SAVING AND WEALTH ACCUMULATION IN THE PSID, 1984-2005

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Abstract

This paper reports on a project to construct and evaluate a wealth and saving dataset for those households who responded to the supplementary wealth and active saving modules of the Panel Study of Income Dynamics (PSID) over the period of 1984 to 2005. The PSID is unique in providing household-level estimates of active saving and net wealth accumulation. The dataset includes measures of wealth, net wealth accumulation, and active saving covering seven wealth surveys and six periods for saving and wealth accumulation. For individual years, the sample sizes vary between 7 and 8 thousand families. The number of families participating in multiple periods is less, but 1,963 have participated in all seven of the wealth surveys. In comparisons with the SCF, we find that the wealth data of the PSID yield very similar results for the bottom 95 percent of the wealth distribution, but the very wealthy are underrepresented in the PSID. The major advantage is that the PSID has multiple observations on a family's wealth over the two decades of coverage.

The micro-level data are also very consistent in the differences in saving and wealth accumulations that they imply across various socio-economic groups. However, the data do not capture the phenomenon of a secular decline in household saving rates over the past two decades that is so evident in the macroeconomic analysis. The measures of wealth accumulation, in contrast, do accord with other evidence of a secular rise in the ratio of household wealth to income. The growth of total wealth over the period of 1994 to 2005 is very similar to that reported in the Flow of Funds Accounts, and it compares very favorable with the estimated wealth gains shown in the SCF. A plausible explanation for the differing results for saving and wealth accumulation is that the survey respondents do not adequately distinguish between active saving decisions and capital gains in accounting for their increases in wealth. Given the strong gains in asset values over the past decade, it is possible that active saving is overstated.[1] At present, our analysis is insufficient to provide an informed answer.

Finally, we used the panel dimension of the data set to explore the question of the effect of capital gains on saving. However, the results were ambiguous and the exercise suggests that measurement errors are a particularly serious problem in the time series dimension of the dataset, and that more powerful methods of controlling for their influence need to be applied in future work.

[1] In at least one area, our assumption that all of the change in homeowner equity for those who moved represented active saving, the estimate is overstated.

Introduction

The U.S. household saving rate has collapsed over the past two decades, falling from 10 percent of income in the early 1990s to less than one percent in 2005-06. This drop is particularly surprising given the large cohort of baby-boomers who should be well into their peak saving years. Several studies have analyzed potential explanations of the saving decline from a macroeconomic perspective.[1] Those explanations include consumption increases induced by the wealth gains of the 1990s, lighter taxes on capital gains, and innovations in mortgage finance and housing credit.

To date, the macroeconomic studies highlight a remarkable lack of consensus on the causes of the reduced saving. The analyses have drawn attention to some of the characteristics of the decline: the extraordinary growth in capital gains, the influence of alternative concepts of saving, and the growing role of pension funds and other forms of contractual retirement saving. Agreement on the fundamental reasons, however, remains elusive. The basic difficulty is that the decline in the household saving rate is a single event even though it has extended over several years. In the absence of greater variation and repeated episodes of similar changes within the United States or other countries, the macroeconomic data are not sufficient to distinguish among the various competing hypotheses.

This paper reports on the analysis of an alternative micro-level data set, the Panel Study of Income Dynamics (PSID), which has followed the evolution of the wealth and saving of a representative sample of individual family units over the past two decades. We used the micro-level data to see if we could determine whose saving has declined and their characteristics, or whether it is a universal phenomenon common to most families. Conceptually, the PSID provides measures of wealth accumulation and saving across a wide range of families differing in age, marital status, education, income, and the composition of their wealth holdings. While the ultimate objective is to explore the dynamics of wealth accumulation, the emphasis of this paper is an evaluation of the quality of the data on saving and wealth accumulation in the PSID. We compare the measures of wealth and saving in the PSID with aggregate data of the national accounts

[1] See, for example, Parker (1999), Lusardi and others (2001), and Peach and Steindel (2000). Poterba (2000) provides a survey that emphasizes the link between the stock market and consumption.

and other survey information, and use it measure differences in saving and wealth accumulation across various socioeconomic groups. However, on the central issue of the study, the PSID does not indicate a pattern of decline in overall rates of saving.

The following section provides a review of the macroeconomic trends and the major research issues. It also summarizes past research that has used micro-level family data, primarily from the PSID. The second section outlines the procedures that were used to construct our data. That is followed by two sections that compare the measures of family wealth in the PSID with those of the Survey of Consumer Finances (SCF). The comparisons demonstrate the value of a panel data set in tracing out the dynamics of wealth accumulation as families age. The fifth and sixth sections focus on the measures of wealth change and its division between active and passive (capital gains) saving. This is the unique feature of the PSID as no other survey provides such information on the change in household wealth.

I. Macroeconomic Overview and Literature Review

The magnitude of the post-1980 collapse of household (personal) saving is most evident in figure 1. In the three decades spanning 1950 to 1980, the saving rate displayed a modest upward trend with a standard deviation of less than one percentage point. Since the early 1980s, the saving rate has declined from 10.4 percent of disposable income to an average of only 0.5 percent in 2005-2006. A broader measure of private saving, inclusive of corporate saving, has a very similar pattern, except for a substantial rise of corporate profits and retained earnings in recent years. In addition, data from the flow of funds allow saving to be separated into a pension component, for which families have only limited information and control, and more discretionary forms of saving. In the 1980s, the pension accounts provided some offset to the reduction in other forms of saving; but over the past decade, pension saving has also dropped substantially. Some of this decline simply reflected the transfer of funds into Individual Retirement Accounts (IRAs).[2] However, the inclusion of the IRAs with pensions suggests that a large portion of the reduction in saving has taken place outside of the retirement accounts. Since the first half of the 1980s, the total household saving rate has fallen by 9.9 percent of income,

[2] Details are provided in table A1.

with a 4.2 percentage point drop in pension saving, an offsetting 0.6 percentage point rise in IRAs, and a 6.3 percentage point fall in non-contractual saving. The measure of saving embedded in the Flow of Funds Accounts suggests that the overall decline is an even larger 11 percent of income.[3]

Much of the discussion of the potential causes of the saving decline has emphasized the role of capital gains on real estate and equities. Capital gains have contributed to a substantial rise in the wealth-income ratio since the 1980s. Wealth has grown from about four times income in the early 1980s to five times income today (figure 2). In addition, several empirical studies have suggested that the home equity component may be more important than other forms of wealth in influencing consumer spending because housing wealth is more broadly distributed across the income distribution and valuations have been less volatile.[4] Estimates of the marginal propensity to spend out of aggregate wealth remain controversial, but seldom exceed 5 percent. With such an upper-bound estimate, the increase in wealth would account for about 5 percentage points of the decline in the saving rate.[5] As shown in figure 2, however, the rise in the wealth-income ratio is concentrated in the years after 1994, whereas figure 1 shows a sustained deterioration in the saving rate over the past two decades. Thus, aggregate wealth changes do not appear to be a reasonable explanation for the portion of the saving decline that occurred prior to 1995.

Still, capital gains may have played a substantial role in delaying what would otherwise be a self-corrective process. Normally, reduced saving implies a slower rate of wealth accumulation and its own built-in corrective mechanism as a decline in the wealth-income ratio leads to a scaling back of consumption relative to income. However,

[3] The flow of funds derives an alternative measure of saving from changes in assets and financial liabilities. The measure of the net change within the household sector is often a residual derived from transactions reported for other sectors, and it is not fully independent of the national accounts' framework. Yet, the statistical discrepancy between the two series is reflective of some of the measurement uncertainties.

[4] Several recent studies have addressed the relative importance of housing and other forms of wealth. Belsky and Prakken (2004) conclude that gains in housing and equity wealth have comparable long-run effects on consumption, but that housing wealth gains are more certain and are realized with a shorter lag. Case and others (2005) use regional variations in housing prices to infer that housing wealth has the larger impact. Carroll and others (2006) find an effect of housing wealth that is greater than that of equities in both the short and long run.

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

as shown in figure 2, the reduced rate of saving has been more than offset by the accelerated rates of capital gain since the mid-1990s.

There has also been considerable investigation of mortgage refinancing as a mechanism that facilitates the withdrawal of homeowners' equity to fund consumption. The sharp decline in refinancing costs coupled with lower interest rates has encouraged homeowners to refinance.[6] In addition, at the time of refinancing, homeowners have the option to increase the size of the new mortgage as a means of withdrawing equity for other uses. It is useful to distinguish between "passive" equity withdrawal which occurs upon sale of a property, and "active" equity withdrawal which is associated with additional debt either through the refinancing of an existing mortgage or a home equity loan on a currently-owned property. Since passive withdrawal is a longstanding phenomenon associated with the sale of homes by older families with small mortgages to younger families with large mortgages, most of the assumed impact on consumption relates to active equity withdrawal.

Empirical estimates of the magnitude of equity withdrawal by Greenspan and Kennedy (2005, 2007) on equity withdrawal has been greatly stimulated research on the subject. They provide estimates of both active and passive withdrawal back to 1991, as well as some rough estimates of the aggregate flow for earlier years. They also make use of several surveys (Canner and others, 2002), which inquired about the uses that households made of the funds, to derive their own estimates of the impact of mortgage equity withdrawal on the household saving rate. They find that the effects were minimal prior to the late-1990s; but, depending on the assumptions, the phenomenon could have explained 1.4 to 2.5 percentage points of the decline in the saving rate after 1998.[7]

Other studies argue that the effects are much smaller or inconclusive.[8] In particular, it is not clear whether the equity withdrawal is an independent influence on consumption, or simply a channel through which the previous discussion of the wealth

[6] According to data from Freddie Mac, average closing costs as a percentage of a 30-year mortgage have fallen from 2.5 percent in 1985 to 0.6 percent in 2006.

[7] Their high estimate assumes that the funds devoted to paying down other consumer debt ultimately fund additional consumption.

[8] Belsky and Praeken (2004) reported a transitory effect on consumption of 5 cents for every dollar of equity withdrawal. An updated study (Macroeconomic Advisors, 2006) found no significant effect using a model that included general wealth effects on consumption.

effect operates. The housing recession and the mortgage lending crisis of 2007-08 should provide greater clarification of the magnitude of the linkage.

Finally, several prior studies have employed micro-survey data on the behavior of individual families to explore various aspects of the decline in household saving. Most of that work used data from the PSID. Hurst and others (1998) used data on wealth accumulation in the PSID between 1984 and 1994 to demonstrate the heterogeneity of family saving behavior and the dominant role of capital gains in accounting for the wealth accumulation of individual families. Juster and others (2006) analyze the same family-level data on saving and wealth accumulation for 1984-89 and 1989-94. They argue that capital gains on equities, not housing, have been the primary contributor to the decline in the personal saving rate at the national level. Hurst and Stafford (2004) used the PSID over the period of 1989-96 to show that liquidity-constrained households who experienced a negative income shock had a heightened probability of refinancing their mortgages. They also found that liquidity-constrained families spent a larger portion of the funds from a refinancing on consumption.

Skinner (1996) used the 1984 and 1989 wealth supplements of the PSID to examine the influence of changes in home value on saving. He found a modest negative effect on saving that was larger for younger families and evidence that the effects were asymmetric: increases in home value had little effect of saving while declines led to offsetting increases in saving. He argued that families anticipated capital gains on their homes and only negative outcomes would alter their saving. His analysis was extended by Lehnert (2004) who also found strong differences by age of the effect of housing wealth on a constructed measure of consumption.

Finally, a few studies have used the Consumer Expenditure Survey (CEX) to measure changes in saving at the household level. The CEX provides a measure of saving based on income minus consumption, rather than the change in wealth estimates of the PSID.[9] Attanazio (1998) used the data to construct cohort profiles of saving and concluded that the saving decline of the 1980s was the result of low saving within the cohorts born between 1925 and 1937. He also found that capital gains have little or no

[9] The primary difficulty with the CEX is a consistent underestimate of consumption that has grown over time. The measurement problems are believed to be responsible for the secular rise in the household saving rate in the CEX.

effect on saving. Bostic and others (2004) merged data from the CEX and the Survey of Consumer Finances (SCF) created a synthetic household level sample. Using that data, they argued that that the marginal impact of housing wealth on consumption is twice that of other wealth components. Dynan and others (2004) used data on saving and wealth changes from the PSID, SCF, and the CEX to demonstrate a positive relationship between saving rates and lifetime income.

II. Data Construction

The basic data used in this study are drawn from the Panel Study of Income Dynamics (PSID). Begun in the 1960s, the PSID gathers longitudinal information on a nationally-representative sample of approximately 5,000 families and subsequent new units that were formed as members of the earlier families left to form their own family units. With various adjustments, the number of families grew to exceed 7,000 by 2005.

Our focus is on the supplementary questions, asked in seven waves of the survey, on the composition of household wealth. In the last six of those seven waves, some questions were also asked about net purchases or sales, since the prior survey, of assets in three categories that were subject to valuation changes (capital gains/losses). Thus, the survey allows us to compute total wealth, and to distinguish between the net accumulation of wealth and saving (excluding valuation changes) for six subperiods. The most important shortfall of the data is its exclusion of wealth that is held inside pension accounts. While these data have been used by other researchers, as outlined above, we have extended the data set to the post-1994 waves and have emphasized a panel dimension that follows the same families across the various subperiods of 1984 to 2005 (seven waves).

The supplemental wealth module was introduced in 1984 and was conducted on a periodic basis prior to 1999 (the 1984, 1989, and 1994 waves). Since 1997 the basic PSID survey has been conducted biennially, and starting with 1999 the wealth and active saving questions have been included in each wave (1999, 2001, 2003, and 2005). The wealth supplement distinguishes among eight asset components: (1) home equity, (2) other real estate, (3) private business/farm, (4) vehicles, (5) transaction accounts, (6)

corporate equities, (7) annuities/IRAs, and (8) other savings.[10] All of these assets are defined net of any associated debt. In addition, information is collected on a ninth category of non-collateralized debt. Home equity can be computed on an annual basis from information on home value and mortgage debt prior to 1999 and biennually in later years. The other components, however, are limited to the specific years of the wealth supplement. The questions have remained the same over time except for the separate identification of annuities and IRAs beginning in 1999.[11] Previously, the questions on transaction accounts and corporate equities were inclusive of funds in IRAs, but no mention was made of annuities.

In addition, beginning with the 1989 wealth survey, questions have been asked about purchases and sales of other real estate, private business, and corporate equities since the prior survey. These are the three wealth components, in addition to main residence, that are subject to valuation changes. Finally, information is collected on other financial transactions that would have a net impact on the family's wealth position. Net transfers are defined as the sum of any inheritances, gifts from friends or relatives, pension fund withdrawals, and funds brought into the family by a new member, less funds take out by those who leave. We also have information on the net purchase of annuities that can be used at some stages of the analysis. It is not clear if annuities are being reported as part of wealth by respondents. Missing observations have been imputed and those procedures are described more fully in appendix A. In all cases, the asset values were converted to 2000 prices using the annual consumption deflator of the national accounts, and the flow variables, purchases and sales of assets, were deflated by the average of the price deflator over the survey period.

Our basis unit of analysis is the family and we include both one-person and couple families. However, couple families are tracked by the identity of the head, who is defined as the adult male member. Since the computation of saving requires two

[10] More complete definitions of the asset categories are provided in appendix B, based on the wealth questions from the 2005 wave of the survey.

[11] The shift to a specific question on IRAs creates some discontinuities because we do not know the asset composition of the IRA accounts. In addition, the dollar value of the unfolding brackets used for respondents who did not give a precise answer to the wealth questions changed somewhat between 1984 and 1989, but remained the same thereafter. The unfolding bracket methodology was also introduced for housing in the 2005 wave.

observations in which the family is defined, marital transitions lead to the exclusion of single females, but not single males.

III. Validation

We first examine the extent to which the PSID is actually representative of the broad trends at the aggregate level that we hope to explain. Other studies have extensive discussions of the income data (Kim and Stafford, 2000), therefore we focus on the measures of family wealth. For wealth, we compare the estimates from the PSID with those from the Survey of Consumer Finances (SCF), since the SCF is widely viewed as the most sophisticated estimate of total household wealth. In a previous paper (Bosworth and Bell, 2005), we extended a benchmark analysis of Antoniewicz (2000) that compared components of aggregate wealth (excluding consumer durables) from the SCF and the Flow of Funds Accounts. The two measures of total wealth compare quite favorably, although the ratio of the annual estimates varies significantly over time and there are some differences in composition. Thus, we use the SCF as the basic standard of comparison for the PSID wealth estimates. The SCF has a far more extensive set of wealth questions and the sample includes a special component aimed at over-sampling high-income, high-wealth families. The SCF is administered on a three-year cycle and the survey years coincided with those of the PSID only in 1989 and 2001. Comparisons can be made for other years, however, by simple interpolations.

As a simple check on the sample weights, we compared the distribution of families in the two surveys by the age and educational attainment of the head. Those comparisons were very similar with some evidence that they have become more comparable over time. Within 10-year age brackets, the differences in the percentage distributions varied by less than two percentage points: the mean of the absolute differences was 1.7 percentage points in 1989 and 1.1 in 2001. Similar results were obtained when household heads were classified by educational attainment – less than high school, high school, some college, and college graduate.[12]

Table 1 reports average wealth holdings by decile groups for the two common years of 1989 and 2001. The definition of wealth differs from that normally used in the

[12] Additional details for 1989 and 2001 are provided in appendix table 2.

SCF by excluding consumer durables and defined-contribution pension plans.[13] All of the estimates are adjusted for inflation using the price deflator for personal consumption expenditures, and we used the decile breakpoints of the SCF in computing the within group means of both surveys. The two surveys are remarkably similar up to the 90th percentile, but the SCF has much larger estimates of wealth above the 95th percentile. There is also a problem at the bottom the distribution where a few families report very negative net wealth positions. In the middle of the distribution and up to the 95th percentile, the differences in the mean wealth holdings are less than two percent. Above the 95th percentile, the PSID severely underestimates family wealth holdings: differences in the mean of 15 percent in 1989 and 30 percent in 2001. Total household wealth is 25 percent less than total household wealth in the SCF in 1989 and 35 percent less in 2001.

It is evident that the PSID is not adequately capturing wealth information on the very richest American families.[14] This is not a surprising result of the sampling frame from which it was drawn, and it is the rational for the over-sampling of high-income families in the SCF. However, it is an important cautionary note for any application of the PSID to national estimates of wealth holdings and wealth accumulation. The issue is made even apparent in figure 1. The top two lines show the estimated average family wealth for every survey from 1983 to 2005. The gap is substantial and it has varied over time.

In contrast, the two lines in the lower portion of figure 3 report the estimates of mean wealth holdings for families below the 95th percentile of wealth, as defined by the breakpoints of the most recent SCF. The two surveys produce nearly identical measures of the wealth of those families and there is no evidence of any significant departure over the full period. Thus, we conclude that the PSID is a useful dataset for analyzing the wealth accumulation of "typical" families, but it does not fully capture the behavior of high-wealth families. The lack of coverage for large wealth holders is a major

[13] The PSID has no information on the value of pension plans.
[14] See Czajka and others (2003) for an additional analysis of the PSID and other household wealth estimates.

shortcoming for the analysis of wealth accumulation, but the PSID is the only survey that allows us to follow the saving behavior of individual families over time.[15]

On the other hand, it is important to note that the wealth estimates of the SCF have also varied significantly relative to total household wealth as reported in the Flow of Funds Accounts. The result for 2001 was abnormally high, whereas the 1989 and 2004 results were very close to the average ratio of the two estimates for the seven survey years. In their comparison of the PSID with the SCF for 1989, Juster, Smith, and Stafford (1999, p. 260) argue that the two-part structure of the SCF (the separate source for the high-income component) contributes to wide variability in the time-series estimates of wealth changes. In that respect, the PSID may be more representative of patterns of changes in wealth.

The wealth estimates of the PSID indicate a growth of total family wealth (2000 dollars) of 170 percent between 1984 and 2005, compared with 145 percent in the Flow of Funds Accounts. However, there are significant conceptual differences between the PSID and the flow of funds (primarily pensions), and the SCF provides a better match. The SCF reports a substantially lower rate of wealth accumulation, 120 percent, over the period of 1983 to 2004. However, the difference may be exaggerated by a reported decline in wealth in the SCF between 2001 and 2004; and, if the comparison is made for 1983-2001, the growth rates are very similar. Between 1989 and 2001, the years used in table 1, the SCF reports a higher growth.

IV. Age-Wealth Profiles in the PSID and SCF

Figure 4 presents comparisons of the age distribution of wealth in the PSID and the SCF in four different years over the past two decades. The top panel reports the results for the PSID. It indicates that the average wealth of young families – whose head is between 30 and 40 years of age -- has remained remarkably constant over time, and that the growth of average wealth is concentrated among older families. At the same time, the successive age profiles provide diminishing evidence of wealth decumulation among older families.

[15] The Survey of Income and Program Participation has on occasion included two estimates of household wealth over a period of about 18 months, but the sample appears to miss an even larger portion of total wealth. See Czajka and others (2003).

The analysis of the SCF in the lower panel shows a very similar pattern of small changes over time in the wealth of younger families. In fact, the age profiles remain very similar through ages 40-49. However, the SCF shows an even larger divergence over time of wealth holdings for older families. The differences between the two surveys can be largely accounted for by the greater concentration of wealth subject to capital gains among older families during the years in which capital gains have been of primary importance. However, the age profile from the 2004 SCF actually lies below that of 2001, a significant contrast with the results from the PSID.

These results highlight a major shortcoming of the analysis of the cross-section surveys: We do not know if the changes in the age profiles reflect factors in common to all birth cohorts or if they are age-specific. Given the shortage of panel surveys, synthetic age-cohort data are often constructed from repeated cross sections as a means of distinguishing age and cohort effects. That is, families of a fixed birth year are compared in surveys of different years. That approach can be used with successive SCFs, for example, to examine changes in wealth holdings over time. The key to the approach is that the cohort groupings must have a constant composition over time. That is unlikely, however, to be completely true of families that are subject to death, divorce, and remarriage. It is liable to be a particular problem for older families where the probabilities of death are believed to be negatively correlated with economic well-being. The waves of the PSID can also be viewed as a series of cross-sectional snapshots of wealth holdings, or as an ongoing panel that resurveys the same families over time. Because it follows individuals as they leave the primary family to form their own families, the PSID should, except for the important qualification that it does not capture new immigrants, remain representative of the total population.

Figure 5 shows three different measures of the cohort patterns of wealth accumulation. The top panel shows the results for synthetic age cohorts constructed from the seven successive rounds of the SCF. Compared to the cross section of figure 4, the cohort analysis suggests the evidence of cohort effects on wealth accumulation are only apparent only after age 50, and they might be accurately identified as common effects of the survey year. In particular, the decline in wealth in the 2004 observation for the two cohorts aged 40 to 59 in 1984 appears more related to the survey year than to age.

The middle panel presents estimates of wealth from synthetic age cohorts that are constructed from the seven wealth surveys of the PSID. The age-wealth profiles are notably lower than those of the SCF, consistent with the prior finding that the PSID under represents high-wealth families. However, the age profiles also rise more smoothly with age. The three older cohorts also show a more consistent pattern of higher wealth holdings for successive birth cohorts, a pattern that ends for the cohorts aged 39 and younger in 1984 – the baby boom generation. There is again very little evidence of a decline in wealth at the older ages.

Finally, the bottom panel reports the results for a continuous panel of families who had no change of head and responded in each of the seven waves of the wealth survey. There is a substantial decline in the number of families from 7 to 8 thousand in the full sample to 1,963 in the panel. In addition, the total panel is no longer a representative sample of the population since it does not include any families that were formed after 1984. However, it does have a strong representation of the older cohort groups. The pattern of cohort effects is very similar to that reported for the full PSID, implying that shifts of the within group composition is not a major problem for the construction of synthetic cohorts. The families that remain in the panel, however, are consistently wealthier than others of their age cohort. In that respect, the panel is also not completely representative of its own cohort population.

V. Saving and Wealth Accumulation in the PSID

The effort to separate wealth changes into two components of active saving and passive saving (capital gains/losses) is unique to the PSID. The measures of active saving from the 1984-89 and 1989-94 waves of the PSID were used by Juster and others (2006) to demonstrate a significant negative correlation between capital gains on equity and active saving. They concluded that capital gains on equity, but not housing, were a major contributor to the decline of household saving in the 1990s. Parker (1999) also used the same data in his analysis of the fall in saving. However, we are aware of no attempts to examine the active saving data for the years after 1994. We have extended the data set to include four additional subperiods over the span of 1994 to 2005. Because of the need to measure wealth at both the beginning and end of a period, the number of

observations is smaller than that for the wealth data, but they vary between 4,674 and 6,764 for the six subperiods of the data set. This subset of respondents also represents a wealthier group of families than the full set of respondents.

The change in total wealth is divided into three components: (1) equity in main residence, (2) wealth subject to capital gains/losses, and (3) fixed income assets.[16] The first two components can be further divided into active saving and valuation changes based on the responses to questions about the purchase and sale of assets.

Active saving in main residence is computed annually. First, for those whose residence does not change, it is defined as the negative of the change in the mortgage liability. For those who move during the year, active saving is simply the change in home equity because we do not know the sale or purchase prices. For both groups of homeowners, active saving in each subperiod includes any net investment in home improvements.[17] For the three asset components subject to capital gains or losses (equities, real estate and business), we have the responses to the specific questions on active saving (purchase less sales). The valuation changes (passive saving) are computed as the change in net wealth minus net purchases, where both the stocks and flows are measured in prices of 2000. By definition, there is no valuation change for fixed-income assets (transaction accounts and other assets, minus non-collateralized debt), and the active saving is simply the change in the real value of the asset. With the introduction of a separate role for IRAs in 1999, we allocated the funds between transactions accounts and equities, depending on the response to a question about whether the funds were allocated mostly to stock, mostly to bonds or some of each.[18] In all of our analyses, we exclude the value of vehicle wealth; in part, because we have no measure of net purchases or valuation changes, and because of difficulties in accounting for the growing reliance on automotive leasing.

Some basic tabulations are reported at the top of table 2. The first column reports the estimated average annual amount of active saving, followed by passive saving in

[16] This framework is based on Juster and others (2006).
[17] Information on home improvements was obtained only as part of the periodic wealth modules and refers to investments in excess of $10,000. Active saving and the valuation change are both measured in constant prices by deflating the home value by the personal consumption price deflator of the national accounts.
[18] There is no separate question on active saving in IRAs, and we assume that they are effectively included in the answers to net purchases of stock. We assigned a weight of 0.75 to the dominate asset and 0.5 if the answer was some of each.

column 2 and the annual change in wealth (active plus passive saving) in column 3 for each of the six subperiods.[19] Most notably, mean active saving and the mean saving rate do not decline over the full period. We do duplicate the result reported by Juster and others (2006) of a decline in average saving in the 1989-94 period, but it recovers in 1994-99 and subsequent periods. This result is equally evident if the data are scaled by income and reported as mean saving rates in column 5. Only the median saving rate, shown in the last column, provides consistent evidence of a secular decline in saving; but the mean and median saving are different significantly and the difference grows over time.[20]

In contrast, the estimates of wealth change in columns 3 and 6 are broadly consistent with the pattern shown in the Flow of Funds Accounts in indicating relatively low rates of accumulation in 1989-94 and 1999-03 and strong gains in other subperiods. The period-to-period variation after 1999, however, is less in the PSID. In part, the self-reported value of equity holdings seems less volatile than implied by market indexes, whereas the gains in home values have also been very large and sustained across the period.[21] The wealth-income ratio rose from 3.1 in 1984-89 to 4.1 in 2002-05, and 60 percent of the gain was achieved through active saving compared to 40 percent for passive saving.

For each of the six subperiods, the rise in wealth is greater than the comparable values from the full wealth survey. The requirement that the family be included for two waves of the wealth survey and the exclusion of families with a change in the head raises the rate of wealth accumulation by excluding a significant portion of young families and those with adverse changes. The extent of the bias varies across the six subperiods, but if the estimates of the wealth change for each of the subperiods are chained, the cumulative increase in mean family wealth is 190 percent between 1984 and 2005 compared with 100 percent for the full wealth survey.

[19] The data include all households that participated in both survey years and whose household head did not change. The weights are those of the initial year.

[20] The saving rates are computed as a ratio of the means or medians of saving and income.

[21] Part of the difference with the macroeconomic data may also be a matter of timing. The 2001 survey was taken during the second and third quarters, prior to the worst of the decline in the stock market; and the 2003 survey occurred well after the market indexes began to recover.

The remainder of table 2 reports the results for active saving and wealth accumulation as percentages of income for various socio-economic groups. The second panel separates the data by three broad age groups. It is evident that saving is concentrated among young and middle-aged families; but the apparent change in the pattern for aged families is particularly striking. In the data for the 1984-89 and 1989-94, families with a head over age 60 did exhibit negative rates of saving, consistent with the life cycle model; but rates of active saving are substantially positive after 1994. The aged also have lower rates of passive saving, reflecting a lower proportion of their wealth in equities. Saving rates also differ substantially by educational attainment (panel 3), with more educated families having substantially higher rates of saving. The differences in rates of total wealth accumulation, however, are quite variable because of greater fluctuations in passive saving for those with some college education.

Homeowners and equity holders play a prominent role in many explanations of the saving decline. The bottom portion of the table reports both mean and median rates of saving and wealth accumulation for homeowners and those with equity holdings at the beginning of each subperiod. Home ownership does not appear to have any consistent impact on mean saving rates, although the rapid increase in home values after 1994 does seem to have contributed to a faster rate of wealth accumulation. The median rates of saving and wealth accumulation, however, indicate consistently higher rates for homeowners, and the evidence of declining saving rates is largely limited to non-homeowners.

Both mean and median rates of saving are consistently higher for families with equity holdings than those without. On the other hand, the gains in wealth accumulation are less consistent because of wide period-to-period variation in rates of passive saving. Again, any pattern of falling saving rates is restricted to the median estimates for families without equity holdings.

The large differences between the mean and median rates of saving are indicative of the large disparities that we observe in the data set, even within seemingly similar groups. It is also likely that the disparities are exaggerated because of various types of response error. The problem is heightened in the measures of saving and wealth accumulation because of the need to utilize estimates of some wealth components from

two survey years. We note that individual responses to the wealth components often appear inconsistent across the various wealth surveys, and estimates of active saving will occasionally change between subperiods by implausibly large amounts.

We can obtain some indication of the sensitivity of the results to extreme values by excluding observations at the top and bottom of the distribution of active and passive saving for each of the original wealth components.[22] We performed this trimming exercise at two different levels of severity, first excluding the top and bottom 10 cases and then repeating it for 50 cases per category. With 11 components, the potential number of excluded cases could be as large as 220 and 1100 respectively, but with duplications, they averaged 155 and 700 observations per subperiod. We report only the results from the exercise that excluded the 10 most extreme cases because the outcomes are similar.

The basic results for the trimmed sample are shown at the top of table 3, and they are directly comparable to the results for the full sample shown at the top of table 2. Despite the use of symmetric exclusion, the saving rate is reduced substantially, and the size of the reduction is much larger in the later subperiods. In 2003-05, the estimated saving rate is cut from 15.5 to 9.7 percent. As a result, the saving rate from the trimmed sample is relatively flat over time compared to the increase reported for the full sample. The rate of wealth accumulation is also substantially smoother across the subperiods. However, while the sample is reduced by less than three percent, the estimate of family income is lowered by 7 to 9 percent.

The three major components of saving are presented in the second panel of table 3 for the full sample, and for the trimmed sample in the third panel. Housing consistently accounts for a large portion of saving and there is no evidence of a declining rate of saving in either the full or the trimmed samples. Using a more detailed analysis of the housing component of saving, we observe that the paying down of mortgages by non-movers accounted for a major portion of active saving in the early periods, but that it has turned slightly negative after 2001, consistent with the reports of greater use of mortgage refinancings to withdraw equity. We observe no offsetting rise in home improvements. Instead, the reduced saving of non-movers has been offset by a rise in saving among

[22] This methodology is employed in Juster and others (2006).

movers, but that may include an element of passive saving, since we define the active saving of movers as the increase in their housing equity.

Net investment in fixed-income assets is the smallest component of saving and the trimmed version shows a smoother estimate over time. The trimming of the sample has the greatest effect on the component of equity-type (real estate, own business and equities) where it reduces the level and cross-period variation in the rates of saving and wealth accumulation. The trimmed data, however, still provide little evidence of a decline in the mean saving rate over the two decades.

The data on homeownership at the bottom of table 3 indicates that the bulk of the trimming was in the category of homeowners, smoothing the estimates of saving and wealth accumulation; but there is still little evidence of a major difference between the saving rates of homeowners and non-owners. A similar smoothing of the data is evident for equity holders, but it is still apparent that they do consistently save a larger portion of their income than families that do not invest in equities.

The top of table 4 distinguishes families' saving and wealth accumulation by their position in the income distribution. The income distribution is measured with a 5-year average centered on the first year of each subperiod. Although there is a large difference in mean incomes between the top and bottom third of the distribution (a ratio of about six), rates of saving and wealth accumulation rise substantially with income, providing strong support for the finding of Dynan and others (2004) that the rich save at a higher rate. Median saving is consistently zero in the bottom third of the distribution. Evidence of a decline in the saving rate is evident only for middle third of the distribution for the median and the lower third for the trimmed sample. In addition, nearly all of the reported passive saving is concentrated in the top third of the income distribution. The trimming of the extreme values has the greatest effect on the estimated saving rate for the top third of the distribution. Finally, the data are consistent with numerous other findings of a widening of the income distribution: the ratio of mean income between the top and bottom third of the income distribution rises from 5.8 in 1984-89 to 7.1 in 2003-5, but the rise is concentrated in years after 1999.

The bottom portion of table 4 reports a similar set of calculations based on thirds of the wealth distribution, where wealth is measured at the beginning of each subperiod.

Again, the general pattern is a secular rise in the mean saving rates, but the medians indicate a decline over the full period. The dollar amount of saving does rise with the amount of wealth; but because mean income in the top third of the distribution is 2½ times that of the lower third, mean saving rates are similar across the distribution. It is also notable that income inequality is increasing across the wealth distribution as the ratio of income in the top to the bottom thirds rises from 2.3 in 1984-89 to 2.7 in 2003-05. That pattern is not evident in the panel based on the medians where the ratio of income in the top and bottom thirds is stable and median saving rates rise with initial wealth. Again, the trimming of the data set smoothes the estimated rates of saving and wealth accumulation across the subperiods, with the largest effects after 2001.

The lack of any substantial evidence in the PSID data set of a decline in rates of saving over the past two decades is most puzzling. In several other dimensions, such as comparing rates of saving and wealth accumulation among various socio-economic groups, the data seem quite reliable and yield consistent results across the six waves of the survey. We note, however, that the estimates of wealth for some households seem inconsistent over time with implausibly large rates of change.

VI. Regression Analysis

In this section we present some simple regression models of saving behavior that take advantage of the panel dimension of the PSID data set to eliminate household fixed effects. Our primary interest is to explore the within family response of active saving to changes in income, wealth and capital gains. We closely follow the framework employed by Juster and others (2006), but we are able to extend the model to cover four additional subperiods. These subperiods, however, are not of equal length. The first three span 5-year intervals and the last three each span two years. Our procedure is to estimate two separate fixed-effect regressions, each with three subperiods of data.[23] In addition, we include transfers of assets into and out of the household due to inheritance or changes in family structure, and a few status variables at the beginning of each subperiod – such as,

[23] This is still a significant expansion of the data set available to Juster and others (2006) since they were restricted to two periods.

coverage by an employer pension, age, homeownership, and whether the family owns any stock.

We adopt the strategy of Juster and others (2006) to handle concerns about bias in the effect of capital gains on saving due to measurement error. Passive saving is derived as the change in wealth minus active saving. For a given change in wealth, an error in active saving necessarily results in a negative correlation with the residual estimate of capital gains. Their solution is to exclude the component whose capital gain component is of interest from active saving. Therefore, we distinguish capital gains on housing, equities, and business plus real estate, and define a set of alternative measures of active saving that exclude the net purchases of the specific asset category. By definition there are no capital gains on transactions accounts.

In addition, we altered the basic specification to focus more on a model of target wealth holding.[24] That is, we formulate a simple model in which desired wealth is a function of household income and age, and active saving in each period is aimed at closing a portion of the gap between desired wealth and actual wealth at the beginning of the period.

$$W^* = F(Age, Income)$$
$$ActSav = \alpha(W^* - W_{-1})$$

Thus, we have added lagged wealth as a determinant of active saving. Because the change in wealth held in transactions accounts is used to compute active saving, we exclude that component from the measure of lagged wealth.

The regression results are shown in table 5. The data are taken from the trimmed data set of the prior section in which we deleted the top and bottom 50 values of active and passive saving for each of the underlying wealth components. For each of the two fixed-effect data sets, 1984-99 and 1999-05, we estimate five alternative regressions. The first relies on a simple aggregate measure of passive saving, but introduces all of the potential biases from measurement errors in active and passive saving. The second regression divides passive saving into three asset categories. Regressions 3 through 5 show the effect of capital gains in each asset category on active saving in the other categories. In the interest of saving space, we do not show the coefficient for age, home

[24] See Carroll (1997) and the references therein.

ownership, and equity holders. In the fixed-effect equations, only a minority of households have a change in these status variables.

In the first column, we observe that those with an employer-based pension typically save less outside the pension, though the effect appears to decline with income in 1984-99, something we do not find in the 1999-05 data set. We measure pension status as the average of the beginning and ending values for each subperiod. The variable has a value of 1 for the first pension and 1.5 if both the head and spouse have a pension.[25] This status variable is only weakly identified since it does not change over the subperiods for many families. There is a large and consistently negative correlation with initial wealth, which we interpret as being consistent with target-saving behavior where the target for wealth is defined by income and other household characteristics. Divorce has an expected large negative impact on saving. Transfers and family income are both cumulated over the subperiod and the proportion of transfers that is saved is consistently larger than for income. In the aggregate, passive saving has a significant negative effect on active saving equal to 8 percent. The second column reports the result of disaggregating passive saving by component. In contrast to Juster and others (2006), we find a significant negative effect for all three categories of passive saving and the coefficient is largest for capital gains in housing.[26]

Columns (3) – (5) report the results of our effort to exclude the effects of measurement error. We redefine active saving to exclude the component for which passive saving is included. In all three cases, the coefficient on passive saving is drastically reduced and actually changes sign in the case of housing. For the test of passive saving in housing, the coefficient on lagged wealth also changes sign. The test for measurement error bias is particularly severe for housing because as we saw in the prior section, housing is the primary form of wealth accumulation for a large number of families. Still, we cannot reject the hypothesis that the influence of capital gains on saving, shown in columns (1) and (2) is spurious. Our own inspection of the data

[25] We do not have pension information for 1994, so we set the pension status variable equal to the 1989 value for 1989-94 and the 1999 value for the 1994-99 subperiod.

[26] When we restrict the analysis to the two subperiods of 1984-89 and 1989-94, we obtain results very similar to Juster and others (2006) of a dominant role for capital gains on equities, but the coefficients are not robust across the other subperiods.

suggests a serious problem of a lack of consistency in the responses to the wealth questions in successive waves of the PSID.

The analysis of the second data set, covering the period of 1999 to 2005 confirms most of the prior results. The coefficients on the variables other than passive saving are very similar to those for the first data set. In the aggregate, passive saving again has a negative effect on active saving (column 6). The extension that allows for separate effects by component (column 7) yields highly negative and significant coefficients for housing and business real estate, but a positive role for capital gains on equities. The effort to control for measurement error eliminates any role for capital gains in housing, produces a positive effect for capital gains on equities, and a strong negative effect for capital gains in business and real estate.

VII. Conclusion

We have compiled a large wealth and saving data set from those households who responded to the supplementary wealth and active saving modules of the PSID over the period of 1984 to 2005. The result is measures of wealth, net wealth accumulation, and active saving covering seven wealth surveys and six periods of change in wealth and saving. For individual years, the sample sizes vary between 7 and 8 thousand families. The number of families participating in multiple samples is less, but 1,963 have participated in all seven of the wealth surveys. In comparison with the SCF, we find that the wealth data of the PSID yield very similar results for the bottom 95 percent of the wealth distribution, but the very wealthy are underrepresented in the PSID. The major advantage is that the PSID has multiple observations on a family's wealth over the two decades of coverage.

The PSID is unique in providing household-level estimates of active saving and net wealth accumulation. Those measures are very consistent in the differences that they imply across various socio-economic groups. However, the micro-level data do not capture the phenomenon of a secular decline in household saving rates over the past two decades that is so evident in the macroeconomic analysis. The measures of wealth accumulation, in contrast, do accord with other evidence of a secular rise in wealth-income ratios. The growth of total wealth over the period of 1984 to 2005 is very similar

to that reported in the Flow of Funds Accounts, and it compares very favorable with the estimated wealth gains shown in the SCF. A plausible explanation for the differing results for saving and wealth accumulation is that the survey respondents do not adequately distinguish between active saving decisions and capital gains in accounting for their increases in wealth. Given the strong gains in asset values over the past decade, it is possible that active saving is overstated.[27] At present, our analysis is insufficient to provide an informed answer.

Finally, the panel dimension of the PSID is potentially of great value in evaluating a wide range of hypotheses about saving behavior because it has observations on wealth and saving over several periods spanning as long as two decades in length. However, our initial attempts to explore the usefulness of the data for resolving issues about the influence of capital gains on saving were disappointing. The exercise suggests that measurement errors are a particularly serious problem in the time series data, and that more powerful methods of controlling for their influence need to be applied to any future analysis. One of the areas for future research is to explore various methods of editing the data to reduce some of the obvious temporal inconsistencies.

[27] In at least one area, our assumption that all of the change in homeowner equity for those who moved represented active saving overstates active saving.

References

Antoniewicz, Rochelle L. 2000. "A Comparison of the Household Sector From the Flow of Funds Accounts and the Survey of Consumer Finances," SCF Working Paper, Board of Governors of the Federal Reserve.

Attanasio, O. P. 1998. "Cohort Analysis of Saving Behavior by U.S. Households." Journal of Human Resources 33, 575-609.

Belsky, Eric, and Joel Prakken. 2004. "Housing Wealth Effects: Housing's Impact on Wealth Accumulation, Wealth Distribution and Consumer Spending," (prepared for the National Association of Realtors National Center for Real Estate Research, 2004).

Bostic, R., S. Gabriel, and G. Painter. 2004. "Housing Wealth, Financial Wealth, and Consumption: New Evidence from Microdata," USC Lusk Center for Real Estate Working Paper 2004-1005 (Los Angeles: University of Southern California).

Bosworth, Barry, and Lisa Bell. 2005. "The Decline in Household Saving: What Can We Learn From Survey Data?" paper presented at the 2005 Retirement Research Council Conference, Washington D.C. (August).

Canner, Glenn; Dynan, Karen; and Passmore, Wayne. 2002. "Mortgage Refinancing in 2001 and Early 2002," *Federal Reserve Bulletin*, (December): 473-481.

Carroll, Christopher D., Otsuka, Misuzu, and Slacalek, Jirka. 2006. "How Large Is the Housing Wealth Effect? A New Approach," NBER WP 12746.

Case, Karl, John Quigley, and Robert Shiller. 2005. "Comparing Wealth Effects: The Stock Market Versus the Housing Market," *Advances in Macroeconomics*, Vol. 5, Issue 1, Article 1.

Czajka, John, Jonathan Jacobson, and Scott Cody. 2003. "Survey Estimates of Wealth: A Comparative Analysis and Review of the Survey of Income and Program Participation," Report to Social Security Administration, Office of Research, Evaluation and Statistics (August).

Davis, Morris A., and Michael G. Palumbo. 2001. "A Primer on the Economics and Time Series Econometrics of Wealth Effects" (Federal Reserve Board, Finance and Economics Discussion Paper, 2001-9).

Deaton, Angus.,1997. *The Analysis of Household Surveys*. Baltimore, Maryland: The Johns Hopkins University Press.

Dynan, Karen, Jonathan Skinner, and Stephen Zeldes. 2004. "Do the Rich Save More?" *Journal of Political Economy*, 112, no 2: 397-443.

Garner, Thesia I. George Janini, William Passero, Laura Paszkiewicz, and Mark Vendemia. 2003. "The Consumer Expenditure Survey in Comparison: With a Focus on Personal Consumption Expenditures," paper presented at the Federal Economic Statistics Advisory Committee Meeting (March 21, 2003).

Gouskova, Elena, and Frank Stafford. 2002. “Trends in Household Wealth Dynamics, 1999 – 2001,” University of Michigan, mimeo.

_____. 2005. “Trends in Household Wealth Dynamics, 2001 – 2003,” University of Michigan, mimeo.

Greenspan, Alan, and James Kennedy. 2005. “Estimates of Home Mortgage Originations, Repayments, and Debt on One-to-Four Family Residences,” *Finance and Economics Discussion Series*, No. 2005-41, Federal Reserve Board, Washington, D.C.

_____. 2007. “Sources and Uses of Equity Extracted From Homes,” *Finance and Economics Discussion Series*, No. 2007-20, Federal Reserve Board.

Hatzius, Jan. 2006. “Housing Holds the Key to Fed Policy,” Goldman Sachs Economics Paper No. 137, February.

Hurst, Erik, Ming Ching Luoh, and Frank P. Stafford. 1998. "Wealth Dynamics of American Families, 1984-1994." *Brookings Papers on Economic Activity, 1998:1*: 267-337.

Hurst, Erik, and Stafford, Frank. 2004. “Home is Where the Equity Is: Mortgage Refinancing and Household Consumption,” Journal of Money Credit and Banking, 36 (6): 985-1014.

Juster, F. Thomas, Joseph P. Lupton, James P. Smith, and Frank Stafford. 2006. “The Decline in Household Saving and the Wealth Effect,” *Review of Economics and Statistics*, 88(1): 20-27.

Juster, F. Thomas, James P. Smith, and Frank Stafford. 1999. “The Measurement and Structure of Household Wealth” *Labour Economic* (June) 6 (2): 253-76.

Kim, Yong-Seong and Stafford, Frank P. 2000. “The Quality of PSID Income Data in the 1990’s and Beyond,” Available at: http://psidonline.isr.umich.edu/Guide/Quality/q_inc_data.html

Lehnert, Andreas. 2004. “Housing, Consumption, and Credit Constraints,” Federal Reserve Board Finance and Economics Discussion Series 2004-63 (September).

Lettau, Martin, and Sydney Ludvigson. 2004. “Understanding Trend and Cycle in Asset Values: Reevaluating the Wealth Effect on Consumption,” *American Economic Review*, 94, 276-299.

Ludvigson, Sydney, and Charles Steindel. 1999. “How Important is the Stock Market Effect on Consumption?” *Federal Reserve Bank of New York Economic Policy Review* (July), 29-51.

Lusardi, Annamaria, Jonathan Skinner, and Steven Venti. 2001. “Saving Puzzles and Saving Policies in the United States.” Working paper no. 8237. Cambridge, MA: National Bureau of Economic Research.

Macroeconomic Advisors. 2006. “Fear Not the MEW,” *Macro Focus,* Vol. 1, no. 2.

Parker, Jonathan A. 1999. "Spendthrift in America? On Two Decades of a Decline in the U.S. Saving Rate," *NBER Macroeconomics Annual, 1999.* Edited by Ben S. Bernanke and Julio J. Rotemberg. Cambridge: MIT Press.

Peach, Richard, and Charles Steindel. 2000, "A Nation of Spendthrifts? An Analysis of Trends in Personal and Gross Saving," *Current Issues in Economics and Finance* (Federal Reserve Bank of New York), 6, no. 2, 1-6.

Poterba, James M. 2000. "Stock Market Wealth and Consumption." *Journal of Economic Perspectives* 14, no. 2 (Spring): 99-118.

Skinner, Jonathan. 1996. "Is Housing Wealth a Sideshow," in David Wise (editor), *Advances in the Economics of Aging* (Chicago: University of Chicago Press: 241–268).

Appendix A: Data Sources

The basic data were all downloaded initially from the PSID web site, but we have made some modifications in the process of constructing the wealth and saving data sets. The wealth data are available from supplemental surveys in seven years (1984, 1989, 1994, 1999, 2001, 2003, and 2005) and the non-housing components were already imputed for missing values. We extended the data set in three respects. First, the wealth files included only net home equity, whereas the value of the home and the mortgage are available annually. Imputed values of the home and mortgage components are not included for the years after 1993. We extended those imputations. Second, we altered the imputation process for open-ended brackets as explained below. Third, we extended the imputation of the active saving measures for the periods beyond 1994. Finally, we edited some observations on wealth that we regarded as obvious recording errors.

Housing

Information on home value, mortgage debt, and on whether or not the household has moved is obtained in every survey – annually prior to 1997. To impute missing home values and mortgages, we adapted the procedures used more generally in the PSID. We dealt first with those respondents who reported that they did not know or refused to answer whether or not they owned their home. The data set was sorted randomly. If the first observation listed was one that was missing an answer, it was randomly assigned the answer "yes" or "no" based on the proportion of respondents that reported owning a home. If the first observation listed was one that did *not* need to be imputed an answer, then all subsequent observations that needed an imputation were assigned the answer of the preceding observation. The same procedure was used to impute answers for those that did not know or refused to answer whether they had a 1st or 2nd mortgage.

At the second stage, missing home value and mortgage values were imputed for 1994 and later survey years in a multi-step procedure. First, all households were sorted into fifteen sub-groups based on their income quintile and three age categories based on the age of the head (35 and less, 35-65, and 65 or older). For observations with a missing home value but a reported value in the previous year, we assigned the prior year's value. The same procedure was used for 1st and 2nd mortgage values. Next, we imputed home values within each of the 15 sub-groups: the sub-group was randomly sorted and each missing observation was assigned the value of the prior observation. The same procedure was used to assign missing mortgage values.[28]

Finally, if a 1st or a 2nd mortgage value was imputed, we looked to make sure that the housing value was greater than the total mortgage value. If not, the total mortgage was set to equal the housing value. Similarly, if the housing value was imputed, we again look to see if the housing value was greater than the total mortgage value. If not, the housing value was set to equal the total mortgage value. If both the housing and mortgage were imputed and the total mortgage was greater than the housing value, the total mortgage value was set to equal the housing value.

In addition, we modified a few reported values that appeared inconsistent in reporting large value changes for households that did not move. We examined situations

[28] Because of the small sample of households with 2nd mortgages, we limited the sub-groups to the income quintiles.

of large change in which the value returned to roughly the prior level in the following year. In these cases, we set the value to the mean of the surrounding years. Similarly a few people reported they did not move over a three-year period, but their ownership status changed from own to rent and back to own. In addition, their home value and mortgage fell to zero in the year that they reported renting. We set the home and mortgage value equal to the mean of the surrounding years and changed the housing status to own for these cases.

Other Wealth

Missing or incomplete answers to the wealth components have already been imputed for the data sets on the PSID web site. The basic procedure used in the PSID assigns values to the missing cases from a matching sub file of all individuals for whom the question applied. In addition, for the wealth and active saving questions, the PSID makes use of brackets. Those families that reported a value within each bracket are combined with those who need a value within that bracket. After sorting this sub file randomly, if the first person lacks a value, they are assigned the mean of those that reported a value within that bracket. Subsequent missing values are assigned the value of the person preceding them in the ordered sort.

However, we found that the imputation procedure can produce unrealistic values for some small open-ended classes. For small samples, the procedure frequently results in a string of households being assigned the same value, and in open-ended classes that value could potentially be quite extreme. In the case of some uncommon asset categories, the sample size could be less than ten households. We altered the procedure for open-ended classes to assign all missing values the median of those reporting a value within the class.

Active Saving

For those assets with the potential for capital gains, households were asked to estimate the net amounts that they purchased or sold, net of any associated debt. The three asset groups were: (1) real estate other than home, (2) businesses/farms, and (3) equities/mutual funds. Active saving is defined as net purchases, and a measure of passive saving, or valuation changes, can be computed as the change in wealth less active saving. For each of the three asset groups, respondents were asked if they had had any transactions over the period since the last wealth survey. If they answered yes, they were asked for an amount. For those respondents who refused to give a specific amount, they were asked to indicate the amount within various brackets (usually 2-3). Imputations for missing values in active saving components for the two sub periods of 1984-89 and 1989-94 were already available in the active saving file on the PSID web site. We extended the process to cover the other four periods for which data are available (1994-99, 1999-01, 2001-03, and 2003-05).

The basic imputation program was obtained from the PSID staff and is the same as used to impute values for the wealth components. We changed the program only with respect to the treatment of the open-ended classes (see above). After sorting the data set randomly, if the first observation listed did not indicate whether the family had a particular transaction, it was randomly assigned a “yes” or a “no” answer based on the distribution of those who answeredthe question. Otherwise, all subsequent observations

that needed to be imputed an answer were assigned the answer of the preceding observation. The same procedure was used to assign brackets to those observations that did not report one. For imputing values, all of the observations falling within each bracket are sorted randomly. If the first observation was a missing value, it was assigned the mean of the reported values. In all other cases, missing values are assigned the value of the preceding observation. We again modified the process for open-ended brackets to assign the median of those reporting a value in that bracket to all missing values.

Individual Recording Errors

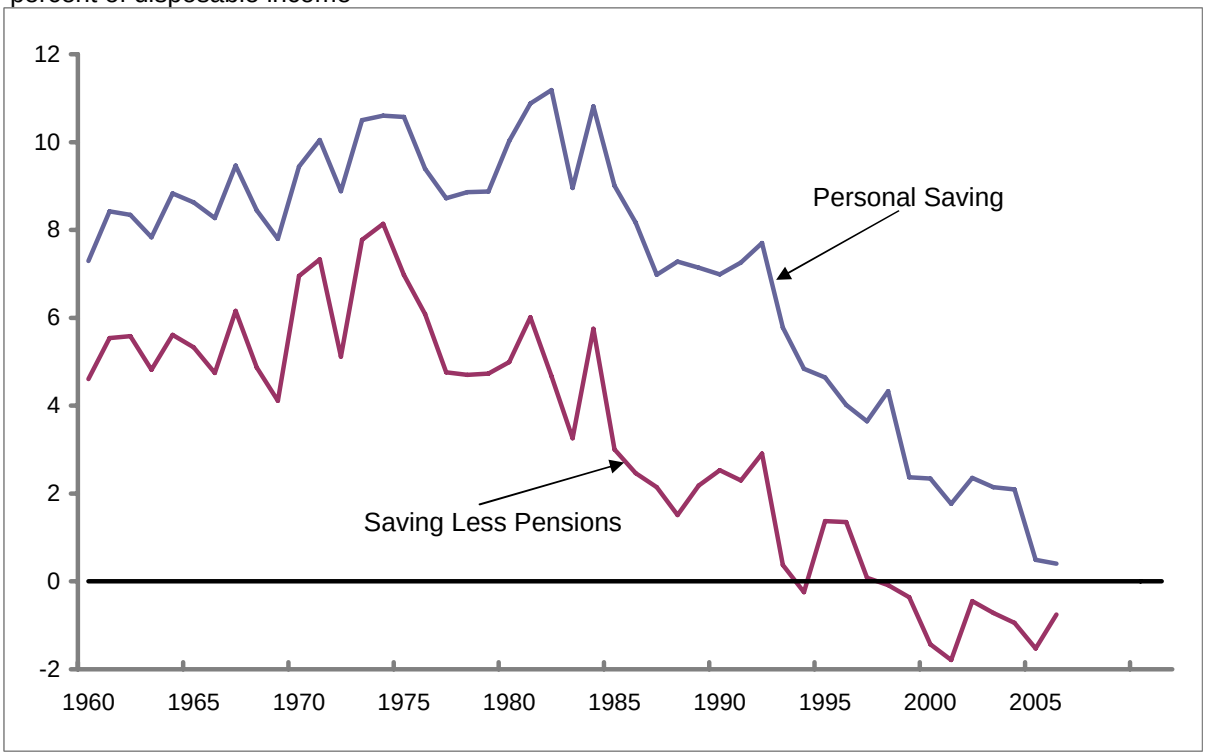
First, the wealth questions appear to confuse some respondents and lead them to report net real estate equity both as a specific wealth component and as the net value of their business. In 204 cases where the entries for net value of other real estate and own business were identical, the business entry was deleted. Second, we parsed the wealth sample for large variations in individual wealth components over time. In particular, we pre-screened the file for changes in net total wealth greater or less than $100,000 (implied annual rate) followed by an equally large reversal in the following period. We altered the value of individual wealth components in 134 instances that we believed to represent coding errors.

Appendix B
Wealth Questions

1. Equity in real estate (second home, land, rental real estate, or money owed on a land contract) -- W_{re}.
2. Equity in vehicle (cars, trucks, a motor home, a trailer, or a boat) -- W_{veh}
3. Equity in business (also includes farm) W_{bus}
4. Equity in stock (includes shares of stock in publicly held corporations, mutual funds, and investment trusts) -- W_{equ}.
5. Annuities/IRAs - private annuities or Individual Retirement Accounts (IRAs) -- W_{ira}
6. Transaction accounts (includes savings accounts, money market funds, certificates of deposit, government savings bonds, and treasury bills) -- W_{dep}
7. Other assets (includes bond funds, cash value in a life insurance policy, a valuable collection for investment purposes, and rights in a trust or estate) -- W_{oth}.
8. Non-collateralized debt, aside from mortgage on main home or vehicle loans -- W_{liab}
9. Home equity (Estimated home value minus remaining mortgage principle, annual before 1997, biennial since then) -- W_{h}.

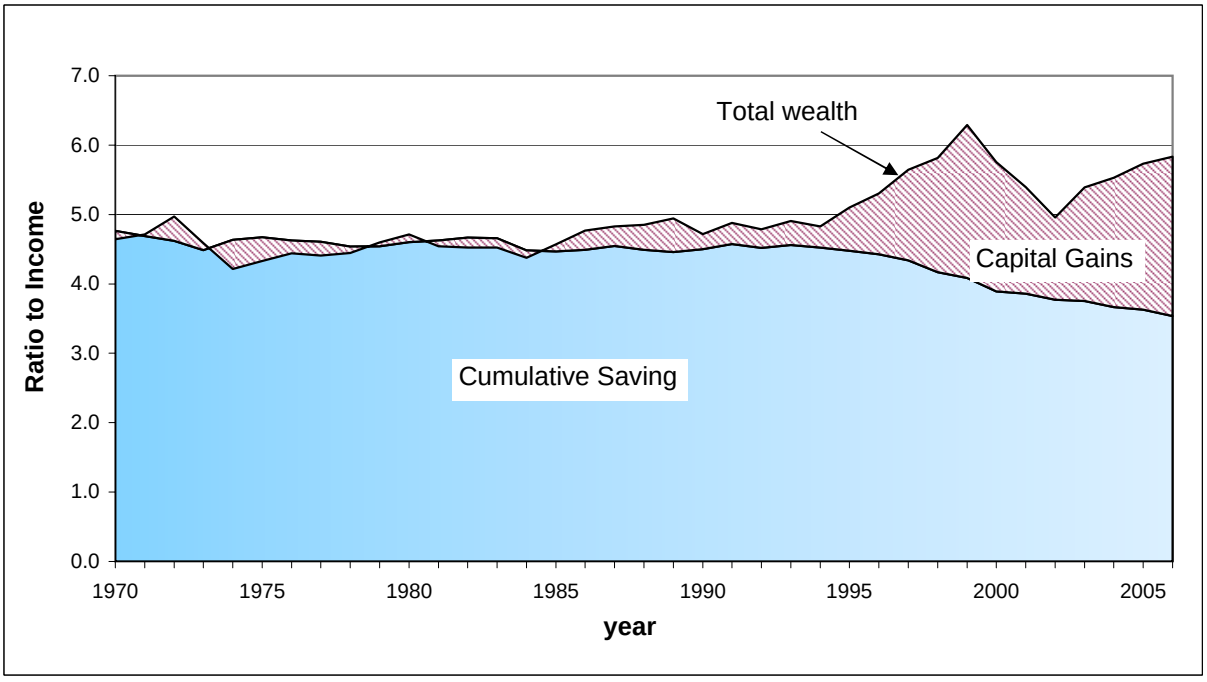
Figure 1. Personal Saving, With and Without Pensions, 1960-2006

percent of disposable income



Source National Income and Product Accounts and the Flow of Funds.

Figure 2. Household Wealth as a Ratio to Income, 1960-2006



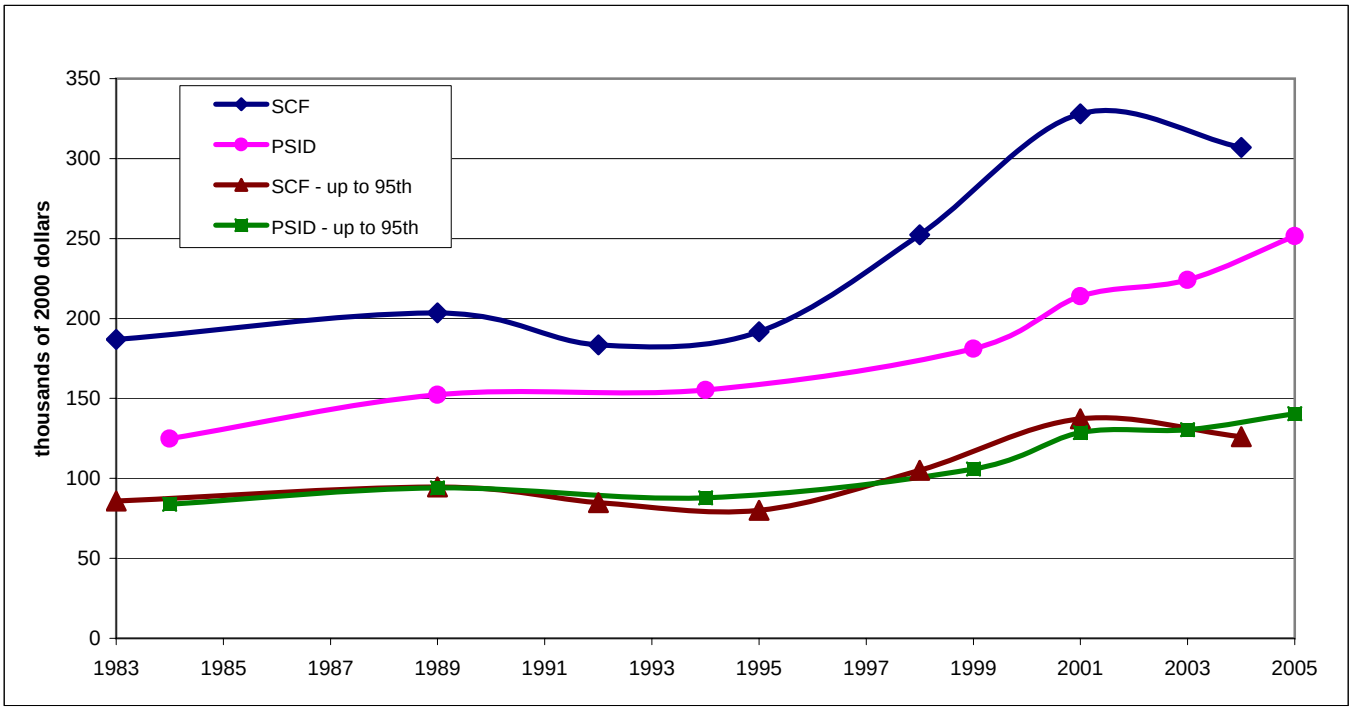
Source: Computed from tables B100 and R100 of the Flow of Funds Accounts. Net saving flows are converted to real values using the personal consumption deflator, cumulated, and converted back to nominal values.

Table 1. Distribution of Household Mean Wealth by Decile, SCF and PSID, 1989 and 2001
thousands of 2000 dollars

	1989			2001		
Decile	SCF	PSID	Difference	SCF	PSID	Difference
0-10	-25.2	-13.9	-11.4	-17.3	-21.8	4.5
10 to 20	-0.4	-0.3	-0.1	-0.9	-0.7	-0.2
20-30	1.5	1.6	-0.1	2.2	2.2	0.0
30-40	12.0	12.4	-0.4	16.6	16.7	-0.2
40-50	33.9	34.3	-0.5	43.3	43.8	-0.4
50-60	63.2	62.3	0.9	80.3	80.0	0.3
60-70	103.2	102.0	1.2	131.2	133.6	-2.4
70-80	159.8	163.7	-3.9	225.3	220.5	4.8
80-90	285.0	280.0	5.0	417.2	411.2	6.0
90-95	536.4	525.0	11.4	815.8	796.4	19.4
95-100	2,274.6	1,925.5	349.1	3,956.5	2,760.1	1,196.4
Total	203.4	152.4	51.1	328.1	214.0	114.0
PSID/SCF, percent	74.9			65.2		
PSID/SCF (up to 95)	99.8			98.1		

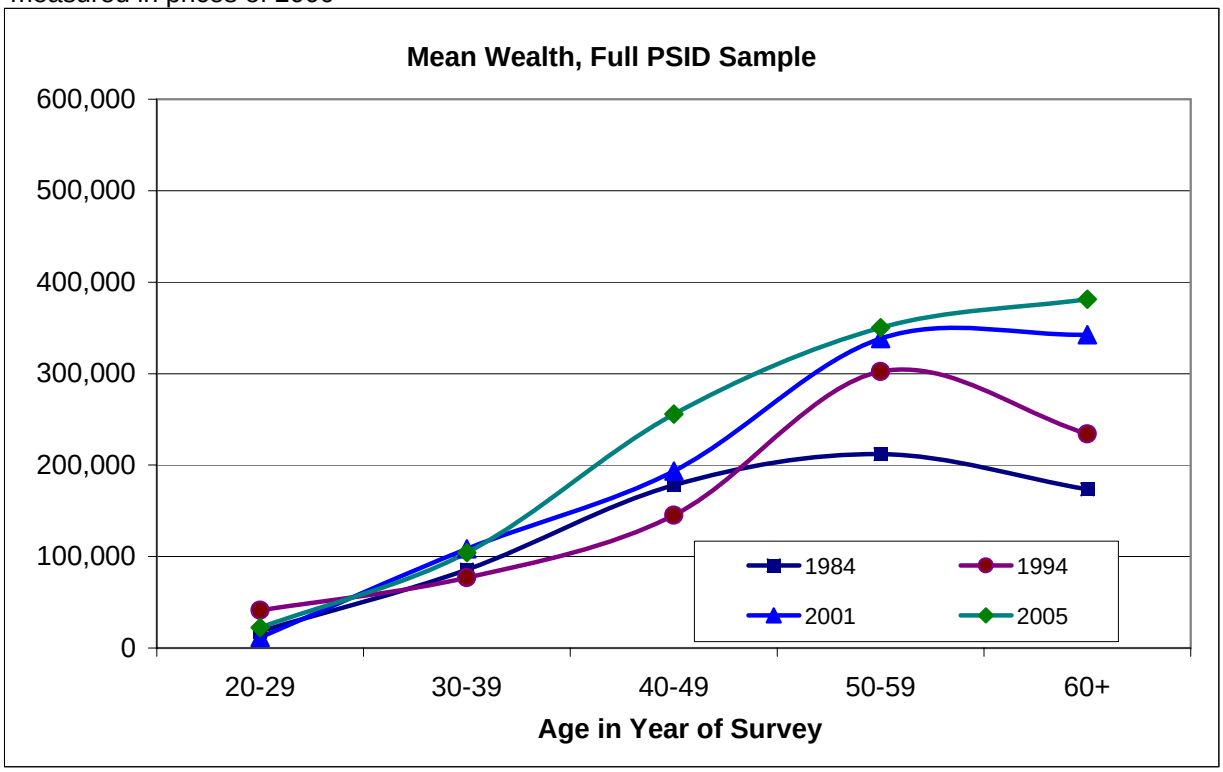
Source: Computed using the decile breakpoints of the SCF for both surveys.

Figure 3. Mean Wealth Holdings, SCF Versus PSID, 1983-2005



Source: Computed by authors as explained in text.

Figure 4. Cross-Section Age Profiles of Mean Wealth, SCF and PSID, 1984-2005
measured in prices of 2000



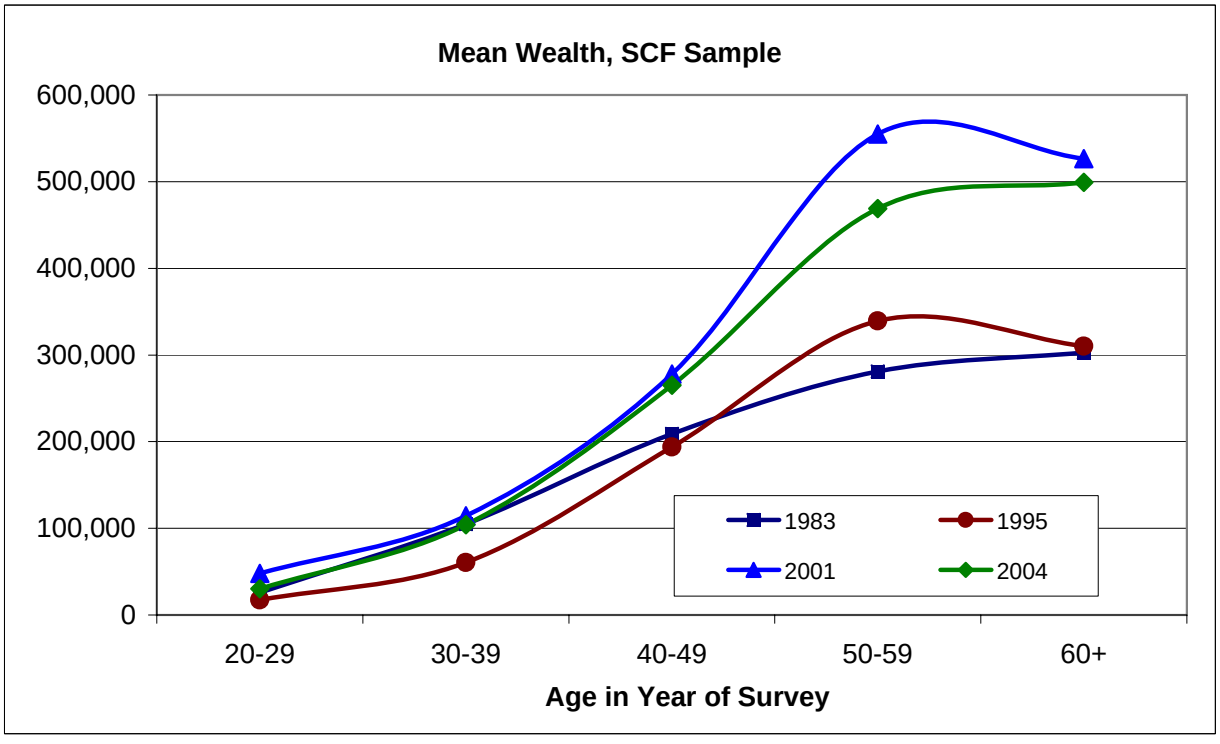
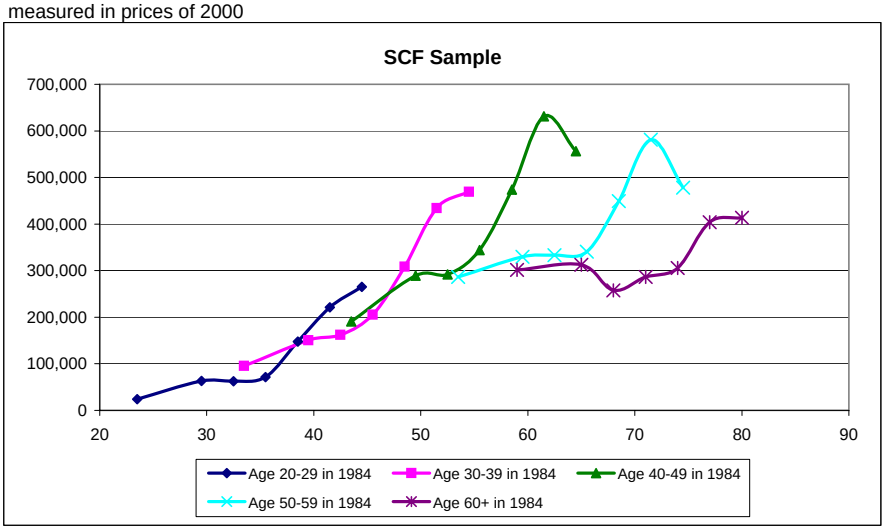
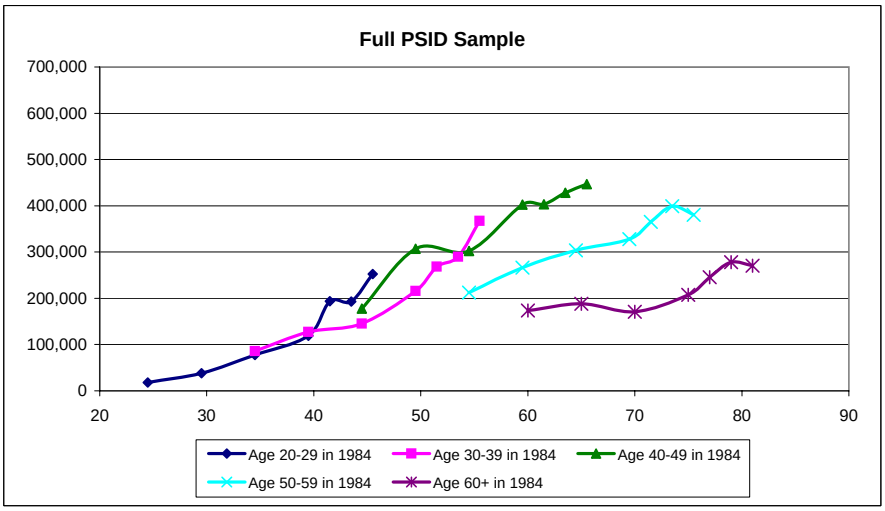


Figure 5. Mean Wealth Holdings by Age Cohort, PSID and SCF, 1984-2005
measured in prices of 2000





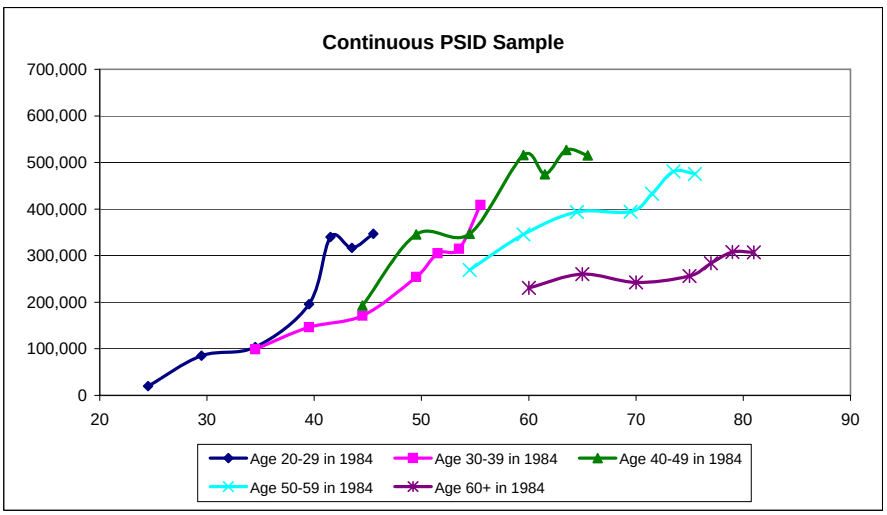


Table 2. Mean Saving and Wealth Accumulation by Socio-Economic Group, 1984-2005

Period	Active Saving (thousands of 2000 $)	Passive Saving (thousands of 2000 $)	Change in Wealth (thousands of 2000 $)	Annual Income (thousands of 2000 $)	Active Saving Rate (percentage)	Wealth Accumulation Rate (percentage)	Median Active Saving Rate (percentage)
Full Sample							
1984-89	5.0	5.0	10.0	51.6	9.7	19.4	2.8
1989-94	4.7	-1.3	3.4	53.4	8.8	6.5	1.7
1994-99	6.1	4.0	10.1	59.1	10.2	17.1	2.6
1999-01	5.8	8.3	14.1	59.7	9.6	23.5	1.8
2001-03	6.8	2.0	8.8	59.8	11.3	14.7	0.9
2003-05	9.7	12.9	22.6	62.6	15.5	36.1	1.0

	Saving Rate (percent of income)			**Wealth Accumulation (percent of income)**		
	Age (means)			Age (means)		
	25-39	40-59	60+	25-39	40-59	60+
1984-89	12.3	14.1	-9.6	16.3	28.9	3.5
1989-94	13.5	8.8	-1.8	13.3	1.0	2.8
1994-99	12.5	9.6	9.1	21.2	20.0	4.1
1999-01	9.4	12.1	5.2	22.6	31.7	7.4
2001-03	10.4	13.6	6.7	21.4	12.6	12.1
2003-05	19.7	13.6	14.3	42.7	37.5	23.1

	Educational Attainment (means)		Educational Attainment (means)	
	high school or less	beyond high school	high school or less	beyond high school
1984-89	6.9	12.0	10.2	27.4
1989-94	5.0	11.6	3.9	8.6
1994-99	4.6	13.4	10.0	20.9
1999-01	7.9	10.0	13.6	28.4
2001-03	5.2	14.3	13.4	15.8
2003-05	6.5	19.6	34.7	37.1

	Home Ownership (means)		Home Ownership (means)	
	no	yes	no	yes
1984-89	10.4	9.5	14.2	21.1
1989-94	9.0	8.7	13.6	4.2
1994-99	7.3	11.0	11.8	18.4
1999-01	8.3	10.0	15.7	25.8
2001-03	13.1	10.9	0.6	18.3
2003-05	19.5	14.5	24.4	38.9

	Home Ownership (medians)		Home Ownership (medians)	
	no	yes	no	yes
1984-89	1.3	4.1	1.3	4.0
1989-94	0.5	3.0	0.5	2.0
1994-99	0.6	3.7	0.6	5.7
1999-01	0.1	4.2	0.1	6.6
2001-03	0.0	2.4	0.0	4.4
2003-05	0.0	3.2	0.0	9.6

	Equity Holders (means)		Equity Holders (means)	
	no equity	equity holders	no equity	equity holders
1984-89	9.8	9.6	17.2	22.5
1989-94	6.4	11.6	5.9	7.1
1994-99	5.8	13.6	11.8	21.1
1999-01	5.5	15.2	20.3	27.9
2001-03	7.5	15.7	29.1	-1.9
2003-05	10.8	22.1	30.4	44.2

	Equity Holders (medians)		Equity Holders (medians)	
	no equity	equity holders	no equity	equity holders
1984-89	1.5	7.3	1.5	7.5
1989-94	0.9	4.7	0.9	3.1
1994-99	1.2	6.5	1.2	7.3
1999-01	0.6	8.6	0.6	8.8
2001-03	0.2	6.4	0.2	3.4
2003-05	0.3	7.4	0.3	14.3

Source: PSID data set and authors' calculations as described in text.

Table 3. Influence of Sample Trimming on Mean Saving and Wealth Accumulation, 1984-2005

Period	Active Saving (thousands of 2000 $)	Passive Saving (thousands of 2000 $)	Change in Wealth (thousands of 2000 $)	Annual Income (thousands of 2000 $)	Active Saving Rate (percentage)	Wealth Accumulation Rate (percentage)	Median Active Saving Rate (percentage)
Trimmed Sample							
1984-89	4.1	0.5	4.5	47.8	8.5	13.6	2.8
1989-94	3.5	-0.3	3.2	49.6	7.0	6.5	1.8
1994-99	4.4	3.1	7.5	54.6	8.0	13.7	2.5
1999-01	1.9	2.3	4.1	55.8	8.4	18.6	1.7
2001-03	1.7	1.1	2.8	54.9	7.7	12.5	0.9
2003-05	2.2	4.4	6.6	57.4	9.7	28.7	0.9

Saving Rate (percent of income)

Full sample -- components

	housing	fixed-income	equity-type assets
1984-89	3.6	1.9	4.2
1989-94	3.1	-0.1	5.9
1994-99	3.2	4.3	2.8
1999-01	4.6	2.7	2.3
2001-03	4.3	2.5	4.5
2003-05	6.7	5.5	3.4

Trimmed sample -- components

	housing	fixed-income	equity-type assets
1984-89	3.3	3.0	2.3
1989-94	3.0	0.9	3.1
1994-99	2.8	3.0	2.2
1999-01	3.9	2.4	2.1
2001-03	3.4	1.7	2.6
2003-05	5.2	2.3	2.2

Home Ownership (trimmed)

	no	yes
1984-89	9.5	8.1
1989-94	7.9	6.7
1994-99	6.2	8.5
1999-01	7.7	8.6
2001-03	8.4	7.5
2003-05	13.3	8.7

Equity Holders (trimmed)

	no equity	equity holders
1984-89	6.4	11.7
1989-94	6.0	8.5
1994-99	5.0	10.7
1999-01	5.2	13.4
2001-03	5.8	10.3
2003-05	6.8	14.5

Wealth Accumulation (percent of income)

Full sample -- components

	housing	fixed-income	equity-type assets
1984-89	6.3	1.9	11.2
1989-94	0.0	-0.1	6.6
1994-99	4.0	4.3	8.8
1999-01	9.2	2.7	11.6
2001-03	10.9	2.5	1.2
2003-05	18.1	5.5	12.5

Trimmed sample -- components

	housing	fixed-income	equity-type assets
1984-89	5.9	3.0	4.7
1989-94	0.3	0.9	5.3
1994-99	3.7	3.0	7.0
1999-01	9.4	2.4	6.8
2001-03	10.6	1.7	0.3
2003-05	16.8	2.3	9.6

Home Ownership (trimmed)

	no	yes
1984-89	10.8	14.6
1989-94	11.0	5.0
1994-99	11.3	14.3
1999-01	14.1	20.0
2001-03	8.8	13.6
2003-05	20.1	30.9

Equity Holders (trimmed)

	no equity	equity holders
1984-89	9.8	19.6
1989-94	7.6	5.1
1994-99	9.6	17.3
1999-01	18.1	19.3
2001-03	19.6	3.1
2003-05	25.1	34.6

Source: PSID data set and authors' calculations as described in text. The sample is reduced by excluding families if they were among the top or bottom 10 values for any active or passive saving component.

Table 4. Rates of Saving and the Distribution of Income and Wealth,1984-2005

	Saving Rate (percent of income)			Wealth Accumulation (percent of income)		
	Income Distribution (means)			Income Distribution (means)		
	lower third	middle third	upper third	lower third	middle third	upper third
1984-89	-2.0	7.7	12.3	-5.4	6.1	28.5
1989-94	0.9	2.4	12.6	-1.4	2.7	9.2
1994-99	3.3	5.5	13.1	4.7	11.6	19.1
1999-01	3.1	7.6	11.2	4.9	16.3	27.6
2001-03	0.9	10.6	13.2	-8.9	17.7	17.0
2003-05	1.4	6.0	20.9	21.2	43.1	35.5
	Income Distribution (medians)			Income Distribution (medians)		
	lower third	middle third	upper third	lower third	middle third	upper third
1984-89	0.0	3.9	7.6	0.0	3.9	9.4
1989-94	0.0	2.5	6.6	0.0	2.5	6.5
1994-99	0.0	3.4	7.2	0.0	4.1	10.6
1999-01	0.0	2.7	7.4	0.0	2.7	11.0
2001-03	0.0	2.1	4.9	0.0	2.1	6.7
2003-05	0.0	1.8	7.6	0.0	1.8	15.3
	Income Distribution (trimmed)			Income Distribution (trimmed)		
	lower third	middle third	upper third	lower third	middle third	upper third
1984-89	-0.3	7.8	10.4	-4.5	8.3	19.4
1989-94	0.0	4.3	9.6	-1.5	4.0	9.1
1994-99	2.7	5.6	10.1	3.7	9.7	17.4
1999-01	2.9	7.1	10.0	2.6	14.3	23.2
2001-03	-1.8	8.6	9.0	-7.3	9.6	17.4
2003-05	-1.8	7.0	12.7	14.9	23.0	33.4
	Wealth Distribution (means)			Wealth Distribution (means)		
	lower third	middle third	upper third	lower third	middle third	upper third
1984-89	9.8	7.8	10.9	14.1	15.2	24.5
1989-94	10.1	7.8	8.9	14.8	12.9	-1.1
1994-99	9.6	9.0	11.3	16.6	16.4	17.7
1999-01	11.0	9.6	9.1	21.2	29.0	21.3
2001-03	16.7	10.0	10.1	23.7	23.5	6.0
2003-05	19.9	11.7	16.1	32.8	57.7	25.0
	Wealth Distribution (medians)			Wealth Distribution (medians)		
	lower third	middle third	upper third	lower third	middle third	upper third
1984-89	1.3	3.6	5.4	1.3	3.6	5.3
1989-94	1.1	2.8	2.4	1.1	2.8	-3.0
1994-99	1.4	3.5	4.7	1.4	5.7	5.7
1999-01	0.8	2.7	4.1	0.8	3.8	6.9
2001-03	0.5	1.7	2.5	0.5	3.1	0.6
2003-05	0.5	2.3	3.1	0.5	5.0	17.5
	Wealth Distribution (trimmed)			Wealth Distribution (trimmed)		
	lower third	middle third	upper third	lower third	middle third	upper third
1984-89	8.5	7.9	9.0	12.3	12.7	15.0
1989-94	8.7	7.7	5.7	12.6	11.4	-0.5
1994-99	7.7	8.2	7.9	14.1	14.9	12.5
1999-01	10.1	9.2	7.1	18.2	22.3	16.1
2001-03	11.6	8.2	5.5	21.2	22.2	1.1
2003-05	15.1	8.9	7.8	23.6	32.4	28.4

Source: PSID data set and authors' calculations as described in text.

Table 5. Determinants of Active Saving

	1984-1994					1994-2005				
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**	**(10)**
Employer Pension	-7.7	-8.0	-5.4	-5.8	-5.2	-3.8	-3.8	-1.1	-3.3	-3.9
	(-2.1)	(-2.2)	(-1.8)	(-1.6)	(-1.4)	(-1.8)	(-1.8)	(-0.6)	(-1.6)	(-1.9)
Employer Pension x Income	0.02	0.02	0.02	0.02	0.02					
	(2.0)	(2.1)	(1.9)	(1.5)	(1.5)					
Initial Wealth	-0.12	-0.13	0.06	-0.07	-0.06	-0.21	-0.19	-0.06	-0.13	-0.20
	(-5.3)	(-5.6)	(3.6)	(-3.5)	(-2.8)	(-15.1)	(-13.5)	(-5.8)	(-10.4)	(-16.6)
Marital Transition										
Married	-0.6	-0.6	4.8	-0.7	-0.3	-2.8	-2.5	-1.6	-3.0	-2.9
	(-0.2)	(-0.2)	(1.7)	(-0.2)	(-0.1)	(-1.1)	(-1.0)	(-0.7)	(-1.1)	(-1.1)
Divorced	-6.3	-6.3	3.0	-6.1	-5.4	-13.8	-14.0	-3.8	-13.5	-13.5
	(-1.6)	(-1.6)	(0.9)	(-1.6)	(-1.4)	(-3.6)	(-3.7)	(-1.1)	(-3.5)	(-3.5)
Net Transfers	0.15	0.15	0.12	0.17	0.17	0.12	0.12	0.03	0.12	0.11
	(4.1)	(4.0)	(4.0)	(4.6)	(4.6)	(4.9)	(5.1)	(1.5)	(4.9)	(4.7)
Income	0.06	0.06	0.02	0.05	0.05	0.09	0.10	0.03	0.08	0.09
	(4.8)	(4.8)	(2.3)	(4.0)	(4.3)	(6.7)	(7.1)	(2.7)	(6.1)	(6.4)
Passive Saving										
Total	-0.08					-0.05				
	(-5.1)					(-5.4)				
Home		-0.14	0.09				-0.14	-0.02		
		(-5.1)	(3.9)				(-8.0)	(-1.3)		
Equities		-0.04		-0.01			0.06		0.08	
		(-2.0)		(-0.6)			(4.3)		(5.8)	
Business and Real Estate		-0.07			-0.02		-0.11			-0.11
		(-2.7)			(-0.9)		(-7.5)			(-7.6)
Constant	8.1	8.8	-4.7	7.4	6.3	11.9	10.5	1.0	9.3	11.6
	(2.5)	(2.7)	(-1.7)	(2.3)	(2.0)	(4.8)	(4.3)	(0.5)	(3.7)	(4.7)
R2	0.036	0.039	0.022	0.028	0.027	0.044	0.059	0.006	0.043	0.047
MSE	39.4	39.3	33.1	38.8	38.8	38.8	38.5	33.5	38.8	38.5
Observations	5,067	5,067	5,067	5,067	5,067	11,793	11,793	11,793	11,793	11,793
Families	1,689	1,689	1,689	1,689	1,689	3,931	3,931	3,931	3,931	3,931

Note: Categorical variables for age, homeownership, and stock holders at the beginning of each sub-period are included in the regressions but not reported in the table. Beginning of period wealth exclude fixed-income assets. The pension variable is measured as the average of the beginning and end of sub-period values. Values are thousands of 2000 dollars. The sample is trimmed by excluding the top and bottom 50 values of active and passive saving for each wealth component. See the text for details.

Table A1. Components of Personal Saving, 1952-2006

Percent of disposable income

Component	Period							Change
	1952-79	1980-84	1985-89	1990-94	1995-1999	2000-2004	2005-2006	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(7)-(2)
Household saving	8.7	10.4	7.7	6.5	3.8	2.1	0.4	-9.9
Pension saving	3.0	5.4	5.5	4.9	3.3	3.2	1.6	-3.8
Individual retirement accounts	0.1	0.9	1.8	1.7	2.2	2.4	3.0	2.0
Other saving	5.7	4.0	0.5	-0.2	-1.8	-3.5	-4.1	-8.1
NIPA-FFA (discrepancy)	-2.0	-1.9	-2.4	-2.2	-0.9	0.8	3.3	5.2
FFA other	7.7	5.9	2.8	2.0	-0.9	-4.2	-7.4	-13.3
Pension fund reserve accumulation	3.0	5.3	3.9	4.9	3.3	3.2	1.6	-3.7
State and local gov't retirement funds	0.7	1.3	1.6	1.2	1.0	0.6	0.0	-1.3
Federal government retirement funds	0.3	0.5	1.0	0.9	0.8	0.6	0.6	0.0
Life insurance companies	0.6	1.4	1.6	1.3	1.4	2.0	1.4	0.0
Private pension funds	1.4	2.0	-0.2	1.5	0.2	0.0	-0.4	-2.4
Defined benefit			0.3	0.5	-0.7	-0.6	-0.8	-0.8
Defined contribution			1.0	1.0	0.9	0.6	0.4	0.4
Addenda:								
Consumer durables	2.3	1.4	2.7	1.4	2.3	2.6	2.1	0.7
Inflation adjustment	2.3	3.0	2.5	1.9	1.0	0.5	0.2	-2.8
Realized capital gains	3.5	4.1	5.6	2.8	5.9	4.7		
Real capital gains	10.0	8.4	14.4	1.5	43.4	1.4	27.0	18.6
net equity withdrawal	-2.0	-1.0	0.4	-0.6	-0.9	2.8	3.3	4.3
Wealth-income ratio (excl. cons. durables)	4.4	4.1	4.4	4.4	5.2	5.0	5.4	1.3

Source: National Income and Product Accounts, Flow of Funds Accounts (September 2006 release), and author's estimates. The estimates of realized capital gains were obtained from U.S. Treasury (2002), and updated with information from the Congressional Budget Office. See Bosworth and Bell (2005) for details of calculation.

Table A2. Comparison of the Distribution of Households in the SCF and PSID, 1989 and 2001

	SCF 1989		PSID 1989			SCF 2001		PSID 2001		
	number of households	share of sample	number of households	share of sample	difference	number of households	share of sample	number of households	share of sample	difference
All households	93,020		93,020			106,496		106,496		
Age of Head										
25-39	30,258	0.33	33,808	0.36	-0.04	28,951	0.27	30,929	0.29	-0.02
40-49	17,364	0.19	16,096	0.17	0.01	25,198	0.24	24,665	0.23	0.01
50-59	13,562	0.15	11,375	0.12	0.02	17,746	0.17	19,330	0.18	-0.01
60-69	12,851	0.14	12,137	0.13	0.01	12,059	0.11	11,391	0.11	0.01
70 & over	13,621	0.15	13,573	0.15	0.00	16,547	0.16	14,694	0.14	0.02
Education of head										
no high school degree	23,890	0.26	24,024	0.26	0.00	19,295	0.18	19,173	0.18	0.00
high school degree	28,202	0.30	29,784	0.32	-0.02	31,536	0.30	29,984	0.28	0.01
some college	18,640	0.20	18,694	0.20	0.00	24,107	0.23	23,077	0.22	0.01
college degree	11,609	0.12	13,674	0.15	-0.02	18,732	0.18	17,543	0.16	0.01
more than college degree	10,313	0.11	5,900	0.06	0.05	12,826	0.12	11,737	0.11	0.01

Source: Authors' calculations as explained in text. In order to focus on the distribution of households by age and education, the weights of the PSID are scaled up to match the total number of households in the SCF for each year.

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