THE WEALTH OF COHORTS: RETIREMENT SAVING AND THE CHANGING ASSETS OF OLDER AMERICANS

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ABSTRACT

Personal retirement accounts are becoming an increasingly important form of retirement saving. Using data from the Survey of Income and Program Participation, the paper considers the effect of this change on the assets of recent retirees and persons who are approaching retirement. Much of the analysis is based on comparison of younger and older cohorts with different lengths of exposure to personal retirement saving programs. The findings suggest that personal retirement saving has already added substantially to the personal financial assets of older families. Projections imply that the personal financial assets of the cohort that will attain age 76 in 28 years will be almost twice as large as the personal financial assets of the cohort that attained age 76 in 1991. The results indicate also that to date there has been little replacement of employer-provided pension saving with personal retirement saving. Together with evidence that personal financial saving is unrelated to changes in home equity, the results suggest that personal retirement saving will lead to an important increase in the overall wealth of the elderly.

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Americans are changing the way they save for retirement. Contributions to personal saving accounts are becoming an increasingly large proportion of retirement saving while contributions to traditional employer-provided pension plans are declining. The proportion of total contributions accounted for by IRAs, 401(k), and Keogh plans increased from about 7 to over 50 percent during the 1980s. We consider the effect that this change has had on the assets of recent retirees and on persons on the eve of retirement. We find that contributions to personal plans have already added appreciably to the personal retirement assets of older Americans and, by implication, that the effect is likely to be much larger in the future.

The paper emphasizes the changing assets of older Americans. The change has been fueled by the rising popularity of personal retirement saving and thus to evaluate its implications for the financial status of the elderly it is necessary to understand the saving effect of these programs. In a series of earlier papers we considered the saving effects of IRAs.[1] Venti and Wise [1992] introduced analysis based on comparison of "like families," a version of the cohort analysis structure used in this paper. Poterba, Venti, and Wise [1992, 1993a] considered the saving effect of 401(k) and IRA contributions based in part on the comparison of like families and in part on the "quasi experiment" presented by eligibility for 401(k) plans. This paper contributes to that line of analysis, but with a different focus, a

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[1]Results using different data sets and different methodologies are presented in Venti and Wise [1986, 1987, 1990b, 1992]. The findings of other investigators of this issue—Gale and Scholz [1990], Feenberg and Skinner [1989], and Joines and Manegold [1991]—are summarized in the last paper.

different methodology, and a broader scope. We direct attention to families just before and just after retirement. We frame the analysis explicitly in terms of cohorts. The analysis rests primarily on comparison of older and younger cohorts of respondents to the Survey of Income and Program Participation (SIPP) between 1984 and 1991. The cohorts had different lengths of exposure to the personal retirement saving plans introduced in the 1980s. Persons who were already retired in the early 1980s had less opportunity to contribute than persons who were still working when these plans were introduced.

We consider not only whether personal retirement saving contributions substitute for other personal financial assets, as in our previous papers, but also whether they substitute for employer-provided pension assets. To understand the effect of pensions on saving, we need to understand not only how personal retirement saving is related to other personal financial assets, but also how each of these is related to employer-provided pension assets.

Traditional economic assumptions imply that if employers increase saving for employees through employer-provided pension entitlements then employees will save less. Or, if individuals choose to save more through personal retirement saving plans then they will save less in other personal financial assets. Or, if individual housing equity is increased through unanticipated gains in housing prices, then the individual will reduce saving in other forms. The net saving effect of personal retirement saving depends on whether individuals make economic financial decisions in accordance with these assumptions. We

find that for the most part these assumptions are inconsistent with observed individual behavior.

I.   BACKGROUND.

A.   Data.

The analysis is based primarily on 1984, 1987, and 1991 data from the Survey of Income and Program Participation (SIPP). The data are drawn from the 1984, 1985, 1986, and 1990 <u>panels</u> of the survey, with data for the same year sometimes available from more than one panel. The 1984 interview was conducted between September and December 1984 and the 1987 interview between January and April 1987, with approximately 28 months between the two interview periods. Thus in the cohort analysis described below we treat this interval as a two-year period. The 1987 and 1991 surveys were conducted almost exactly four years apart. The 1984 to 1991 period is assumed to span six years.

Each panel contains eight interview waves administered every four months over a 32 month period. We use all the waves containing supplemental topical modules requesting detailed information on assets and liabilities and pension plan coverage. These waves are wave 4 of the 1984 panel (administered between September and December 1984), wave 7 of the 1985 panel and wave 4 of the 1986 panel (January to April 1987), and wave 4 of the 1990 panel (February to May 1991). The SIPP household is defined by a physical address. These were reformatted into individual family units headed by either a husband-wife pair or a single individual. Thus a single SIPP household may yield several "families" for the present analysis.

We consider the following asset categories:

- Personal Financial Assets
  - Total
  - Personal (Targeted) Retirement Assets
  - Other Personal Financial Assets
- Employer-Provided Pension Assets
- Social Security Assets
- Home Equity
- Other Non-Liquid Equity

The analysis deals primarily with personal financial assets and employer-provided pension assets. The components of each of the categories are listed in Appendix Table 1. The table pertains to families aged 65 to 69 in 1991. It reports the proportion of families owning each of the components, as well as the asset mean and median values. The category "personal retirement assets" includes holdings in IRAs, 401(k)s, Keoghs, and life insurance annuities.[2] But the mean (and median) family balance would have been quite small at that time. These saving plans are grouped together because each narrowly targets saving for retirement, as opposed to saving for other, presumably more short-term, goals. The category "other personal financial assets" encompasses conventional (non-tax advantaged) saving vehicles, including saving accounts, money market deposit accounts, CDs, NOW accounts, money market funds, U.S. government securities, municipal and corporate bonds, stocks, mutual funds, U.S. Savings Bonds, and other interest earning assets. The category "total personal financial assets" is the sum of personal retirement assets and other personal

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[2] Respondents were not asked for a 401(k) balance for 1984.

financial assets. Home equity is the current market value of the home less the unpaid mortgage.

As explained below, the data are used to create means and medians by cohort—all persons who are the same age in a particular calendar year. Thus the same cohort can be followed over successive ages in 1984, 1987, and 1991. However, Social Security and employer-provided pension assets must be calculated from observed benefit payments. Thus wealth in these forms is available only for persons who are retired and we typically consider them only for persons over 65. The present values are obtained by capitalizing the stream of monthly income from each source using sex-specific survival probabilities calculated from mortality tables.[3]

B.   Family Wealth at Retirement.

Social Security benefits provide the vast majority of the income of a large fraction of retired Americans, and the present value of expected future benefits is the major component of the wealth of most elderly families. In 1991, the median Social Security wealth of families with heads 65 to 69 was about $100,000. (See Figure 1a.)   Median

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[3]A discount rate of 6 percent is used. Social Security, Railroad Retirement, federal employee, and military pensions are indexed by law. About 75 percent of state and local public employees receive some post retirement benefit increase; about half receive automatic COLAs (Phillips (1992). Post-retirement benefit increases in the private sector are less common. Gustman and Steinmeier (1993) found that during the 17 year period ending in 1987, that included a period of high inflation, about 45 percent of private sector defined benefit plans provided some post-retirement cost of living increase, usually ad hoc. We have indexed Social Security, Military pension, Railroad retirement, and all government employee pension annuities at an annual rate of 4 percent. Other annuities are not indexed.

employer-provided pension wealth (including government and military pensions) was only $16,017. Pension wealth is distributed much more unevenly than Social Security wealth—44 percent of families 65 to 69 have no pension income at all. The median level of housing equity was $50,000, but housing equity is typically not used to support consumption of the elderly, at least not until quite advanced ages.[4] The median level of other non-liquid assets, such as cars and business equity was only $5,992. Personal saving through conventional channels represents a very small proportion of the assets of most older families; the median level of (other) personal financial assets was only $7,428.[5] Thus most families, if they spend the income provided by Social Security and employer pension annuities, have almost no liquid accessible assets to meet unexpected expenditures. More than half of families had neither IRA nor 401(k) accounts so that the median wealth in personal retirement assets was zero.

Although the median is the best single measure of the assets of the typical family, the components of wealth other than Social Security are highly skewed so that the means are much larger than the medians. The mean level of other personal financial assets in 1991 was $42,018, more than five times the median. But even mean other personal

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[4]See Venti and Wise [1989, 1990a, 1991], Feinstein and McFadden [1989], and Sheiner and Weil [1992].

[5]The value for 1991 may be an anomaly. Medians in earlier years were about $9,000 and mean values increased from about $34,365 in 1984 to $42,018 in 1991.

financial assets are a small fraction of combined Social Security and employer-provided pension assets, as indicated in Figure 1b.

The means, however, reveal the increasing importance of IRA and 401(k) assets as a fraction of total personal financial assets. For families aged 65 to 69, personal retirement assets were only 6.6 percent of total personal financial assets in 1984, they represented 20.6 percent by 1991. Personal retirement assets increased over four fold between 1984 and 1991, much more than any other component of wealth, as shown in Figure 1c.

C. Aggregate IRA and 401(k) Saving.

Total contributions to IRA and 401(k) accounts over the 1980s are shown in Figure 2. IRA contributions jumped enormously in 1982 as soon as they became available to all wage earners and then increased to a peak of over $38 billion in 1985. Contributions dropped dramatically after the Tax Reform Act of 1986, that limited the tax-deductibility of the contributions of families with incomes over $40,000 per year and single persons with incomes over $25,000. Even though only 27 percent of contributors were affected by the legislation,[6] contributions fell by over 60 percent, with a dramatic decline even in the contributions of persons who were unaffected by the legislation. The implications of this decline are discussed in detail in Poterba, Venti, and Wise [1992, 1993a]. By 1990, less than $10 billion was contributed to IRA accounts.

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[6]See EBRI [1986].

Contributions to 401(k) plans increased consistently from their introduction in 1982 to $46.1 billion in 1989, the most recent date for which data are available. Straight line extrapolation of past trends would suggest that contributions are now about 70 billion. Figure 2 reveals no relationship between IRA and 401(k) contributions, with the annual increase in 401(k) contributions about the same after as before the 1987 decline in IRA contributions.

The relationship between these contributions and contributions to other retirement saving plans (excluding Social Security) is shown in Figure 3a. Contributions to defined benefit pension plans declined almost 40 percent, from $48.4 billion in 1980 to $24.9 billion in 1989. This decline was apparently due primarily to the large unexpected returns to pension fund assets over the 1980s, as described in Bernheim and Shoven [1988]. The decline may have been induced also in part by the funding limits imposed by the Omnibus Budget Reconciliation Act of 1987, as explained in Schieber and Shoven [1993]. Participants in defined benefit plans declined only 9.3 percent and the number of plans by 10.5 percent between 1980 and 1989. Contributions to defined contribution plans remained about the same over the entire period.[7]

Personal targeted retirement saving represented only 7.6 percent of the total in 1980 but had increased to over 50 percent of the total by 1989. It seems apparent that if IRA contributions had not been

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[7]The data show an anomalous increase from 25.5 in 1988 to 34.0 in 1989. Preliminary tabulations by the Department of Labor show a decline to below 25.5 in 1990.

curtailed by the 1986 legislation, balances in these accounts would have represented a much larger fraction of contributions to all retirement plans and total contributions would have been substantially larger. The trend in total contributions displayed in Figure 3a closely follows the trend in IRA contributions.

Total personal saving as measured by the Federal Reserve Board's Flow of Funds (FOF) accounts, is shown in Figure 3b. These data include contributions to targeted retirement saving plans, as well as other components of saving. The FOF data are based on direct measurement of the net acquisition of assets and are thus more comparable to the targeted retirement saving components than the National Income and Product Account (NIPA) data, the most often cited measure of aggregate personal saving. The NIPA data estimate saving as the residual between disposable income and personal consumption expenditures. The FOF data include several assets not incorporated in the NIPA definition of saving.[8] Thus, in addition to the more inclusive FOF series, the Federal Reserve Board also publishes a series that attempts to match the components of saving that are in principle included in the NIPA measure—indicated by "FOF NIPA Basis" in Figure 3b. But even after the adjustment, the NIPA and FOF measures often differ by tens of billions of dollars. They are discussed in some detail in Poterba, Venti, and Wise [1993b].

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[8]There are three principle conceptual differences between the FOF and the NIPA definitions of savings. These involve treatment of non-housing durable goods, state and local government pension reserves, and net saving of corporate farms. For details see Wilson et al [1989].

Targeted retirement contributions represent a large fraction of FOF national saving. In 1986, for example, retirement plan contributions accounted for 72.3 percent of FOF NIPA Basis data and 30.9 percent of the unadjusted FOF series. Both measures tend to follow the pattern of targeted retirement saving in Figure 3a, which in turn follows the pattern of IRA contributions. In particular, both measures show a substantial increase in saving between 1980 and 1986, both show a noticeable fall in saving after the 1986 legislation, and then a recovery by 1989.

The goal of the subsequent analysis is to assess the impact of personal retirement saving on the financial status of older Americans as they approach and enter retirement. Two issues are considered. First, using cohort data, the relationship between personal retirement saving and other personal financial assets is considered in this section 2. Second, the relationship between total personal financial assets and employer-provided pension assets is considered in section 3. We direct attention only briefly to the relationship between housing wealth and personal financial assets, but that relationship has been analyzed recently by Hoynes and McFadden [1993]. who find little relationship between changes in housing equity and personal financial assets. We rely on their results in making summary judgements about the net effect of personal targeted retirement saving on the financial assets of older Americans. In his review article on the relationship between housing equity and wealth, Skinner [1991] also concludes that there is little or no relationship between housing equity and other financial asset saving.

II. PERSONAL RETIREMENT SAVING AND OTHER ASSETS: COHORT ANALYSIS.

A. Cohorts and Cohort Data.

We begin with a discussion of the principle elements of cohort analysis. A cohort is typically a group of persons that are born in the same year. Thus persons who are a given age in 1984 are also a cohort. Cohort analysis usually means that the same cohort is followed over time. That is, persons who are age 50 in 1984 can be observed in 1985, 1986, and so forth. Panel data is designed to follow specific individuals over time. For example, the mean wealth of persons who are 50 in 1984 can be traced over time, considering the mean wealth of these same persons in 1985, in 1986, and so forth. From panel data, the cohort means are obtained directly by following the same persons over time. But cohort means can also be obtained from random samples of the population in successive years (a series of cross-sections). We use the SIPP data in this way, although these data also include a short panel component, following the same people for 32 months. Using these data, the mean assets of a random sample of persons who are 50 in 1984 are compared to the mean assets of another random sample of persons who are 51 in 1985, 52 in 1986, and so on.

We have made calculations for 15 cohorts defined by age in 1984: C42, C44, ... , C70. For ease of exposition we usually show data graphically for only a subset of the cohorts. In fact, each cohort is defined by all persons within a 5-year age interval in 1984. For example, C42 refers to the midpoint of the interval that includes people between 40 and 44 in 1984, 41 and 45 in 1985, etc.

For illustration, mean personal retirement saving assets are graphed for five cohorts in Figure 4a. For each cohort, assets are reported for 1984, 1987, and 1991. For example, the mean of personal retirement assets of cohort C46 was about $1,800 in 1984, $4,500 in 1986, and $11,700 by 1991. Increases for the C52 and C58 cohorts are also large. But the increases for the older cohorts are much smaller. The C70 cohort, that was past typical retirement age in the early 1980s when the programs were introduced, accumulated very little in personal retirement assets. That is, the relationship between age and the accumulation of personal retirement assets depends strongly on the cohort.

Notice that the relationship between age and asset accumulation judged by the cross-section profile is grossly misleading in this case. For example, the difference between the assets of 46 and 52 year olds in 1984 is much less than the assets actually accumulated by cohort C46 between age 46 (in 1984) and age 52 (in 1991). In Figure 4a the cross-section relationship between age and assets can be obtained by linking the values reported for a given year. For example, 1991 values are reported for ages 52, 58, 64, 70, and 76, highlighted by the small circles. Similarly, the 1984 values—for ages 46, 52, 58, 64, and 70—are highlighted by the triangles. In both cases the cross-section relationship gives a distorted view of the actual accumulation of personal retirement assets with age. This is because the large "cohort effects" are unrecognized in the cross-section relationship.

The cohort effects can be judged directly by the difference in assets of cohorts that attained a given age in different calendar years.

At a given age, different cohorts had different lengths of exposure to personal retirement saving programs, that were widely available beginning in 1982. For example, cohort C46 that attained age 52 in 1991 accumulated much greater personal retirement assets by age 52 than cohort C52 that attained age 52 in 1984 and thus, by that age, had had many fewer years to accumulate these assets. The same is true for cohorts C52 and C58 at age 58, C58 and C64 at age 64, and C64 and C70 at age 70.

To facilitate exposition, we often fit the three data points for each cohort and graph the fitted values, as shown in Figure 4b. In this way it is possible to visualize many more cohorts on the same graph.

Mean personal retirement assets for all 15 cohorts are shown in Appendix Table 2. The data for each cohort is in a separate column and the relationship between age and assets within a cohort is shown by the asset values moving down the column. Cross-section relationships for 1984 are shown in the "top" diagonal, for 1987 by the middle diagonal, and for 1991 by the lower diagonal. As indicated in Figure 4, the differences are extremely large.

In the subsequent analysis we will consider whether cohort effects like those shown for personal retirement assets in Figure 4 are offset by countervailing cohort effects with respect to other personal financial assets. If they are, there will be no cohort effects in total personal financial assets; it they are not, the personal retirement asset cohort effects will be mirrored by similar cohort effects in total personal financial assets. Equivalently, if there are no cohort effects with respect to other personal financial assets, this implies that the

personal retirement asset cohort effects are not cancelled by offsetting cohort effects in other personal financial assets. To highlight the cohort effects, most of the evidence is presented graphically. We also use more formal estimates of cohort effects to project the future retirement assets of younger cohorts.

B.   Personal Retirement Assets and Other Personal Financial Assets

We begin by considering the assets of all respondents to the SIPP. The basic assumption is that younger cohorts—that reached a given age in later calendar years—had a longer period in which to contribute to personal retirement accounts. But that in other respects the cohorts are similar (after correcting for earnings). Thus differences in asset accumulation can be attributed to the differential availability of these programs. The implicit assumption is that the differences are not due to a systematic trend in the "taste" for saving. Contributors to personal targeted retirement saving programs and non-contributors are then considered separately. In this case, the cohort differences among contributors are assumed to result from the differences in exposure to the special retirement saving programs. In addition, however, the cohort effects of contributors can be compared to the cohort effects among non-contributors. The non-contributor cohort effects might be considered an indication of cohort effects that would have obtained in the absence of the special retirement saving programs. The results will show that for the most part there are no cohort effects among non-contributors. For contributors, cohort effects are observed with respect

to personal retirement assets but not with respect to other personal financial assets.

To simplify the graphical exposition, we sometimes show the actual data for "non-overlapping cohorts," as in Figure 4a. Or, we present fitted values like those in Figure 4b. We would like to emphasize the assets of the typical family and thus would prefer to use median values. In addition, the medians are less subject to random fluctuation due to extreme outliers. As explained above, however, in some instances the medians are not informative (when fewer than 50 percent of families own an asset) and we present only means.

An issue that arises in the cohort analysis is the appropriate comparison of the assets of persons who attained a given age in different calendar years. If our goal were to compare the purchasing power of different cohorts, a price index would be the most appropriate measure by which to put different calendar year data on a common basis. Here, however, the issue is not purchasing power but rather the saving that would have occurred in the absence of the personal retirement saving programs. There are at least two possibilities: One is to assume that the increase (or decrease) in other personal financial asset saving that would have occurred in the absence of the personal retirement saving programs is the percent increase in this asset category among non-contributors. Averaged over ages 48 to 68 the increase was 3.8 percent between 1984 and 1991. Another conceptual approach is to base the correction on the nominal earnings of successive cohorts, assuming that other personal financial asset saving is based on earnings, and, that there would have been no real cohort effects in personal

financial asset saving in the absence of the personal retirement saving programs. The closest empirical approximation to this conceptualization may be an earnings index. For illustration, we present some results in nominal dollars, but most of the results are based on values converted to 1984 dollars using the wage and salary component of the Bureau of Labor Statistics Employment Cost Index.

1. **All Respondents: Means.**

a. **Nominal Values.**

The mean personal targeted retirement assets of cohorts C46, C52, C58, C64, and C70 are shown in Figure 5a. As described with respect to the illustrative figure above, younger cohorts, that attained any specific age in a later calendar year and thus at that age had had longer exposure to the special retirement saving plans introduced in the early 1980s—accumulated much larger personal retirement assets. For example, cohort C58 accumulated the highest level of personal retirement assets. Members of this cohort were age 56 when the IRA and 401(k) programs were expanded in 1982 and were age 64 when last surveyed in 1991. The C70 cohort accumulated the lowest level of personal retirement assets. Members of this cohort were already age 68 and past retirement in 1982 and thus were in large part unable to take advantage of the IRA and 401(k) programs.

The corresponding means of other personal financial assets of the same cohorts are shown in Figure 5b. The accumulation of personal retirement assets—described above—differed greatly by cohort, the corresponding accumulation of other personal financial assets also shows a cohort effect, but not one that offsets the retirement asset

cohort effect; younger cohorts also have higher levels of other financial assets. Because the rapid accumulation of retirement assets was not offset by a reduction in the accumulation of other financial assets, the accumulation of total personal financial assets also shows strong cohort effect, with younger cohorts—who attained any age in a later year—typically accumulating more personal financial assets, as shown in Figure 5c. Both total and retirement assets for three cohort are shown in Figure 5d. At age 58, for example, the difference in retirement assets of cohorts 52 and 58 can be compared directly to the difference in the total personal assets of these cohorts. The same comparison can be made for cohorts 58 and 64 at age 64.

b. Indexed Values—Fitted.

Fitted values of total and retirement assets for eight cohorts are shown in Figure 5e. The vertical lines are to aid in comparing the cohort differences in total and retirement assets at given ages. If there were no reduction in the other financial assets of successive cohorts as they increased their personal retirement assets, the difference in the total would be equal to the difference in retirement assets. The average of the ratios of the total to the retirement asset difference is 1.16. There is of course some randomness in these ratios. But the data suggest that the accumulation of personal retirement assets resulted for the most part in a corresponding increase in total personal financial assets. Fitted values for other personal financial assets are graphed in Figure 5f. They reveal essentially no systematic cohort effect.

c. Indexed Values—Actual And Projected.

The results above show that each of the successively younger cohorts has greater personal financial assets than the preceding older cohort. What will be the personal financial asset levels of the younger cohorts when they reach the age of the oldest cohort? Although it is improbable that future asset levels can be precisely predicted, we believe that the data allow plausible projections of the future assets of the younger cohorts. We fit the actual cohort means with a specification of the form

$$A_{ic} = \alpha + \beta_c + \gamma_1 (Age_i) + \gamma_2 (Age_i)^2 + \gamma_3 (Age_i)^3 + e_{ic} \qquad (1)$$

where A represents an asset category—personal retirement assets, other personal financial assets, total personal financial assets—c indexes cohort and i the ith cohort mean. The β_c are cohort effects with $\Sigma\beta_c = 0$. Thus the individual estimates represent deviations from the mean effect, which is set to zero. The specification is intended to fit the age-asset accumulation pattern, allowing the differences in the levels of the assets between successive cohorts to be maintained as the cohorts age, and to cumulate. It is assumed, for example, that the estimated difference between the assets of the two youngest cohorts, C42 and C46, will be maintained as the cohorts age. Thus the projected difference at age 76 in the asset levels of cohorts C42 and C70, for example, is given by the difference between C42 and C44, plus the difference between C44 and C46, plus the difference between C46 and C48, and so forth. Indeed, it is convenient to think of the estimated cohort effects as representing the projected cohort differences

at age 76. It is likely that this assumption implies a conservative estimate of the projected cohort differences. Constant percentage differences as the cohorts age, for example, imply much larger age 76 cohort differences.

The estimates are shown in Table 1a. The projected personal retirement assets (column 1) of the youngest cohort are $14,076 <u>above</u> the mean while the projected assets of the oldest cohort are $13,105 <u>below</u> the mean, a difference of $27,181. If there were no counterbalancing cohort effects with respect to other personal financial assets, the total personal financial asset cohort effects should approximately parallel the retirement asset cohort effects. The estimates show that the projected total (column 2) for the youngest cohort is $16,003 <u>above</u> the mean and $14,083 <u>below</u> the mean for the oldest cohort, a difference of $30,086. The other personal financial asset cohort effects are typically not statistically different from zero. An F-test does not reject the hypothesis that there are no cohort effects, that is, that all the individual effects are zero.

The projections of total personal financial assets based on equation (1) are graphed in Figure 5g. The age 76 personal financial assets of the oldest cohort are $37,299; the projected age 76 assets of the youngest cohort are $67,385, an increase of over 80 percent.

2. Contributors and Non-Contributors Separately: Indexed Means.

a. Indexed Values—Fitted.

Because only a minority of respondents contribute to a personal retirement saving account—only about 40 percent of cohorts who were younger than 65 in 1984 and a much smaller percent of older

cohorts—the total saving effect of the participants is diluted by the larger number of respondents that did not participate and were apparently unaffected by these saving programs. Thus we also present data for contributors and non-contributors separately. The findings based on means are shown in Figures 6a through 6c. Again, cohorts who reached a given age in a later calendar year, had accumulated much more in personal retirement accounts than cohorts who reached that age in an earlier year. These differences are reflected, for the most part, in corresponding differences in total personal financial assets, as shown in Figure 6a. And, as with both contributors and non-contributors together, the cohort data for other personal financial assets of contributors show essentially no systematic cohort effects. (See Figure 6b.)

For comparison, the accumulation of personal financial assets of non-contributors is shown in Figure 6c. There appear to be no cohort effects among non-contributors at younger ages. At older ages, older cohorts appear to have slightly higher personal financial asset levels. This may be because a smaller proportion of older cohorts ever contributed to a personal retirement plan, and thus the non-contributors among the older cohorts disproportionately include "savers" that if they were younger would have contributed to a personal retirement account. This composition effect is discussed below with reference to Table 2.

b.   Indexed Values—Actual and Projected.

Projected means (indexed to 1984) of contributors are shown in Figure 6d together with actual values for selected cohorts. The projected age 76 total personal financial assets of cohort C70 (in 1991)

is $93,151; the projected value of the C42 cohort at age 76—18 years hence—is $160,175. As with both contributors and non-contributors, the estimated cohort effects for total personal financial assets tend to mirror the estimated effects for personal retirement assets, as shown in Table 1b. The estimated cohort effects for other personal financial assets are not typically statistically different from zero. (The estimates, however, reveal an apparent composition effect among older cohorts and this is discussed below.) Thus for participating families the cumulative effect of personal retirement account contributions is very large. Assuming no cohort effect with respect to other personal financial assets, personal retirement assets would increase over the next 18 years from 22 to 50 percent of the total personal financial assets of age 76 families.

3. Contributors and Non-Contributors Separately: Indexed Medians.

a. Indexed Values—Fitted.

As mentioned above, the distribution of financial assets is highly skewed so that means are much larger than medians. Thus the median is a much better indicator of the assets of the typical family. Medians for all respondents are not informative, however, because the median for personal targeted retirement assets is typically zero. Median total and retirement assets for contributors are shown in Figure 7a. Like the means, the medians also show that younger cohorts accumulated much larger levels of personal retirement assets than older cohorts. The larger accumulation of retirement assets was not offset by a corresponding reduction in the accumulation of other personal financial assets (Figure 7b), that show no substantial off-setting cohort

effects. Thus younger contributor cohorts are accumulating much larger levels of total financial assets (Figure 7a) than their older counterparts.

The medians for non-contributors are shown in Figure 7c. These data show extremely low levels of financial assets and essentially no cohort effects at younger ages. As mentioned above, the "apparent" cohort effect for the oldest cohort apparently reflects a composition effect; most of the oldest respondents were non-contributors, and thus had greater assets than younger cohort non-contributors.

b.   Indexed Values—Actual and Projected.

Like the means, the projected median values of total personal financial assets show very large cohort effects that tend to mirror the cohort effects for personal retirement assets, as shown in Table 1c. Recall that unlike means the sum of the medians if not the median of the sum, and thus the estimated cohort effects cannot be "added" across equations. Most of the estimated cohort effects for other personal financial assets are not statistically different from zero, although an apparent composition effect is reflected in the estimated cohort effects among older cohorts. Nonetheless, it is clear that younger cohorts of participating families are accumulating much more in total personal financial assets than older cohorts. The projected median of current age 76 families (cohort C70 in 1991) is $62,388; the projected accumulation of the youngest cohort by age 76 is $107,138.

4.   Summary of Age-Specific Cohort Effects: Medians.

The graphs of the cohort data show the accumulation of assets with age for successively older cohorts. The different levels of asset

accumulation by different cohorts at specific ages provide the core data to evaluate the net saving effect of personal retirement saving contributions. The median data are summarized in Table 2. These data are based on the same cohort data graphed in Figures 7a through 7c. But not all of the cohort data in the table are shown in the figures.

Consider the age 60-64 data, for example. Median targeted retirement saving increased from $6,477 for the oldest cohort (those who were in this age interval in 1984) to $22,131 for the youngest cohort (who were in this age interval in 1991). There was little corresponding change in other personal financial assets by cohort, however, from $17,617 for the oldest cohort to $20,100 for the youngest cohort. Total personal financial assets increased by almost 90 percent, from $27,101 to $52,498. The table shows the assets of non-contributors as well. They show no trend and are extremely small, $600 in 1991. Similar trends are revealed for the other age groups.

In addition, the table shows the proportion of each age group that has a personal retirement saving account. The proportion with retirement accounts does not vary much by age or cohort for persons younger than 64. Nor does the proportion vary much for the oldest age group, of which very few in any cohort had accounts. But older cohorts, in the 65 to 69 and 70 to 74 age intervals in particular, were much less likely than the younger cohorts to have personal retirement accounts. Thus the data show a decrease in the total personal financial assets of non-contributors in the 65 to 69 age interval as the proportion in the non-contributor status declined (from .81 to .65). This composition effect is also reflected in the older cohort data graphed in

Figures 6c and 7c and the data must be interpreted accordingly. But the data for "pre-retirement" ages and for the oldest ages seem not to be importantly affected by this changing composition.

III.   PERSONAL RETIREMENT SAVING AND EMPLOYER-PROVIDED PENSION ASSETS.

Tradeoffs between personal retirement saving and other personal financial asset saving may provide the most readily available opportunity for substitution from one form of saving to the other. But personal retirement saving could also substitute for employer provided pension assets. Persons who foresee larger employer-provided retirement benefits may be less likely to contribute to a 401(k) plan, or to an IRA account, or to accumulate other personal financial assets. Thus we consider whether families with more pension wealth have less wealth in total personal financial assets.

There are two circumstances that condition the analysis: first, the SIPP data do not allow calculation of employer-provided pension wealth until a person is retired and receiving pension benefits. The benefit, together with life tables, can be used to determine the present value of expected future pension benefits—pension wealth. Thus cohort analysis as presented above is not suitable in this case. Second, both pension wealth and personal financial asset saving will increase with income, thus without controlling for income persons with greater personal financial wealth would almost certainly have greater pension wealth as well. Thus we consider the relationship between personal financial assets and pension wealth for persons 65 to 69, who have

retired and for whom we can determine pension wealth.[9] And we use Social Security wealth percentiles to control for lifetime income. The relationship between Social Security wealth and lifetime income is very non-linear, with less than proportionate increases in Social Security wealth as lifetime income increases. But we believe that the percentile level provides the best available means of grouping people by lifetime income.

Using an analysis of variance framework, we estimate the relationship between pension wealth and three personal financial asset categories: personal retirement assets, other personal financial assets, and total personal financial assets. The specification is of the form

$$A_i = a_i + b_i(\text{PensionWealth}) + c_i(\text{Education}) + e_i , \qquad (2)$$

where i indicates the ith Social Security wealth decile and A denote a personal financial asset category.

The parameter estimates on pension wealth are reported in Table 3 for each of the personal asset categories and for each of the years 1984, 1987, and 1991. The estimates are typically small but suggest that a dollar more in pension wealth is associated with from 4 cents less to 19 cents more in total personal financial assets in 1991, although most estimates are not statistically different from zero. Essentially the same results are obtained if education is excluded from the specification. And, the same results are obtained if home equity is added to the specification, to control for other wealth that could in

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[9]Only persons with reported Social Security benefits are included in the analysis.

principle be used to meet financial needs after retirement. Thus we conclude that there is unlikely to be much if any substitution of personal financial saving for employer-provided pension entitlement.

We obtain essentially the same results when equation (1) is estimated separately for persons with and without a college degree. If anything, the results are stronger for persons with college degrees. That is, the estimated coefficients are somewhat larger for the college educated group. This result is apparently at variance with the recent results of Bernheim and Scholz [1993], who find no substitution for persons without a college degree but a positive substitution effect for persons with a college degree. Their estimates are based on the Survey of Consumer Finances and pertain to persons who are not yet retired. They use an indicator variable for pension coverage, whereas we use pension wealth just after retirement. Their measure of personal assets includes business equity and property other than primary home, whereas we include only personal financial assets. Our ANOVA specification also aims to capture lifetime earnings differences and allows for complete interaction by Social Security wealth percentile.

Several other previous studies have considered the impact of employer-provided pensions on personal saving. The early work of Cagan [1965] and Katona [1965] found that persons covered by an employer pension save more in other forms. Cagan attributed this to a "recognition effect," whereby pension coverage induces awareness of the need to save for the future. More recently, several studies have sought to update and add to this line of analysis by relating personal saving to expected pension wealth, instead of pension coverage. These

studies have focused on older persons who are not yet retired and for whom the pension-saving tradeoff may be greatest. The results have been mixed, perhaps because it is difficult to calculate pension wealth accurately for persons who are not yet retired. Munnell [1976] finds a substantial offset, as high as 62 cents for each dollar of estimated pension wealth. Blinder, Gordon, and Wise [1981], Hubbard [1985], and Avery, Alliehausen, and Gustafson [1986], however, find little or no evidence of a tradeoff; Diamond and Hausman [1984] find a modest tradeoff. Thus these findings would suggest that the tradeoff is far from dollar for dollar and the consensus view appears to be little or no effect.

Possibly the principle reservation about the previous studies is the difficulty of constructing an accurate measure of expected pension wealth for persons prior to receipt of pension benefits. Such calculations require assumptions about job mobility, future earnings, time to retirement, and, most important, pension plan provisions. The detail necessary to calculate pension wealth is are not reported in any of the data used by previous investigators, with the exception of the Survey of Consumer Finances used by Avery, Elliehausen, and Gustafson [1986]. Thus we have directed attention to recently retired persons and have used Social Security wealth percentiles to control for lifetime income.

IV. HOUSING EQUITY.

Rapid increases in housing prices led to large increases in home equity in many parts of the country over the 1980s. The cohort data—not indexed—are shown in Figure 8. The substantial cohort

effect is apparent. Younger cohorts that attained a given age in a later year typically had accumulated more housing equity. Thus not only did younger cohorts accumulate more wealth in personal retirement saving plans, they also accumulated more wealth in the form of housing. For many, the increase in housing equity was probably an unanticipated windfall gain. Thus it might be expected that there would be even more inducement to reduce other personal financial asset saving, contrary to the findings reported above.

Notice that the figure shows increasing housing equity for every cohort through age 76. Cross-section data, however, would show a misleading decline in housing equity with age. The 1991 cross-section data, represented by the 1991 values at 52, 58, 64, 70, and 76, show home equity declining after age 64. Older cohorts have less housing equity than younger cohorts, but not because they reduce housing equity as they age.

We have not attempted in this paper to consider formally the relationship between personal financial asset saving and housing equity. Hoynes and McFadden [1993] have recently completed an analysis of this issue. They find essentially no relationship between increases in home equity and total personal financial asset saving, based on data from the Panel Survey of Income Dynamics (PSID). They are able to follow the same persons over an extended time period. The SIPP data follow the same persons for only 30 months and the cohort method we use in section two does not provide a sufficient number of cohorts to perform a meaningful comparison of changes in home equity versus changes in personal financial assets by cohort. Skinner [1991], based

on a survey of analysis of this issue, also finds little relationship between housing equity and personal financial assets.

V. CONCLUSIONS.

Personal targeted retirement accounts are an increasingly important form of saving for retirement. By 1989, contributions to IRA, 401(k), and Keogh accounts exceeded contributions to traditional employer-provided defined benefit and defined contribution pension plans. We have emphasized the effect of this form of saving on the financial status of recent retirees and on persons approaching retirement. Based on comparison of younger and older cohorts, we conclude that, for the most part, the increasing contributions to personal retirement plans have not displaced other financial asset saving. And thus that the real personal financial assets of younger cohorts are substantially larger than the assets of their predecessors. Although any projections must be imprecise, the conservative estimates that we have made suggest that age 76 families 18 years in the future will have almost $25,000 more in a personal financial assets than current 76 year old families—about $67,000 versus $43,000. The personal financial assets of participating families will be $67,000 higher at age 76—$93,000 versus $160,000.

Using Social Security wealth percentiles to control for lifetime income, we find that thus far there has been little replacement of employer-provided pension entitlements with personal retirement saving. Nor do we find any reduction in other personal financial asset saving with increases in employer-provided pension wealth. Thus we conclude that, for the most part, personal retirement saving has not

displaced saving by employers on the part of individuals, nor have employer pensions displaced other personal financial assets. This should not be interpreted to mean that employer pensions have no effect on individual behavior. It seems apparent that employer pensions together with Social Security have led to dramatic declines in typical retirement ages and the labor force participation of older Americans. Thus even if pensions have not reduced the amount that employees save in other forms, they surely have reduced the amount that older persons earn. This issue is discussed in some detail in Lumsdaine and Wise [1990].

Because we can find no apparent offset to the increase in personal retirement saving, we believe that this form of saving will not only be an increasingly important component of the wealth of the elderly, but indeed holds the prospect of adding substantially to the financial status of older Americans. In particular, personal retirement saving is likely to increase substantially the non-annuitized liquid financial saving of older families.

If these trends continue, the baby boom generation will accumulate substantially larger levels of personal financial assets than there older counterparts and thus after retirement will have much larger pools of accessible assets upon which to draw to meet unexpected contingencies.

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Cohort	Personal Retirement Assets		Total Personal Financial Assets		Other Personal Financial Assets	
	Coefficient	t-Stat	Coefficient	t-Stat	Coefficient	t.-Stat
a. Both Contributors and Non-Contributors -- Means						
C42	14076	19.0	16002	8.2	1927	1.0
C44	11085	17.9	12024	7.3	939	0.6
C46	9997	17.3	9568	6.3	-428	-0.3
C48	7821	14.8	6556	4.7	-1264	-0.9
C50	5759	11.9	4132	3.2	-1626	-1.3
C52	3814	8.6	1459	1.2	-2354	-2.1
C54	1944	4.7	452	0.4	-1492	-1.4
C56	363	0.9	734	0.7	370	0.4
C58	-1604	-3.9	-1682	-1.6	-78	-0.1
C60	-3815	-8.7	-5165	-4.5	-1349	-1.2
C62	-5813	-12.1	-3796	-3.0	2017	1.7
C64	-8130	-15.4	-5234	-3.7	2895	2.2
C66	-10345	-18.0	-8766	-5.8	1578	1.1
C68	-12049	-19.2	-12203	-7.3	-154	-0.1
C70	-13103		-14081		-981	
b. Contributors -- Means						
C42	30138	16.3	31120	4.4	982	0.1
C44	24305	15.8	25331	4.3	1025	0.1
C46	21990	15.3	20567	3.8	-1423	0.2
C48	17802	13.5	16136	3.2	-1666	-0.3
C50	13235	11.0	11451	2.5	-1784	-0.4
C52	8697	7.9	5686	1.3	-3011	-0.7
C54	4355	4.2	2536	0.6	-1818	-0.5
C56	381	0.4	379	0.1	-2	0.0
C58	-4140	-4.1	-5351	-1.4	-1210	-0.3
C60	-8972	-8.2	-15512	-3.7	-6539	-1.6
C62	-12970	-10.8	-10886	-2.4	2084	0.5
C64	-17496	-13.3	-10101	-2.0	7395	1.5
C66	-21873	-15.3	-11122	-2.0	10751	2.0
C68	-26299	-16.8	-24331	-4.1	1968	0.3
C70	-29153		-35903		-6752	

Table 1. Projection Equation Estimated Cohort Effects, by Asset and Contributor Status

Cohort	Personal Retirement Assets		Total Personal Financial Assets		Other Personal Financial Assets	
	Coefficient	t-Stat	Coefficient	t-Stat	Coefficient	t.-Stat
c. Contributors -- Medians						
C42	16066	11.8	21522	6.5	-6078	2.3
C44	12793	11.3	19358	7.0	-2771	-1.2
C46	12074	10.3	17811	6.9	-2955	-1.4
C48	9936	10.3	14804	6.2	-2441	-1.3
C50	7383	8.3	11362	5.2	-2005	-1.1
C52	5066	6.2	7053	3.5	-1964	-1.2
C54	3103	4.1	4498	2.4	-1753	-1.2
C56	910	1.2	163	0.0	-1370	-1.0
C58	-1953	-2.6	-3451	-1.9	-374	-0.3
C60	-5556	-6.3	-9896	-5.0	-1806	-1.1
C62	-7414	-8.4	-11095	-5.1	-74	-0.0
C64	-10617	-11.0	-12503	-5.3	3520	1.8
C66	-12448	-11.8	-15700	-6.1	5184	2.5
C68	-14046	-12.2	-20652	-7.3	7186	3.2
C70	-15297		-23274		7701	

Table 1. Projection Equation Estimated Cohort Effects, by Asset and Contributor Status, Cont.

Age Interval & Data Reported	Year Attained Given Age		
	1984	1987	1991
Table 2. Summary of Cohort Effects at Selected Age Intervals, Percents and Medians			
Age 50 to 54			
% With Personal Retirement Saving	36	42	46
Personal Retirement Assets	5000	10018	15742
Other Personal Financial Assets	8440	9047	8200
Total Personal Financial Assets	16054	23004	31549
% Without Personal Retirement Assets	64	58	54
Total Personal Financial Assets	500	500	500
Age 55-59			
% With Personal Retirement Saving	43	43	43
Personal Retirement Assets	5300	10700	15402
Other Personal Financial Assets	12520	16580	12800
Total Personal Financial Assets	21200	32000	39400
% Without Personal Retirement Assets	57	57	57
Total Personal Financial Assets	600	500	600
Age 60-64			
% With Personal Retirement Saving	38	41	42
Personal Retirement Assets	6477	12000	22131
Other Personal Financial Assets	17617	19500	20100
Total Personal Financial Assets	27101	37300	52498
% Without Personal Retirement Assets	62	59	58
Total Personal Financial Assets	1100	600	600
Age 65-69			
% With Personal Retirement Saving	19	27	35
Personal Retirement Assets	7000	11000	17739
Other Personal Financial Assets	35500	37540	40000
Total Personal Financial Assets	44050	53700	74260
% Without Personal Retirement Assets	81	73	65
Total Personal Financial Assets	5000	3916	1600

Table 2. Summary of Cohort Effects at Selected Age Intervals, Percents and Medians, Cont.

Age Interval & Data Reported	Year Attained Given Age		
	1984	1987	1991
Age 70-74			
% With Personal Retirement Saving	8	15	20
Personal Retirement Assets	7096	9887	15000
Other Personal Financial Assets	40800	46000	43850
Total Personal Financial Assets	62866	58825	78000
% Without Personal Retirement Assets	92	85	80
Total Personal Financial Assets	5500	8930	6000
Age 75-79			
% With Personal Retirement Saving	6	7	11
Personal Retirement Assets	6000	9450	15000
Other Personal Financial Assets	36000	60000	61719
Total Personal Financial Assets	56383	67398	83978
% Without Personal Retirement Assets	94	93	89
Total Personal Financial Assets	7800	6000	10741
Age 80+			
% With Personal Retirement Saving	4	4	5
Personal Retirement Assets	3730	6000	16018
Other Personal Financial Assets	45030	35719	56800
Total Personal Financial Assets	51487	49129	87391
% Without Personal Retirement Assets	96	96	95
Total Personal Financial Assets	6000	8000	10000

Table 3. ANOVA Estimates of the Effect of Employer Pension Wealth on Personal Financial Assets, by SS Wealth Percentile, and by Asset and Year

SS Wealth Percentile	Personal Retirement Assets		Other Personal Financial Assets		Total Personal Financial Assets	
1984						
1st	-.021	(.010)	-.006	(.050)	-.027	(.053)
2nd	-.000	(.013)	.052	(.061)	.052	(.065)
3rd	-.005	(.015)	.125	(.073)	.120	(.078)
4th	.008	(.016)	-.003	(.077)	.005	(.082)
5th	.028	(.016)	.230	(.075)	.257	(.079)
6th	-.005	(.011)	.159	(.055)	.153	(.058)
7th	-.008	(.012)	.024	(.059)	.016	(.062)
8th	-.012	(.016)	-.112	(.078)	-.124	(.083)
9th	-.008	(.014)	.126	(.067)	.118	(.071)
10th	.006	(.010)	.045	(.048)	.052	(.051)
1987						
1st	.013	(.013)	.074	(.053)	.087	(.056)
2nd	-.001	(.015)	-.040	(.060)	-.041	(.064)
3rd	-.011	(.023)	.054	(.090)	.043	(.096)
4th	-.008	(.020)	-.086	(.078)	-.093	(.083)
5th	.000	(.017)	.173	(.068)	.174	(.073)
6th	.020	(.013)	.208	(.053)	.228	(.056)
7th	.002	(.010)	.009	(.041)	.012	(.043)
8th	.020	(.014)	.027	(.057)	.047	(.060)
9th	.005	(.018)	-.278	(.071)	-.274	(.075)
10th	-.032	(.013)	.278	(.052)	.246	(.056)
1991						
1st	.006	(.020)	.066	(.055)	.072	(.062)
2nd	-.003	(.042)	.003	(.116)	.000	(.131)
3rd	.105	(.039)	.087	(.107)	.192	(.121)
4th	.064	(.030)	.084	(.083)	.147	(.093)
5th	-.016	(.023)	-.023	(.064)	-.039	(.073)
6th	-.029	(.026)	.065	(.071)	.036	(.080)
7th	-.007	(.029)	-.007	(.080)	-.013	(.090)
8th	.054	(.028)	.111	(.078)	.165	(.088)
9th	.057	(.026)	.031	(.071)	.088	(.080)
10th	-.027	(.022)	.039	(.061)	.012	(.069)

Appendix Table 1. Components of Asset Categories, Proportion of Families Owning, and Mean and Median Levels, Age 65-69, 1991

Asset Category and Component	Percent Owning	Mean	Median
Personal (Targetted) Retirement Assets	34.5	10992	0
Individual Retirement Accounts (IRAs)	30.8	7239	0
401(k) Accounts	3.8	617	0
Keogh Plans	1.9	1439	0
Life Insurance and annuities	3.0	1626	0
Other Personal Financial Assets	84.8	42018	7428
Saving Accounts & CDs	72.2	19894	3600
Money Markets Funds, Bonds, & Securities	13.3	8007	0
Stocks & Mutual Funds	21.9	13219	0
U.S. Savings Bonds	14.1	548	0
Non-Interest Bearing Checking Accounts	38.4	351	0
Employer-Provided Pension Assets	56.2	62305	16017
Pension	34.6	23276	0
Railroad Retirement	2.0	3483	0
Federal	5.1	9767	0
State Government	2.6	11550	0
Local Government	2.8	3569	0
Military	7.1	5251	0
Veterans	5.2	3891	0
Other	3.0	1517	0
Social Security Assets	88.0	99682	99167
Home Equity	75.3	64955	50000
Equity in Other Property	81.8	33855	5992
Net Equity in Other Property	13.2	7450	0
Motor Vehicle Equity	80.6	6902	3950
Business Equity	5.9	7180	0
Rental Property	7.7	7961	0
Other Properties (vacation, commercial,...)	1.4	369	0
Money Owed to Family	2.6	685	0
Equity in Other Financial Investments	3.5	2258	0
Money Owed to Family-Business/Property Sale	2.7	1049	0

Appendix Table 2. Mean Personal Retirement Assets for 15 Cohorts

Age	Cohort (Age in 1984)														
	42	44	46	48	50	52	54	56	58	60	62	64	66	68	70
42	1509														
44	4343	1426													
46		4532	1825												
48	10369		4528	2036											
50		10391		4885	1983										
52			11694		5740	2353									
54				11816		6810	2980								
56					12030		7030	2849							
58						12494		6702	3039						
60							11174		7967	4275					
62								15130		8108	4272				
64									15033		8467	3678			
66										10820		4932	3262		
68											10612		6328	2398	
70												10999		3201	1608
72													7565		2036
74														5374	
76															3204

Fig 1a. Median Assets by Year
Families Aged 65 to 69

Legend:
- Other Personal Financial
- Other Non-Liquid
- Home Equity
- Employer Pension
- Social Security

Fig 1b. Mean Assets by Year
Families Aged 65 to 69

Legend:
- Personal Retirement
- Other Personal Financial
- Other Non-Liquid
- Home Equity
- Employer Pension
- Social Security

Fig 1c. Mean Wealth Increase 1984-91
Families 65-69
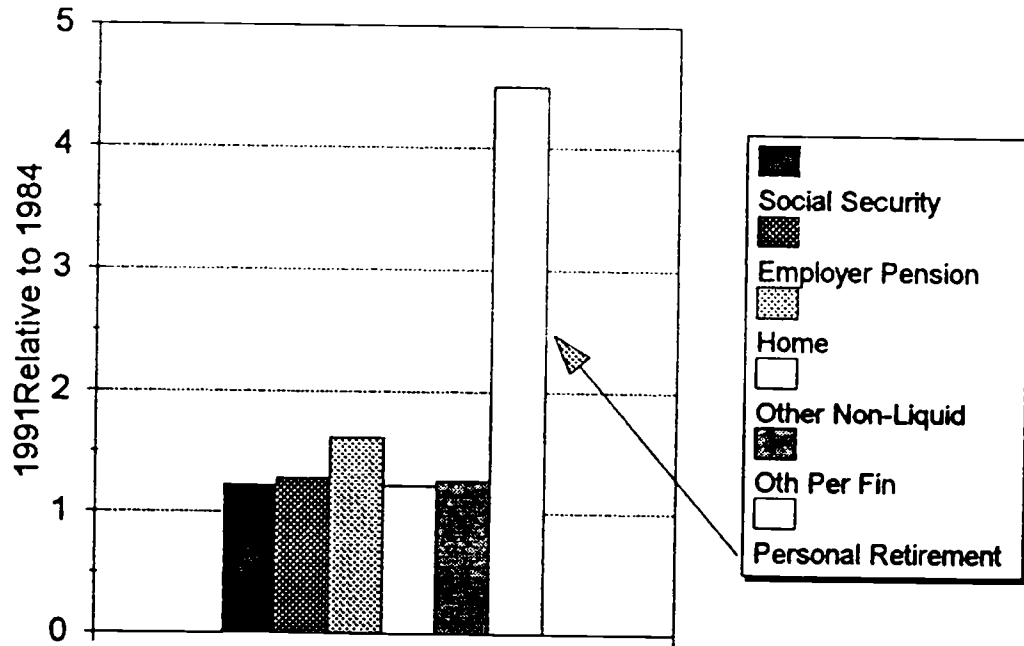
Fig 2. IRA and 401(k) Contributions

Fig 3a. Retirement Plan Contributions

Legend: DB, DC, Keogh, 401(k), IRA
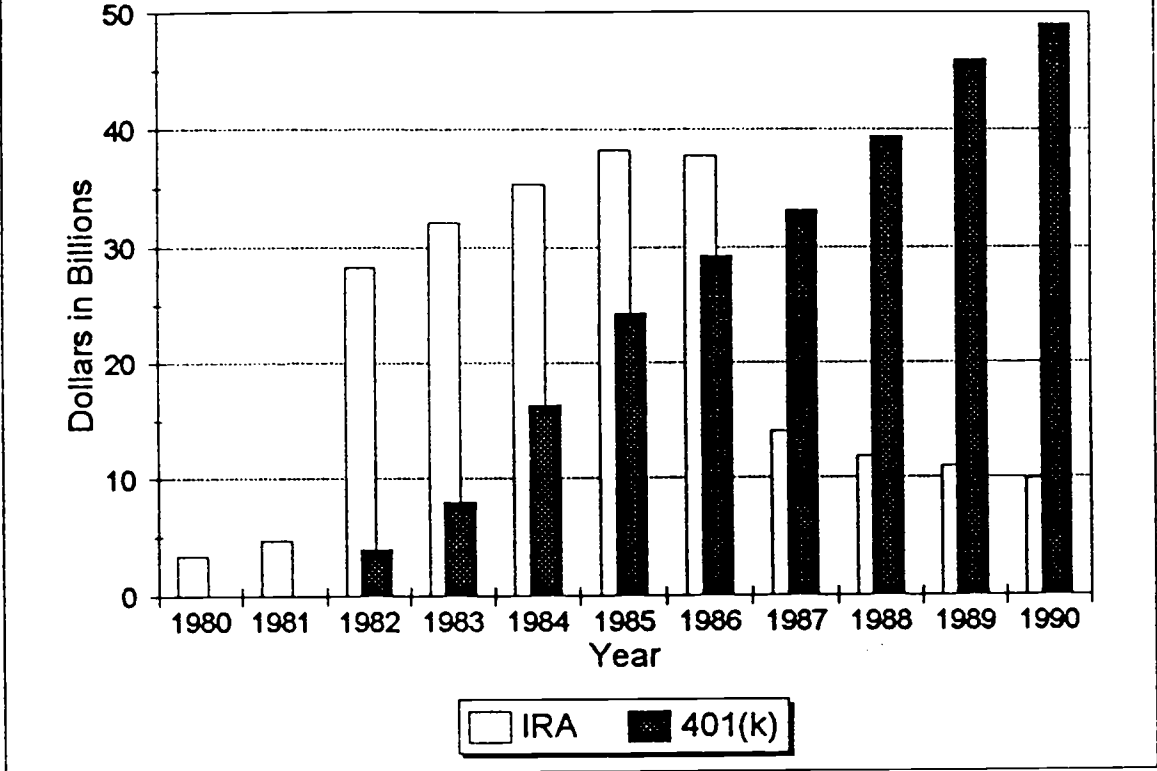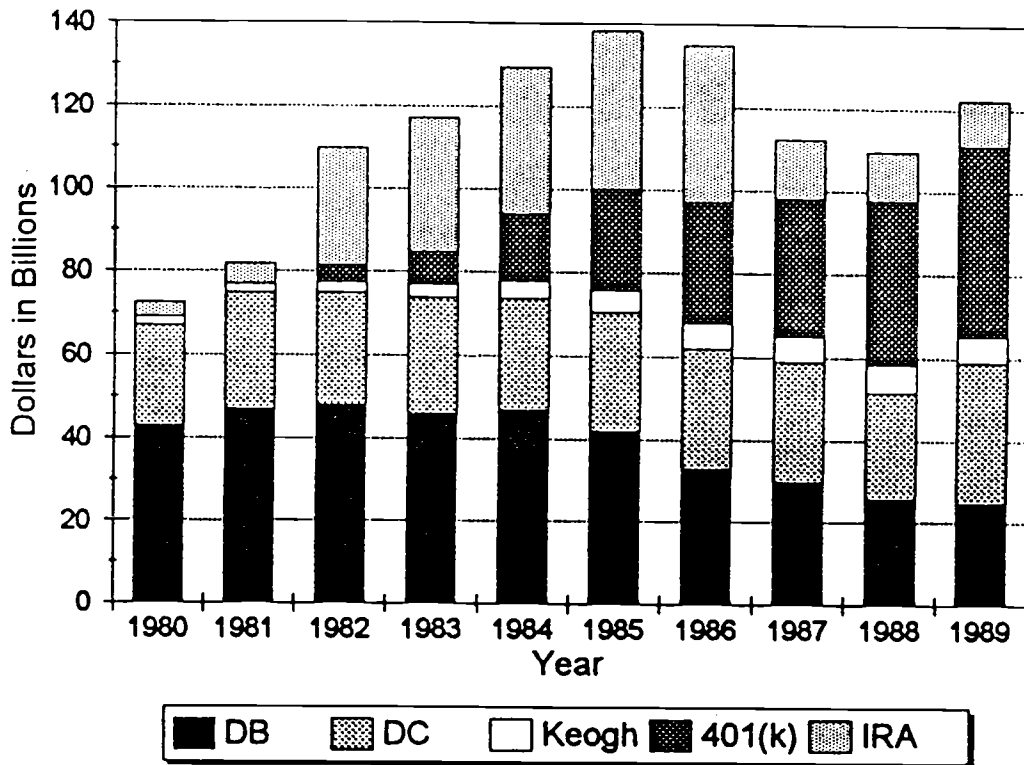
Fig 3b. National Flow of Funds Saving

Legend: FOF Unadjusted, FOF NIPA Basis, Tot Retire Cont

Fig 4a. Illustration of Cohort Data
Personal Retirement Assets

Legend: C46, C52, C58, C64, C72, 84 CS, 91 CS
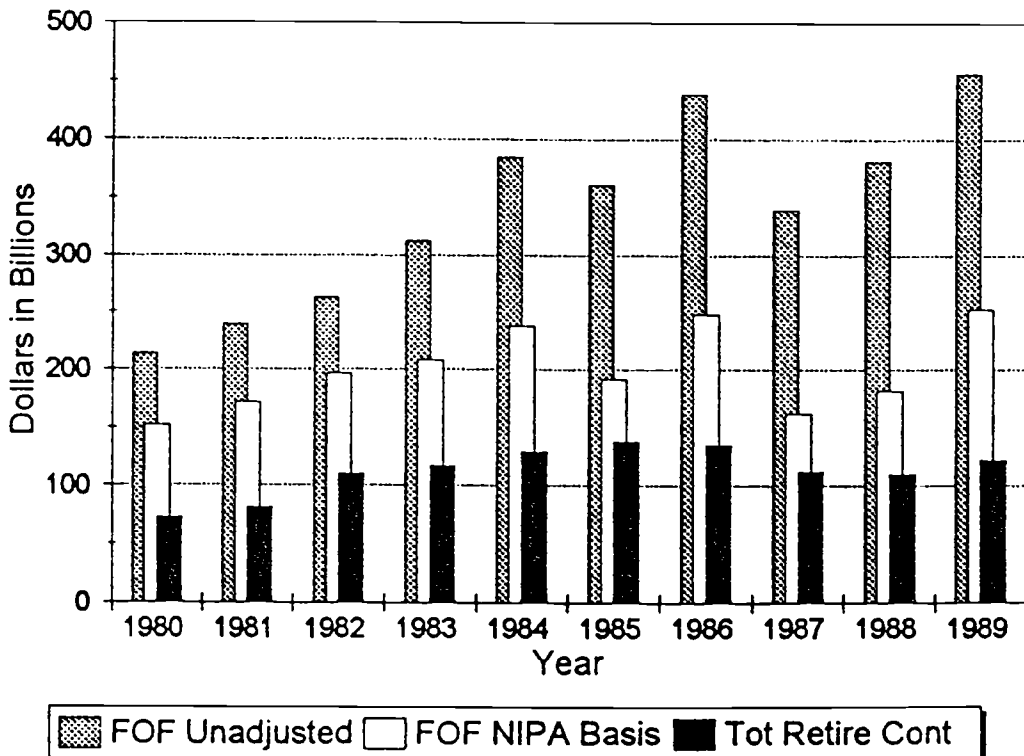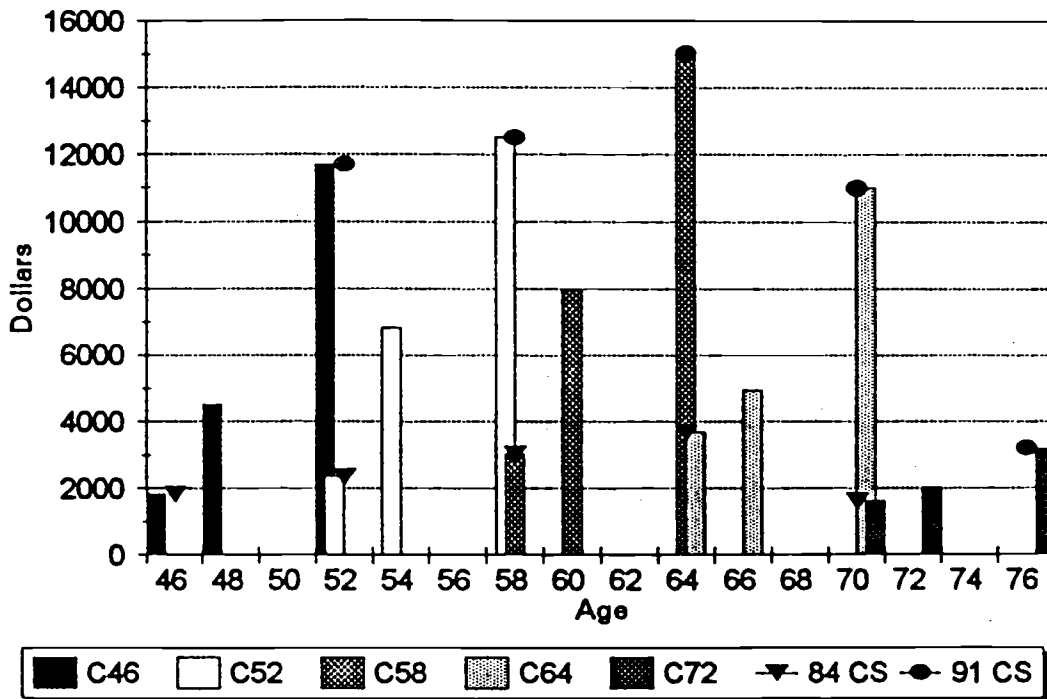
Fig 4b. Illustration of Cohort Data
Personal Retirement Assets--Fitted

Legend: C46, C52, C58, C64, C72
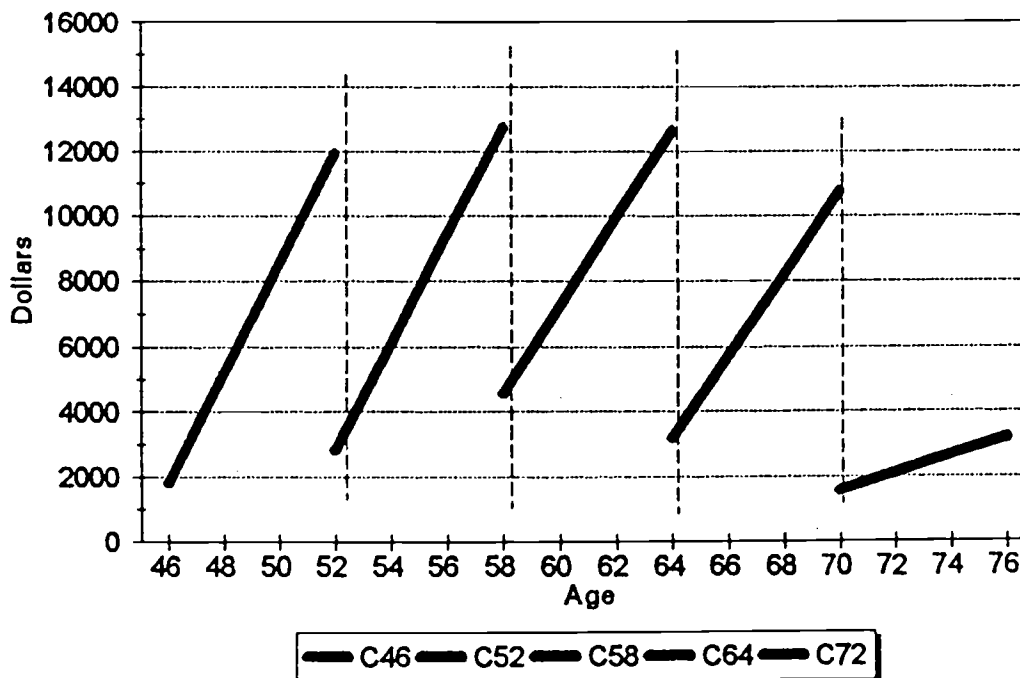
Fig 5a. Personal Retirement Assets
All Respondents--Five Cohorts--Means

C46 C52 C58 C64 C70
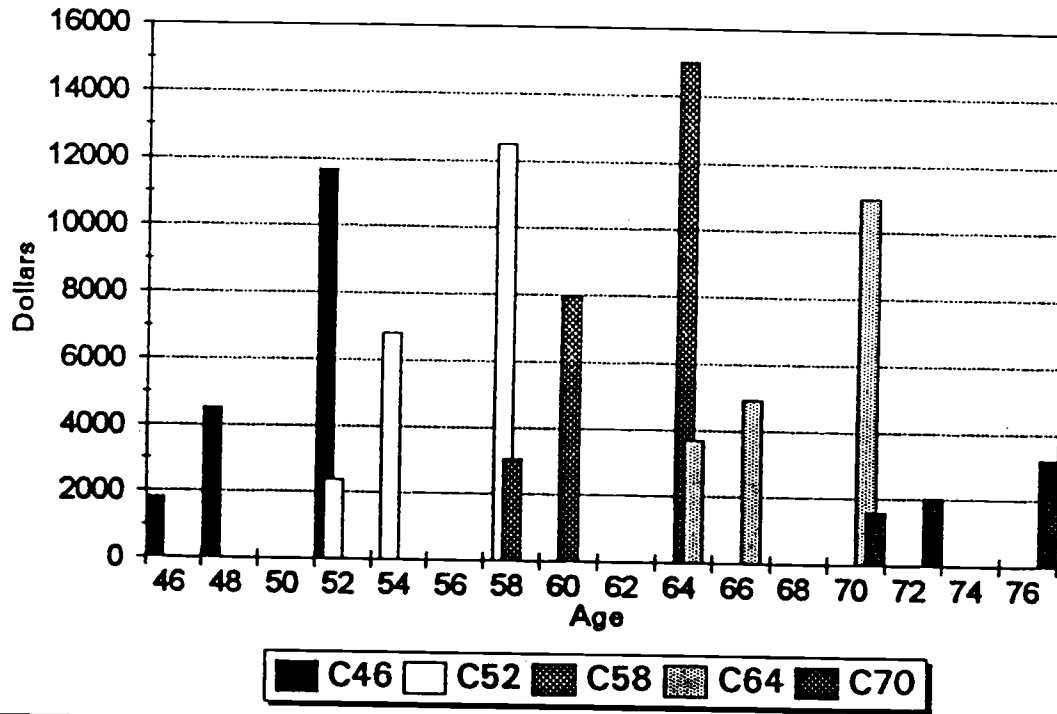
Fig 5b. Other Personal Fin Assets
All Respondents--Five Cohorts--Means

C46 C52 C58 C64 C70
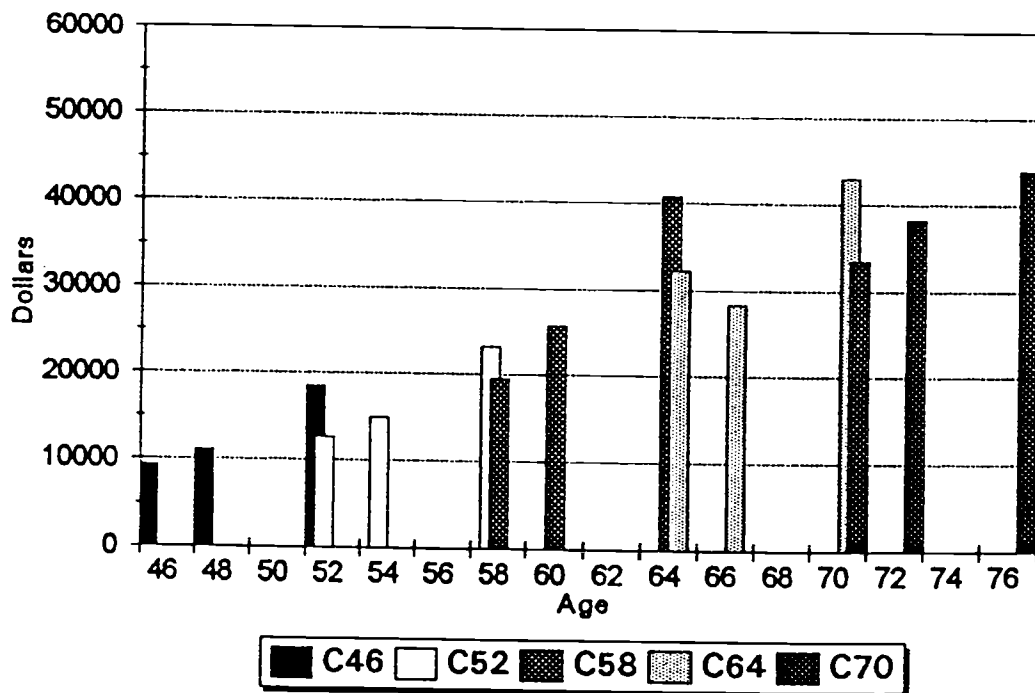
Fig 5c. Total Personal Fin Assets
All Respondents--Five Cohorts--Means

Legend: C46 □ C52 C58 C64 C70
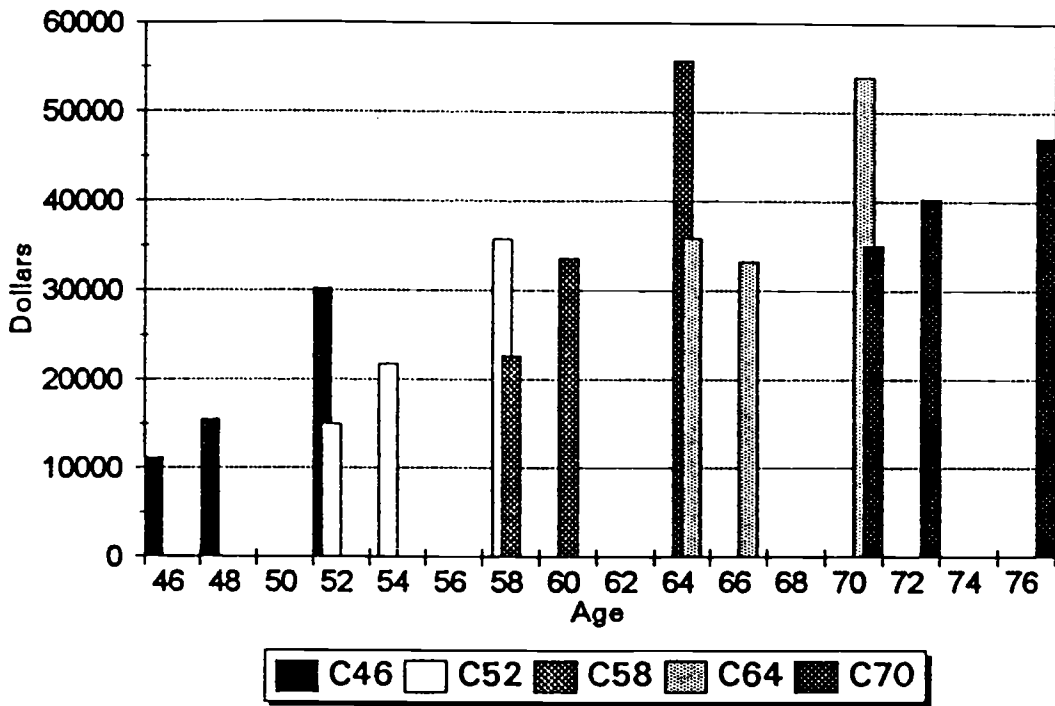
Fig 5d. Total PFA v PRA
All Respondents--Selected Cohorts

Legend: C52-Tot □ C58-Tot C64-Tot C52-Ret C58-Ret C64-Ret
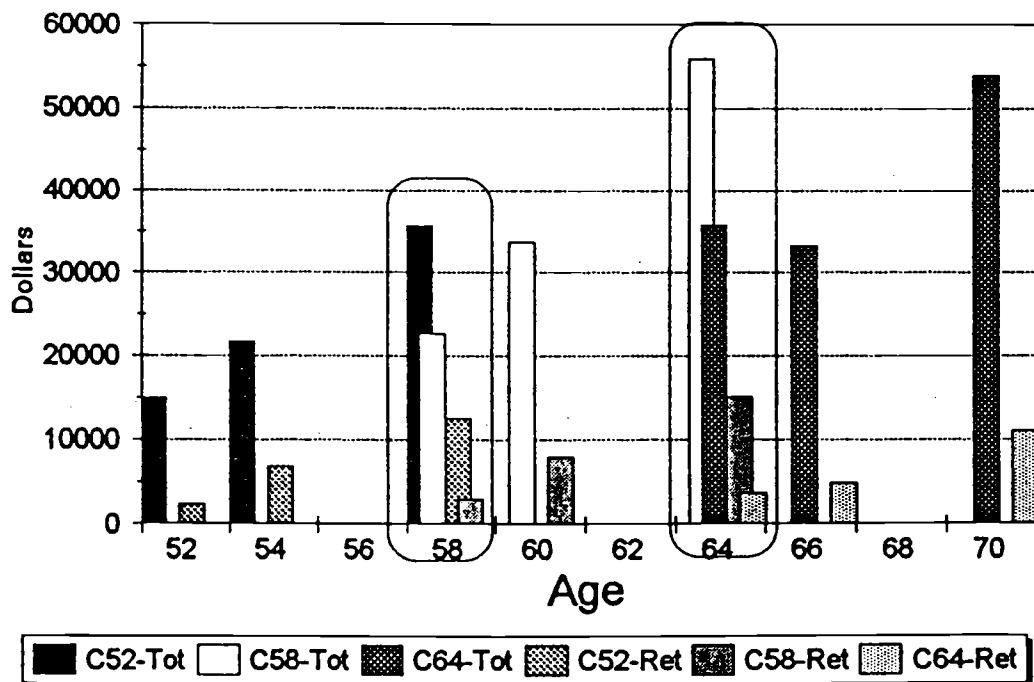
Fig 5e. Personal Financial Assets
Total and Retirement
Means--Both Contribuors & NonContributors--Indexed

Fig 5f. Personal Financial Assets
Other
Means--Both Contributors & Non-Contributors--Indexed
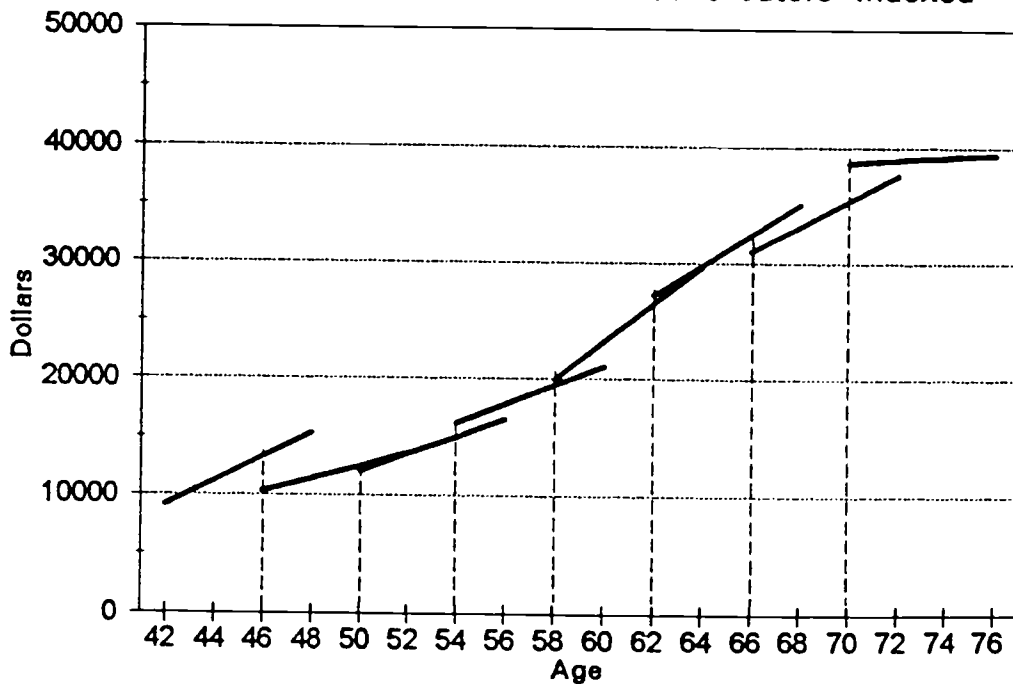
Fig 5g. Total Pers Financial Assets
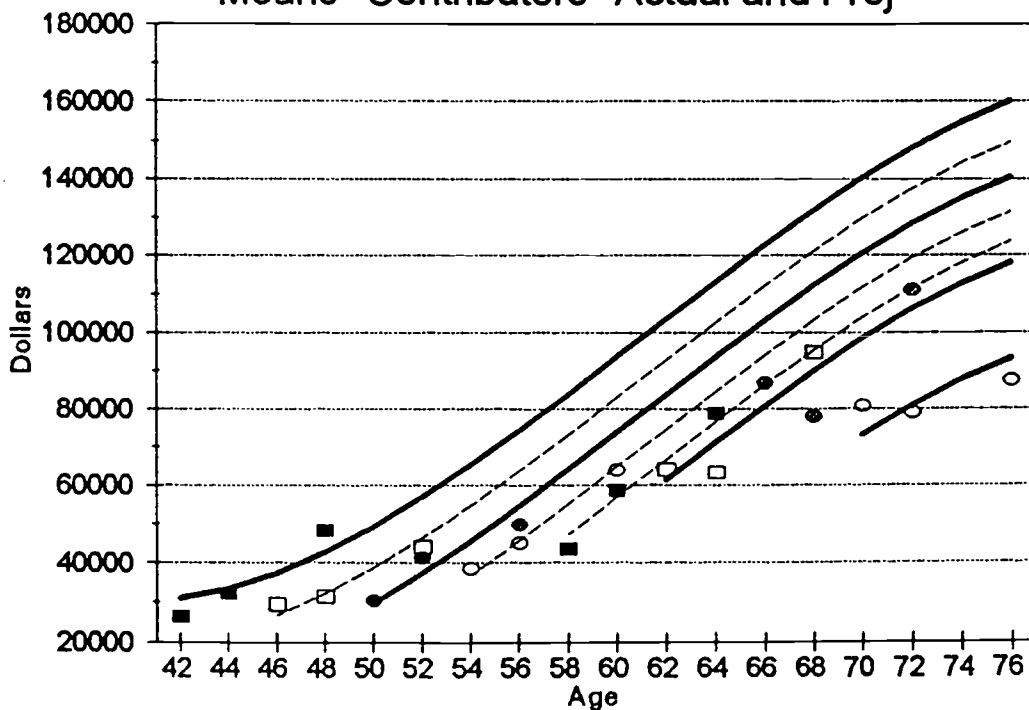## Means--Both--Actual and Projected
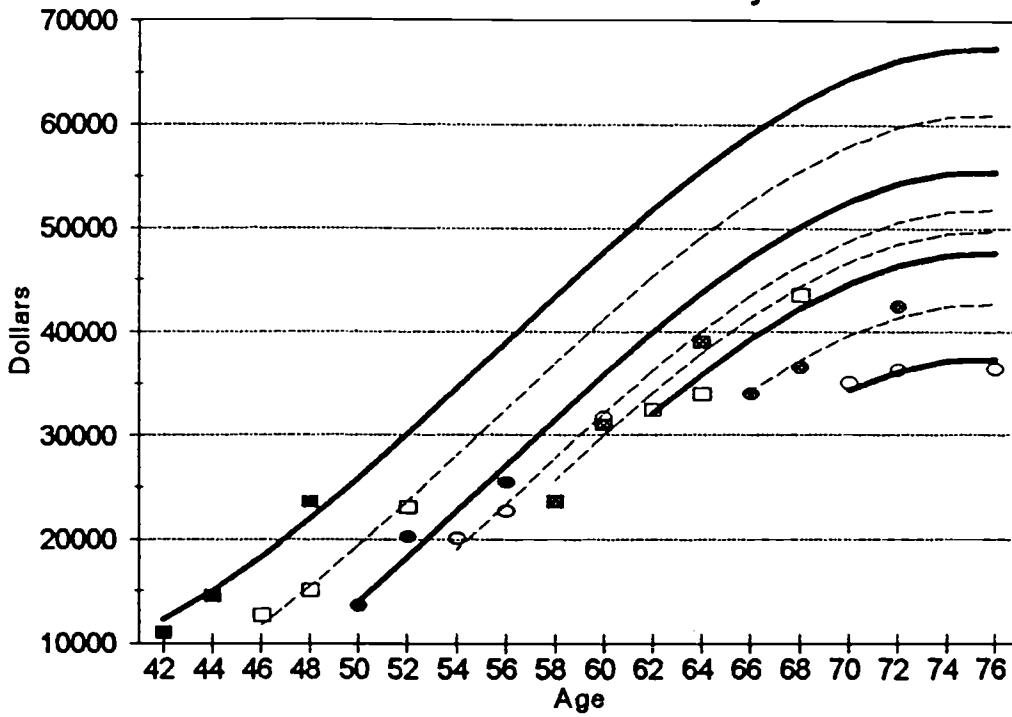
Fig 6a. Personal Financial Assets
Total and Retirement
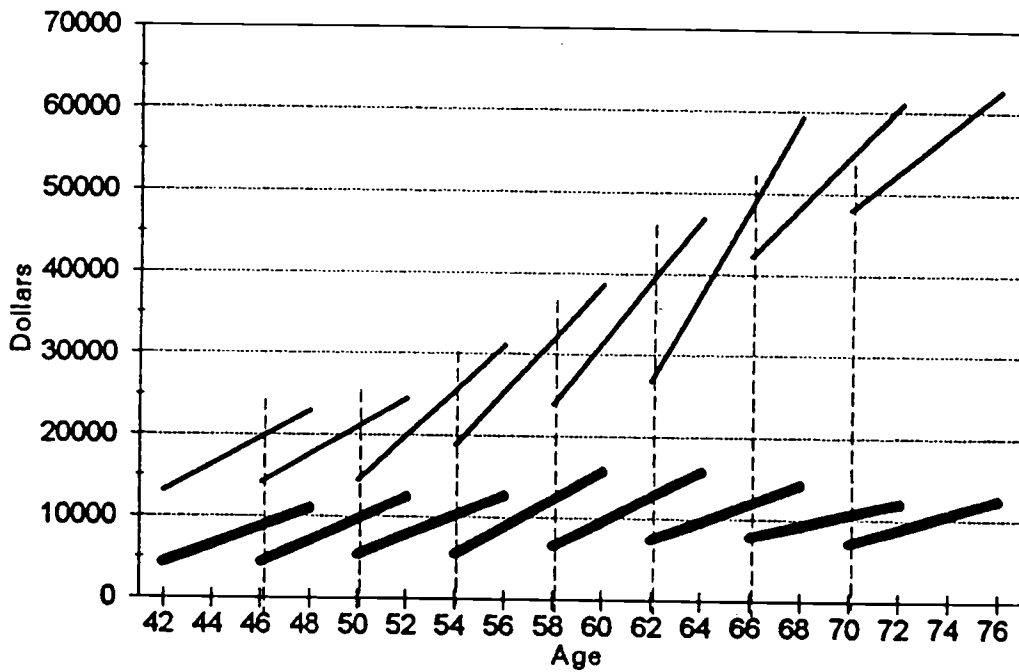### Means--Contribuors--Indexed
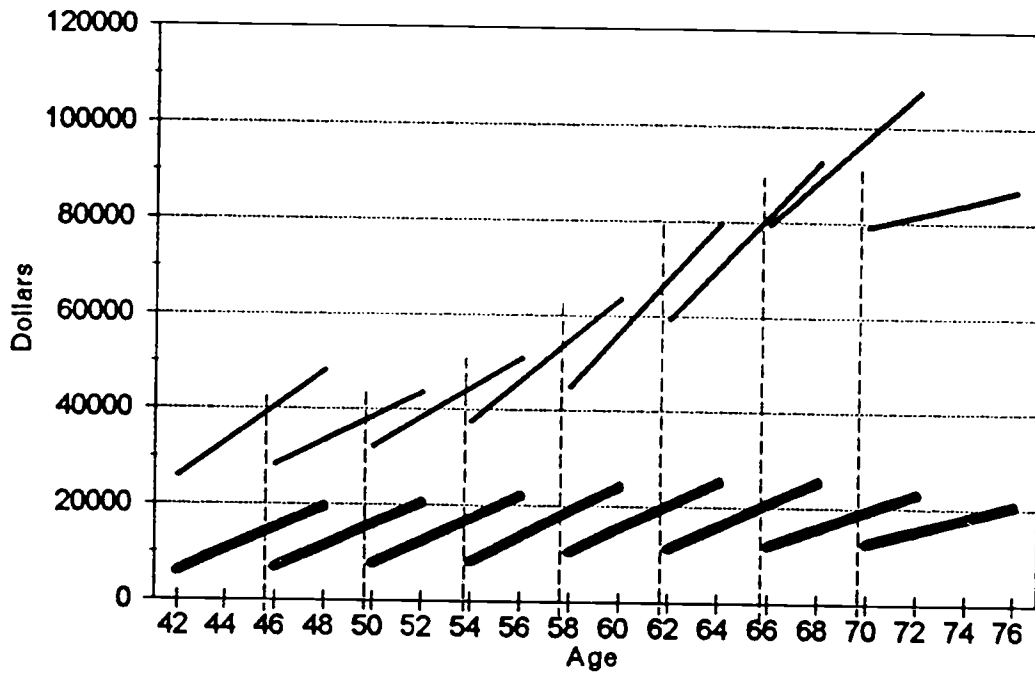
Fig 6b. Personal Financial Assets
Other
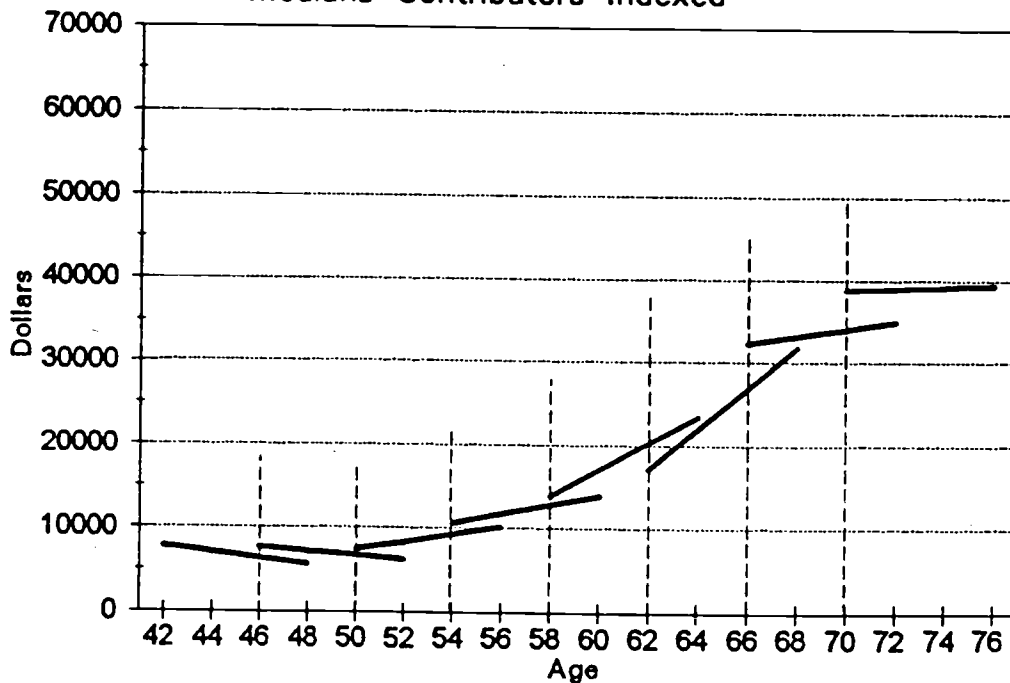### Means--Contributors--Indexed
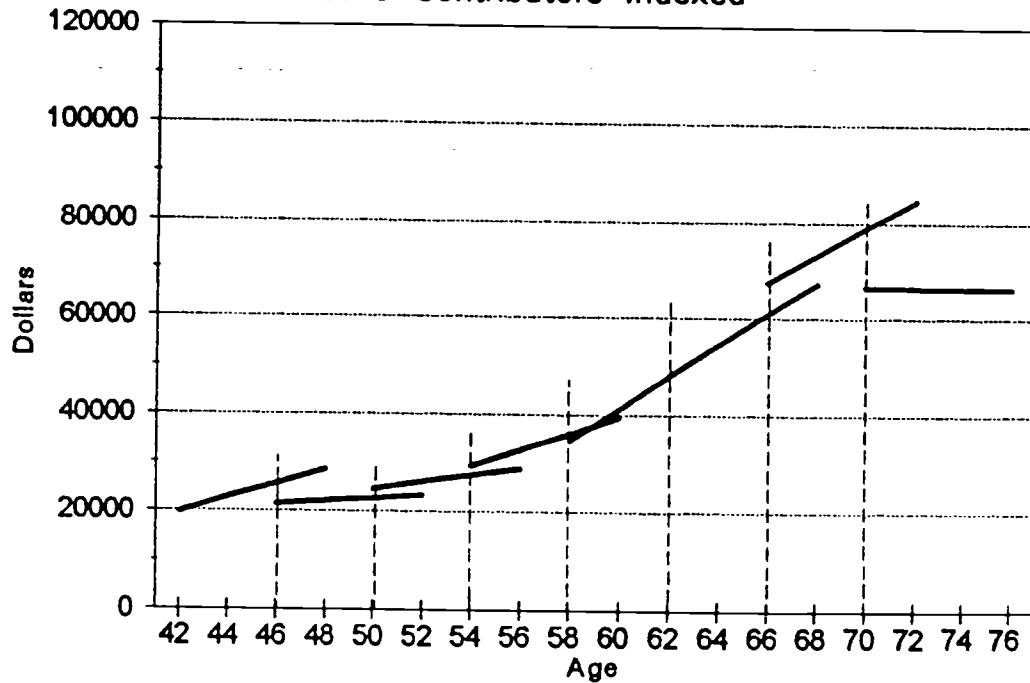
Fig 6c. Personal Financial Assets
Other
Means--Non-Contributors--Indexed
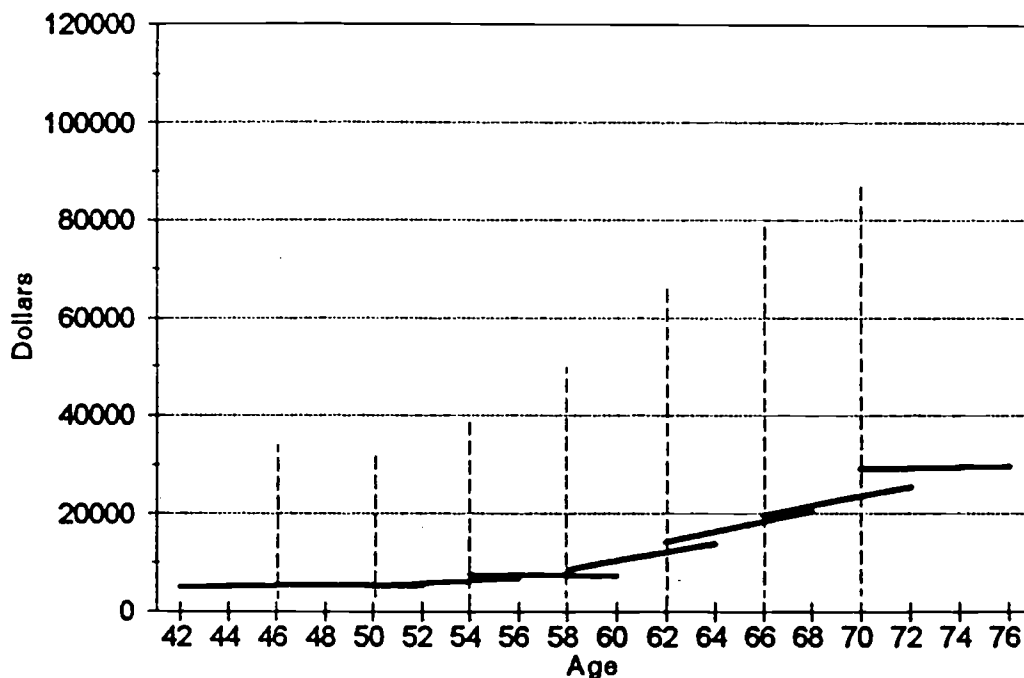
Fig 6d. Total Pers Financial Assets
Means--Contributors--Actual and Proj

Fig 7a. Personal Financial Assets

Total and Retirement

Medians--Contribuors--Indexed

Fig 7b. Personal Financial Assets

Other
Medians--Contributors--Indexed

Fig 7c. Personal Financial Assets

Other
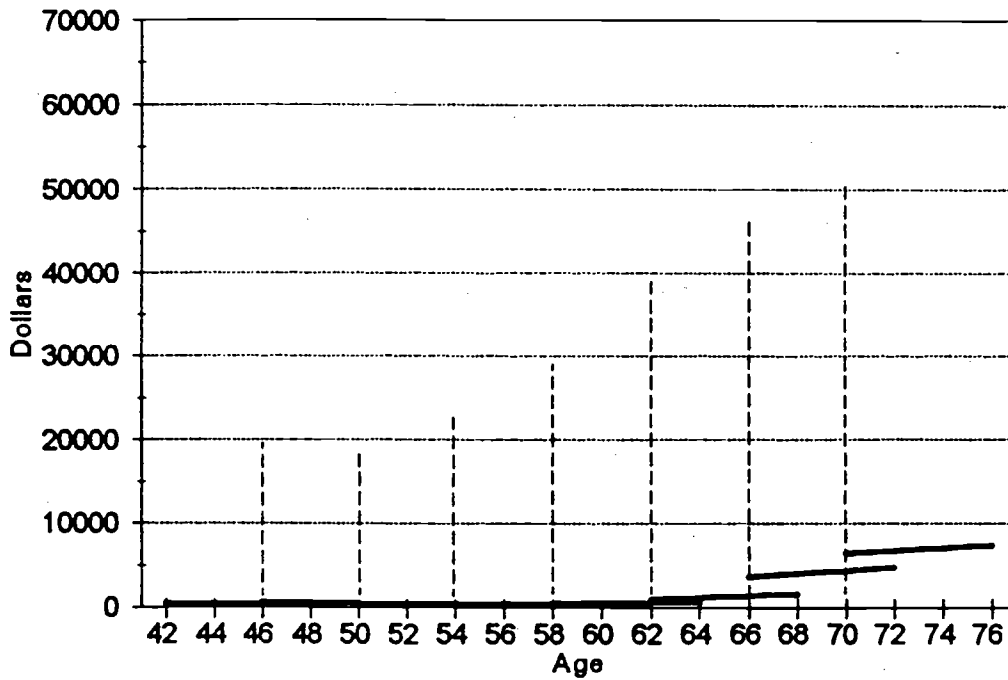### Medians--Non-Contributors--Indexed

Fig 7d. Total Pers Financial Assets
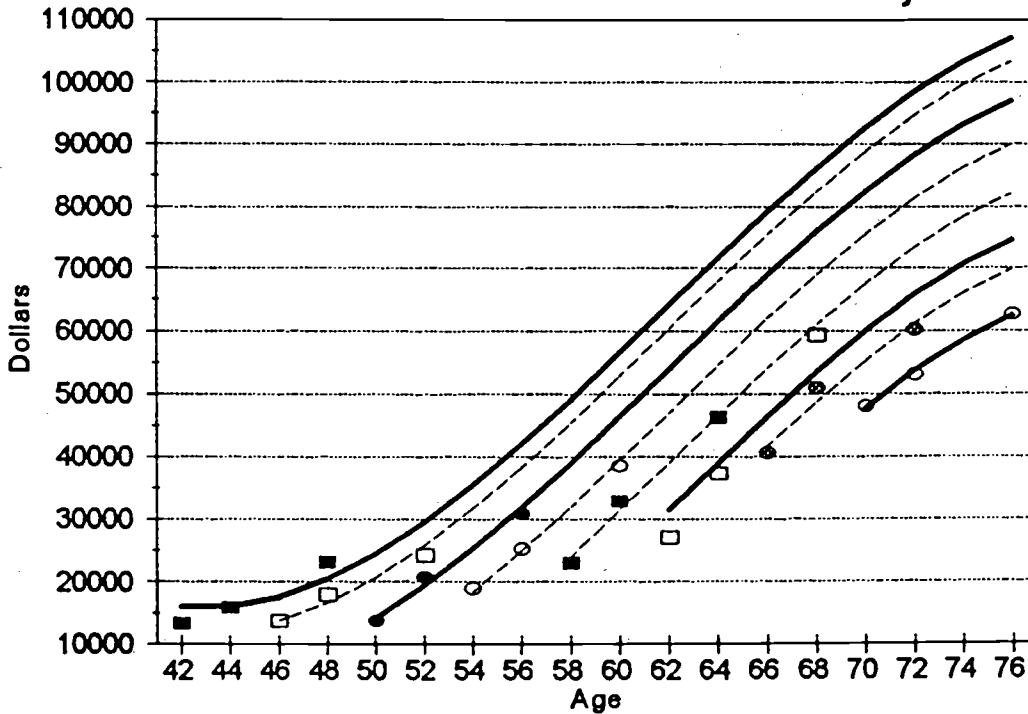
Medians--Contributors--Actual and Proj

Fig 8. Home Equity

All Respondents--Selected Cohorts