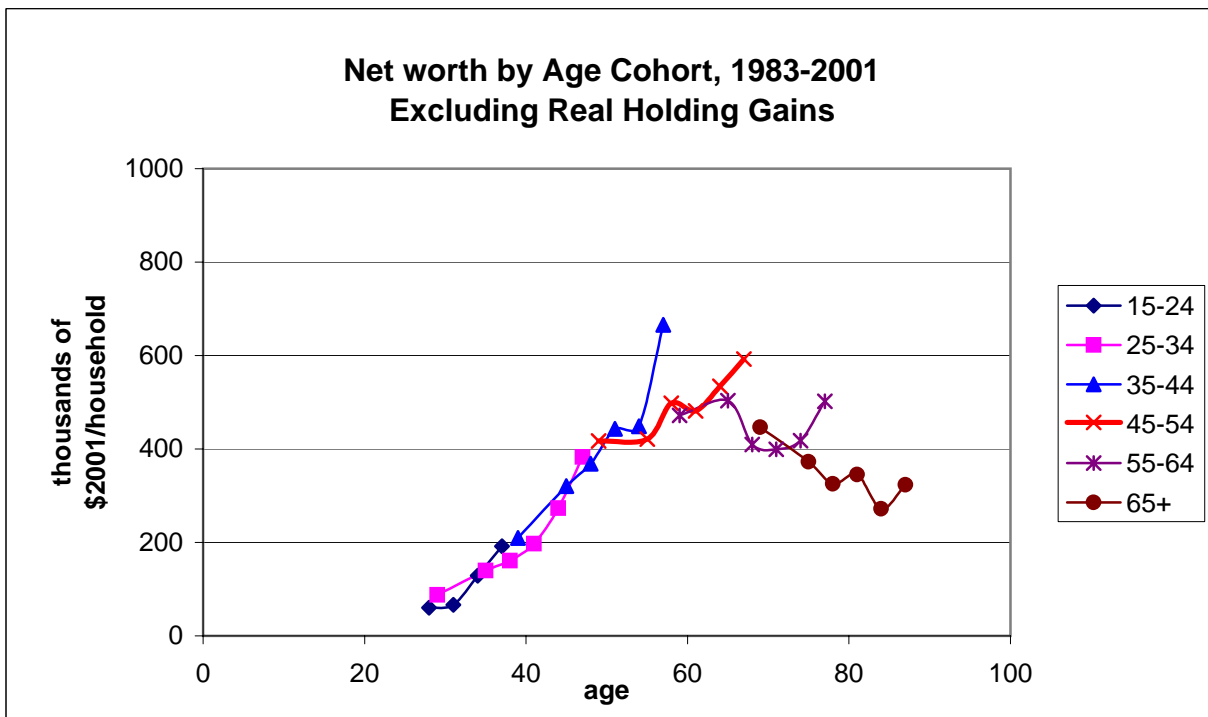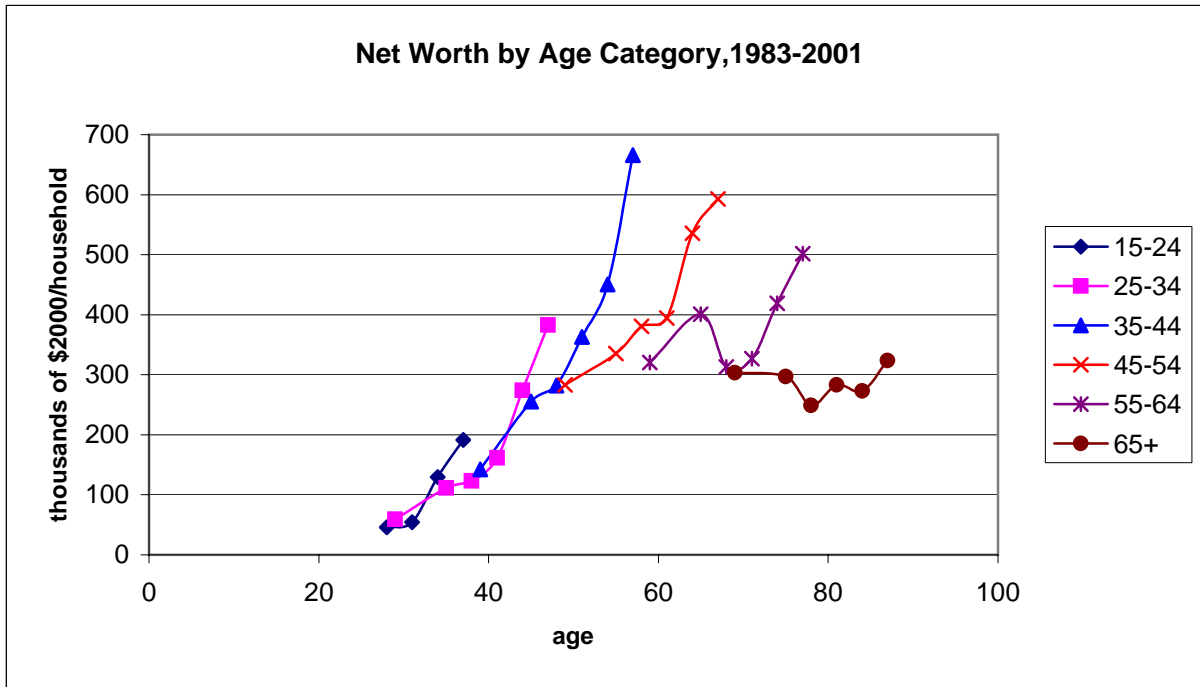Source: Survey of Consumer Finances and Flow of Funds Accounts, various years and authors' calculations.
Note: Wealth change is the difference between 1989 and 1983 components inclusive of capital gains. Saving excludes capital gains.

Table 5. Saving and Inheritances by Socioeconomic Characteristics, 1983-89

	Saving excluding inheritances (billions $)	Mean Saving (dollars)	Saving Rate (percent)	Inheritances (billions $)	Incidence of inheritance (percent)	Households (percent)
Age of household head in 1983						
Under 40	304	11,261	4.4	101	8.6	43.9
Age 40-60	630	30,888	10.2	213	15.8	33.3
Over 60	-186	-6,524	-6.8	65	8.0	22.8
Income in 1983						
Lower third	-162	-4,426	-8.4	41	8.5	33.4
Middle third	9	4,004	0.2	100	7.4	33.1
Upper third	901	41,490	9.2	238	16.7	33.5
Educational level of household head						
Less than high school	-161	-5,904	-7.4	26	7.6	27.9
High school and some college	348	12,693	4.8	170	9.1	49.8
College and greater	561	40,668	8.9	182	19.0	22.3
Net worth in 1983						
Lower third	324	13,515	10.3	43	7.8	33.1
Middle third	449	18,808	10.8	58	8.4	32.9
Upper third	-25	9,089	-0.3	278	16.3	34.0
Wealth/Income in 1983						
Lower third	423	17,401	11.9	49	8.4	33.1
Middle third	827	33,745	14.3	84	10.5	32.9
Upper third	-502	-9,173	-7.7	246	13.6	34.0
Homeowner in 1983						
Not a homeowner	269	11,349	6.4	75	9.8	37.0
Homeowner	479	15,161	4.1	304	11.5	63.0
Homeowner in 1983 and 1989						
Not a homeowner	1	2,734	0.0	109	9.6	49.1
Homeowner	746	24,363	7.7	270	12.1	50.9
Total	748	9,130	4.7	378	10.9	100

Source: Authors's calulations as described in text.

Figure 3. Net Worth per Household, With and Without Capital Gains,1983-2001

Net Worth by Age Category,1983-2001

Net worth by Age Cohort, 1983-2001
Excluding Real Holding Gains

Table 6. Wealth Holdings by Age, 1983-2001

billions of 2001 dollars

Age in 1983	1983	1989	1992	1995	1998	2001
			Total Wealth			
Under 10	-	-	10	15	50	254
10-19	13	159	211	350	1,225	1,350
20-29	305	1,302	1,725	2,128	4,218	5,320
30-39	1,765	3,413	3,766	5,076	6,639	7,792
40-49	2,754	4,091	4,770	4,894	6,845	6,947
50-59	3,314	4,267	4,672	4,710	5,188	5,592
60-69	3,980	3,870	3,409	3,089	2,776	2,190
70+	2,314	2,233	1,516	1,191	601	249
Total	14,445	19,336	20,079	21,453	27,542	29,693
			Wealth per Household			
Under 10	-	-	34,594	9,425	9,554	24,789
10-19	21,332	22,865	18,364	21,274	65,545	67,690
20-29	19,238	61,418	78,040	96,185	176,879	212,351
30-39	98,781	174,480	193,344	245,290	337,259	397,951
40-49	191,729	289,375	351,053	392,812	519,774	544,021
50-59	260,741	343,695	355,815	379,699	450,780	472,389
60-69	335,159	337,449	331,963	302,125	340,536	372,909
70+	217,771	306,095	271,687	389,605	259,659	207,745
Total	172,137	207,867	209,336	216,674	268,578	278,816

Source: SCF data adjusted to the levels of the Flow of Funds

Table 7. Annual Changes in Wealth and Saving by Age

billions of 2001 dollars unless otherwise indicated

Age in 1983	1983-1989	1989-1992	1992-1995	1995-1998	1998-2001
Change in Wealth					
Under 10	0	3	2	12	68
10-20	24	17	46	292	42
20-29	166	141	134	697	367
30-39	275	118	437	521	384
40-49	223	226	41	650	34
50-59	159	135	12	160	134
60-69	-18	-154	-107	-105	-195
70+	-13	-239	-108	-197	-117
Total	815	248	458	2030	717
Saving					
Under 10	0	3	1	6	55
10-20	21	17	35	202	-49
20-29	126	134	89	403	173
30-39	189	127	367	6	187
40-49	124	251	-23	152	-113
50-59	87	180	-19	-147	43
60-69	-71	-105	-109	-265	-228
70+	-32	-214	-108	-246	-124
Total	445	394	234	110	-56
Saving per Household 2001 dollars					
Under 10	0	17864	1149	1522	6855
10-20	3690	1461	2072	10284	-2456
20-29	4449	4762	3384	15703	6786
30-39	6585	4999	15317	254	9109
40-49	5688	13963	-1474	10661	-8351
50-59	4529	10876	-1234	-11033	3552
60-69	-3951	-7406	-8874	-25831	-31125
70+	-2309	-25644	-20936	-82271	-67758
Total	3287	3214	2013	976	-515

Source: Survey of Consumer Finances benchmarked to FFA and author's calculations.

Table 8. Number of Households by Age

millions of households

Age in 1983	1983	1989	1992	1995	1998	2001
Under 10	0.0	0.0	0.3	1.6	5.2	10.2
10-19	0.6	6.9	11.5	16.5	18.7	19.9
20-29	15.9	21.2	22.1	22.1	23.8	25.1
30-39	17.9	19.6	19.5	20.7	19.7	19.6
40-49	14.4	14.1	13.6	12.5	13.2	12.8
50-59	12.7	12.4	13.1	12.4	11.5	11.8
60-69	11.9	11.5	10.3	10.2	8.2	5.9
70+	10.6	7.3	5.6	3.1	2.3	1.2
Total	83.9	93.0	95.9	99.0	102.5	106.5

Source: Survey of Consumer Finances benchmarked to FFA and author's calculations.