DO 401(K) CONTRIBUTIONS
CROWD OUT OTHER
PERSONAL SAVING?

James M. Poterba

Steven F. Venti

David A. Wise

DO 401(K) CONTRIBUTIONS
CROWD OUT OTHER PERSONAL SAVING?

ABSTRACT

During the late 1980s, contributions to 401(k) plans eclipsed contributions to Individual Retirement Accounts as the leading form of tax-deferred individual retirement saving. This paper uses data from the 1984, 1987, and 1991 Surveys of Income and Program Participation to describe patterns of participation in and contributions to 401(k) plans, and to evaluate the net impact of these contributions on personal saving. We find that 401(k) participation conditional on eligibility exceeds sixty percent at all income levels. This pattern contrasts with Individual Retirement Accounts in the early 1980s, which exhibited a sharply rising profile of participation across income groups. We study the net effect of 401(k) contributions on personal saving by comparing the growth of non-401(k) assets for contributors and non-contributors, and by comparing the level of wealth for families who are eligible for 401(k)s with that of those who are not. We find little evidence that 401(k) contributions substitute for other forms of private saving. We also explore the substitutability of 401(k) contributions for IRA contributions, and revisit the question of whether IRAs substitute for other types of saving. Our findings suggest little substitution on either margin.

James M. Poterba
Department of Economics
MIT
Cambridge, MA 02139
and NBER

David A. Wise
Kennedy School of Government
Harvard University
Cambridge, MA 02138
and NBER

Steven F. Venti
Department of Economics
Dartmouth College
Hanover, NH 03755
and NBER

Two retirement saving programs became important channels for personal saving in the United States in the 1980's. One, the Individual Retirement Account (IRA), has been the subject of substantial public discussion and economic analysis. It grew from a very limited program in the early 1980's to one that attracted almost $40 billion in contributions and accounted for a quarter of personal saving by 1986. Contributions fell precipitously after the Tax Reform Act of 1986, which limited the tax benefits of IRAs for middle- and high-income taxpayers. The other program, the 401(k), also began in the early 1980's, and grew to a saving plan with $46 billion in contributions in 1989. It is still growing rapidly. In contrast to IRAs, almost no public discussion or economic analysis has been directed at the 401(k) program.

This paper describes patterns of 401(k) saving, and then explores the substitution between 401(k) saving, IRA saving, and other personal saving. We also present new evidence on the substitution between IRA contributions and other types of personal saving. Our analysis is based on simple but robust methods, with substantial reliance on the essentially exogenous determination of 401(k) eligibility status. We find little substitution between 401(k) saving and other forms of financial asset saving, and little substitution between either of these forms of saving and IRA saving. Most contributions to 401(k)s and IRAs therefore represent net new saving.

1

This paper is divided into six sections. Section one describes the structure of 401(k) plans and IRAs. The second section presents detailed information on the participation and contribution decisions of individuals who are eligible to make 401(k) contributions, and contrasts this with participation in IRAs. We particularly explore the decline in IRA contributions following the Tax Reform Act of 1986. Sections three and four compare the non-401(k) asset accumulation patterns of 401(k)-eligible and ineligible households to analyze the substitution between 401(k)s and other assets. In section five, we focus on the substitution between 401(k) saving and IRA saving. This involves explicit analysis of IRA contributions by 401(k) participants. A brief conclusion suggests that it is difficult to explain our stylized findings within traditional models of saving, in which investors respond only to after-tax rates of return. This suggests that other factors must play an important role, and calls for increased attention to alternative models of saving behavior.

1. RETIREMENT SAVING PROGRAMS IN THE UNITED STATES

The current U.S. tax code creates a number of specialized saving vehicles that enable savers to reduce their tax burden on capital income. The most important vehicle is the 401(k) plan. The 401(k) program was created by the Revenue Act of 1978, but was not widely used until the IRS issued clarifying regulations in 1981. 401(k) plans are available only to employees of firms that offer such plans. Deposits in 401(k) accounts are tax-deductible and the return on the contributions accrues tax free. Taxes are paid upon

withdrawal. Prior to 1987 the employee contribution limit was $30,000, but the Tax Reform Act of 1986 reduced the limit to $7,000 and indexed this limit for inflation in subsequent years. The contribution limit is $8,994 for the 1993 tax year.

There are several notable features of 401(k) plans. First, employers can "match" employee contributions. About 60 percent of contributions are matched at rates above 10 percent, and 26 percent at rates above 100 percent. Employer matching strengthens the incentives for saving through these plans. Second, some plans permit "hardship withdrawals" in certain circumstances, although such withdrawals are usually subject to a penalty tax. Finally, employees may borrow funds from their 401(k) accounts, although the precise borrowing rules are employer-dependent. The General Accounting Office [1988] summarizes the characteristics of 401(k) plans in more detail.

The other important retirement saving vehicle, the Individual Retirement Account, became popular after the Economic Recovery Act of 1981 made IRAs available to all wage earners and their spouses. Between 1981 and 1986, any wage earner could contribute up to $2,000 per year to an IRA, with the contribution deducted from taxable income. In addition, the spouse of a wage earner could contribute up to $250 per year to an account. Interest income on the IRA accrued tax free. Upon withdrawal, taxes were to be paid according to income tax rates in effect at the time of the withdrawal. A ten percent penalty was imposed on withdrawals before age 59½.

3

The Tax Reform Act of 1986 substantially limited the IRA tax advantage for individuals with incomes above $30,000 and families with incomes above $40,000. The tax deductibility of contributions was phased out between $30,000 and $40,000 for single persons and between $40,000 and $50,000 for families, provided the contributor also had an employer-provided pension plan. Higher-income individuals could nevertheless make non-deductible IRA contributions, and the return on the contributions still accumulated tax free. As a rough approximation, about one-half of the advantage of the IRA over conventional saving vehicles was removed for those above the deductibility limits.

The relative returns to saving through a 401(k), an IRA, and a traditional taxable saving vehicle can be described as follows. Consider a saver who plans to withdraw assets for consumption in T years, and who will be more than 59½ years old at that time. Assume a constant interest rate of r, and constant marginal tax rates of τ. The value in T periods of one dollar of current pre-tax income, saved through ordinary taxable channels, is

$$V_{ordinary} = (1-\tau)e^{r(1-\tau)T}. \qquad (1)$$

If the pre-tax dollar is invested in a tax-deductible IRA, as under pre-1986 rules for all households or post-1986 rules for lower- and middle-income households, the value is

$$V_{IRA} = (1-\tau)e^{rT}. \qquad (2)$$

A non-deductible IRA would have a value of

$$V_{IRA} = (1-\tau)e^{rT} - \tau\left[(1-\tau)e^{rT} - (1-\tau)\right]$$

$$= (1-\tau)\left[(1-\tau)e^{rT} + \tau\right].$$

(3)

Finally, a pre-tax dollar invested in a 401(k) yields

$$V_{401(k)} = (1-\tau)(1+m)e^{rT}$$

(4)

where m is the employer match rate for employee contributions.

Conventional financial calculations, emphasizing rates of return, demonstrate that the 401(k) investment strictly dominates even a fully deductible IRA whenever the employer match rate is positive. On this criterion, deductible as well as non-deductible IRAs also dominate saving through traditional taxable accounts. Because many households fail to follow a simple rate-of-return-maximizing strategy, however, we suspect that these considerations affect but do not completely determine saving behavior.

Total contributions to 401(k) and IRA accounts are shown in Figure 1.1. IRA contributions increased from less than $5 billion to almost $30 billion ($19xx) as soon as they became available to all wage earners in 1982. Thereafter, annual contributions increased to almost $40 billion in 1986. But the Tax Reform Act of 1986 led to a dramatic reduction in IRA contributions, which were less than $10 billion by 1990. Annual contributions to 401(k) plans began at a low level in 1982 and then increased continuously, reaching almost $46 billion in 1989. The data show no change in the growth of

5

401(k) contributions after the Tax Reform Act of 1986, when IRA contributions declined.

2.   401(K) AND IRA PARTICIPATION TRENDS

The proportion of families with at least one member eligible for a 401(k) increased from close to zero in the early 1980s to 13.3 percent by 1984 and to 34.7 percent by 1991. Table 2.1 presents information on both 401(k) eligibility and participation given eligibility.[1] Conditional on eligibility, the participation rate increased from 58.1 percent in 1984 to 70.8 percent in 1991. The third column in Table 2.1 gives the overall 401(k) participation rate, which is the product of the eligibility rate in column (1) and the conditional participation rate in column (2). By 1991 almost one-quarter of all families participated in a 401(k). The last column of Table 2.1 shows the participation rate in IRAs, which contrasts with that for 401(k)s. The percent of families with an IRA has never exceeded 30 percent.[2]

---

[1]The "family" is defined as the household reference person and spouse if present. Families are included in the sample if the household reference person is between the ages of 25 and 65, at least one family member reports earned income, and no family member reports self-employment income.

[2]These figures are the percent of families that have a positive balance in an IRA each year. Since many families may have an IRA but no longer make contributions, these figures overestimate the IRA participation rate. For comparison a better number would be the percent of families contributing to an IRA in each year. Unfortunately the SIPP data do not report contributions. However, data on tax returns indicate that IRA participation reached a peak of about 16 percent in 1986.

6

Table 2.2 shows eligibility and participation rates by age and income are shown for 1991. Eligibility for a 401(k) increases with income, but is not strongly related to age. Given eligibility, participation is unrelated to age and is above 60 percent for all income groups. The relationship between income and 401(k) participation shown in the third panel of the table is due largely to the relationship of eligibility to income. In contrast, participation in an IRA, for which all wage earners were eligible until 1986, is strongly related to both age and income. Participation in 401(k) plans in 1991—given eligibility—and participation in IRAs in 1986 is graphed in Figure 2.1. The IRA rates are based on Internal Revenue Service data and represent IRA contribution rates at the height of the program.

The high rate of 401(k) participation may be partly due to the attractive employer matching rate in many 401(k) plans. But data presented in Poterba, Venti, and Wise [1992] show 1986 participation rates of 50 percent even when the match rate is zero, and although the participation rate is higher when the match rate is greater than zero, there is little relationship between participation and the match rate given that it is positive.[3]

An alternative explanation of the high 401(k) participation rate is that 401(k) contributions are usually made through payroll deductions, which may serve as a form of self-control and ensure

---

[3]Kusko, Poterba, and Wilcox [1992] and Papke [1992] also present evidence on the relationship between match rates and participation in 401(k) plans.

that a saving plan is adhered to. Once the payroll deduction form has been signed, saving is removed from day-to-day competition with consumption; salary reductions never appear as spendable earnings. Shefrin and Thaler [1988] develop a theory of saving that focuses on such "mental accounting" and self-control factors. Other factors that could explain high 401(k) participation rates are some degree of encouragement by employers to participate in a 401(k), and the presence of hardship withdrawal provisions in some 401(k) plans which makes them more liquid than an IRA.

While 401(k) participation rates have increased smoothly over time, IRA contribution rates exhibit a broken trend, with a sharp decline in 1987. The limits placed on IRA tax deductibility by the Tax Reform Act of 1986 had much greater effects on contributions than evaluation of the legislation, for example in Hausman and Poterba [1987], might have suggested. Approximately 73 percent of all tax filers were unaffected by the changes. One would have expected little change in IRA contribution behavior at low income levels, as IRA contributions could still be made on a tax-deductible basis. And although one would have expected a reduction in contributions at higher income levels, it should have been mitigated by the retention of the tax free accrual of interest.

Contrary to these expectations, however, even lower-income families reduced their IRA contributions by 40 to 50 percent and families that lost the up-front tax deduction virtually quit contributing after the 1986 legislation. Figure 2.2 shows IRA contribution rates in 1985 and 1988, by income interval. The data

8

used to construct the figure are from the Internal Revenue Service *Statistics of Income* series. Close to 70 percent of families with incomes greater than $50,000 made IRA contributions before 1986. But after the legislation, the proportion fell to less than 10 percent. Families with incomes between $40,000 to $50,000—over which the up-front deduction was phased out—reduced their contribution rate by 70 percent.

The across-the-board reduction in the IRA contribution rate was probably due in part to a misperception of the 1986 legislation, especially among lower income families. Higher income families may also have misunderstood the legislation, thinking that both the up-front deduction and the tax-free accumulation of returns had been eliminated. The systematic decline in contributions at all income levels also suggests that the promotion of these accounts by financial institutions may have been an important determinant of IRA saving.

IRA and 401(k) contributions significantly altered the composition of retirement saving in the United States over the 1980s. Not counting Social Security, total retirement saving is composed largely of employer contributions to defined benefit and defined contribution pension plans, and individual contributions to IRAs, Keogh plans, and 401(k) plans. Total contributions to each of these plans are shown in Figure 2.3a. The figure does not include other forms of financial asset saving, part of which is saving for retirement, and accumulation of housing wealth, some of which could also be thought of as retirement saving.

9

The figure indicates that total retirement saving increased sharply until 1985 and fell substantially thereafter. The pattern of total retirement saving follows the pattern of IRA contributions, and if it had not been for 401(k) contributions, total retirement saving would have fallen much more than it did. In spite of the increase in the number of defined contribution pension plans in the 1980s, total contributions to these plans remained almost constant over the entire period. There was a large drop in contributions to defined benefit pension plans, reflecting increases in the value of pension funds invested in the stock market and thus lower required additional contributions to meet projected benefit entitlements. This trend, discussed in Bernheim and Shoven [1988], is much greater than the decline that can be attributed to falling defined benefit coverage. Piacentini and Foley [1992] report that the number of participants in defined benefit plans increased from 38 to 41 million between 1980 and 1988, although the number of plans fell from 148,000 to 146,000.

By 1989, IRAs, 401(k)s, and Keogh plans together accounted for almost 53 percent of total retirement saving (Figure 2.3b). If IRA contributions had not been reduced by the Tax Reform Act of 1986, this proportion would probably have been substantially higher. Thus these new saving vehicles have rapidly become an extremely important component of the future financial support of the elderly. Counting defined contribution pension plans, 76 percent of the flow of 1988 retirement saving was directed to "individual" accounts, with a value that the individual can track as it accrues;

10

only 24 percent was through defined benefit plans. In 1980, "individual" accounts comprised only 43 percent of the total.

3. THE NET SAVING EFFECTS OF 401(K) CONTRIBUTIONS: EVIDENCE FROM REPEATED CROSS-SECTIONS OF HOUSEHOLDS

A central policy issue in evaluating retirement saving programs is whether contributions represent net new saving, or whether they are simply a relabelling of saving that would have been done otherwise. To investigate whether 401(k) contributions represent "new saving," one could compare the total non-401(k) saving of 401(k) contributors to the total non-401(k) saving of non-contributors. This shows that contributors save more in non-401(k) forms than non-contributors, even after controlling for differences in income, and thus the total saving of 401(k) contributors exceeds the total saving of non contributors. This does not necessarily mean that 401(k)s increased total saving, because the comparison of contributors to non-contributors ignores individual specific saving effects. Some families are "savers" and some families are "non-savers," and the former are likely to save more in all available forms. Convincing evidence on the net saving effect of 401(k)s therefore requires a more subtle test.

We use two approaches to consider the saving effect of 401(k)s, both intended to control for individual-specific saving effects. The first test, which is reported in this section, considers three demographically similar random cross-sections of families that have been "exposed" to 401(k) plans for different time periods. The

central question is whether longer exposure to these plans results in higher levels of saving.[4] In addition to studying the effect of 401(k) contributions, we also use the three cross-sections to provide new evidence on the net saving effect of IRAs.

Our second test relies on the natural experiment that is provided by the largely exogenous determination of 401(k) eligibility. It considers whether eligibility is associated with higher levels of total saving, holding income constant. This approach views 401(k) eligibility as the treatment in a "natural experiment" to evaluate the net saving effect of a plan with the 401(k) tax incentives and other provisions. A key difference between this analysis of 401(k) contributions and previous studies of IRA contributions is that there is cross-sectional variation in household eligibility for 401(k) plans. We report the results of this test in the next section.

In our first test, we compare asset balances of households in the 1984, 1987, and 1991 Surveys of Income and Program Participation (SIPP). The samples are similar with respect to age, income, and other economic and demographic characteristics. In principle, we are comparing the typical person, say age 40, in 1984

---

[4]An issue that cannot be controlled for with this approach is the possibility that the persons who took up the 401(k) option were those who were about to <u>change</u> their saving behavior. If the 401(k) just happened to be available at the opportune time, and it was used as the saving vehicle for the reborn saver who would otherwise have increased saving in another form, then the results may not indicate the net saving effects of 401(k)s. This issue is discussed in more detail with respect to IRAs in Venti and Wise [1992]. Our second approach tends to minimize the potential confounding of effect of this coincidence possibility.

to the typical person age 40 in 1987 and to the typical person age 40 in 1991. In each case, the typical person is at the same point in the life-cycle and would presumably have accumulated similar levels of assets, abstracting from possible aggregate effects due to asset appreciation rates or nominal income changes.

There is one important difference between the samples, however. The 401(k) contributor in 1984 had roughly two years over which to contribute, the 401(k) contributor in 1987 had roughly five years, and the 1991 contributor roughly nine years. Not all 1991 contributors would have contributed for nine years, however; there were many new contributors between 1984 and 1991. Nonetheless, if 401(k) contributions represent asset transfers, or are accompanied by reduced saving in other forms, then the total asset balances of the 1984, 1987, and 1991 contributors should be roughly the same. In this case, 401(k) contributions, made for up to nine years, would replace saving that would have been done in other forms. If 401(k) contributions represent new saving, however, then other financial assets should be about the same in each year and the total financial assets of the 1991 contributors will exceed the total assets of the 1984 contributors by the amount contributed to 401(k)s between 1984 and 1991.[5]

Our analysis focuses on four elements of the household balance sheet: 401(k) assets, IRA balances, other financial assets,

---

[5]The average balance in 401(k) accounts, however, will depend on the mix of new and longtime contributors; not all 1991 contributors had been contributing since 1984, as the data on the growth in 401(k) eligibility in Table 2.1 suggest.

13

and consumer debt. We calculate these balance sheet components separately for six types of households, identified on the basis of observed saving behavior. These groups are those with and without 401(k)s, with and without IRAs, with neither an IRA nor a 401(k), and with both. Our methodology can be illustrated with the following table.

Group Identifier	Asset Category (a)			
	401(k) Balance	IRA Balance	Other Financial Assets	Debt
401(k) Participant				
401(k) Non-participant		A_{as}		
IRA Participant				
IRA Non-participant				
Participant in Both				
Participant in Neither				

For each year, we estimate the asset balances for each element of this table. We label these balances A_{as}, where a denotes asset category and s the saver group. We then study the evolution of A_{ast} over time, which is represented by the t subscript.

The elements of the previous table could be measured as means, medians, or other summary measures of the asset distribution for each saver group. Given the well-known skewness of wealth distributions, we focus on medians. We denote the population median for each asset-saver group by α_{ast}, and estimate the model

$$A_{ast} = \alpha_{ast} + \epsilon_{ast} \tag{5}$$

by median regression. Our analysis focuses on inter-year differences in α_{ast}, which controls for time-invariant group-specific effects on asset accumulation.[6]

Table 3.1 presents the results of the median regressions, which are also summarized graphically in Figure 3.1. The standard errors reported in parentheses under the estimates for 1984 and 1991 pertain to the difference between these estimates and the 1987 estimate. Differences that are significant at the five percent level are indicated by an asterisk. The assets of families that had 401(k) plans are shown in the first sub-panel of Table 3.1a, while the next sub-panel reports assets for families without 401(k) plans. The table presents results for total financial assets both including and excluding stocks and bonds, on the grounds that these assets are less liquid than other investment vehicles. The data for 1984 are not complete because the SIPP did not obtain 401(k) asset balances in that year.

To focus on the important features of the data, consider the change over time in asset balances excluding stocks and bonds. There was no change between 1984 and 1991 in the financial assets of families <u>without</u> 401(k) plans; the median was $1,500 in each of

---

[6]The assumption that the characteristics of each saver group are constant through time may not be strictly valid. In a similar analysis for IRAs, Venti and Wise [1992] corrected for changes in key family characteristics without much effect on the estimated changes in assets over time.

the three years. There was also essentially no change in the other financial assets of families with 401(k) plans. In addition, the non-401(k) financial assets of the 401(k) families were virtually the same as the total financial assets of the families without 401(k)s, about $1,500.[7] As a result of their 401(k) assets, however, the 401(k) eligible families had much higher levels of total financial assets, $6,061 in 1987 and $8,858 in 1991. The pattern is the same whether stocks and bonds are included or excluded from total financial assets. The fact that the other financial asset balances of the 401(k) group did not change as their 401(k) balances increased suggests that there was no substitution of 401(k) saving for other financial assets.

The first two sub-panels of Table 3.1b present a similar comparison for families that had only IRA accounts in the three years. These data do indicate heterogeneity between IRA savers and non-savers. The analysis is intended to control for this difference by considering changes over time within the groups. The other financial assets of IRA contributors are much larger than those of non-contributors. In addition, the change in the composition of IRA contributors and non-contributors after the Tax Reform Act of 1986

---

[7]In this respect the two groups are apparently composed of like savers who follow the same saving behavior. Thus in this case even comparisons between the two groups in a given year are not confounded by heterogeneity. In the next section, we will emphasize that, given income, 401(k) eligibility may be viewed as randomly assigned with respect to saving behavior.

can be seen in the increase in the other financial asset balance of both groups in 1991.

A possible explanation for the increase in the other financial assets of non-IRA contributors between 1987 and 1991 is that many high-saving young families that would have opened new IRA accounts had the pre-1986 provisions been retained are now in the non-contributor group, raising the average financial asset balance of that group. These young contributors would also have lower other asset balances than the 1991 account holders who are increasingly composed of older persons with "old" accounts to which they may no longer be contributing. That is, the "would be" IRA contributors raise the average assets of the group they are now in, and their absence from the group that they would have been in also raises the average of that group.

This evidence for changing composition of the IRA contributor and non-contributor groups leads us to emphasize the data for 1984 and 1987 only. Consider families that had IRA accounts in 1987. Assume that the families that had IRA accounts in 1987 are like those that had such accounts in 1984, except that the 1987 families were able to make IRA contributions for two or three more years. Indeed, the 1987 families had $2,900 more in IRA accounts than the 1984 families. If additional IRA contributions replaced saving that would otherwise have occurred in other forms, however, total assets (including IRAs) of the 1987 sample should have been about the same as the total for the 1984 sample. But the median total financial assets of the 1987 families was $3,000 larger than the median of the

1984 families. There was essentially no change in other financial asset balances, $6,550 versus $6,100, and no change in median debt. This suggests that the IRA contributions did not replace other saving. These results are similar to those in earlier studies of IRA contributors, such as Venti and Wise [1990, 1991], and are directly comparable to the results in Venti and Wise [1992] based on Consumer Expenditure Survey data.

The third sub-panel of Table 3.1b shows comparable data for families with both IRA and 401(k) accounts in each of the three years. Like the data for the 401(k) only group, the data for this group are incomplete because 401(k) balances were not obtained in the 1984 survey. The basic inference is nevertheless the same. IRA and 401(k) contributions were not offset by reduced saving in other financial assets. By 1991, families with both accounts had a median balance of $27,000 in the two together, more than 60 percent of the median balance in total financial assets. Total financial assets increased from $32,499 to $44,000 between 1987 and 1991. The 1991 respondents had essentially the same balances in non-401(k)-IRA financial assets as the 1984 and 1987 respondents, and their median debt was not significantly different from the median in the earlier years.

The data on households with both IRAs and 401(k)s in 1984 and 1987 suggest little substitution between these two forms of saving. The IRA balance for this group increased by $1,100 more than the IRA balance for those with IRAs only—$4,000 versus $2,900. After the Tax Reform Act of 1986, however, families with

both accounts may have reduced IRA contributions more than the families with only IRA accounts. The increase in the median IRA balance between 1987 and 1991 was $3,100 for families with only an IRA account, but only $1,000 for families with both accounts.

Our analysis has focused on _median_ assets levels, rather than means, because the very large financial assets of a few families lead to mean asset levels that are much greater than the assets of the typical family. For example, the median of total financial assets of families without a 401(k) was $1,500 in 1984, whereas the mean was $8,942. The median has the disadvantage, however, that medians of individual assets do not sum to the median of total assets, as means do. Mean values analogous to the medians in Table 3.1 are presented in Appendix Table A3.1a. The basic conclusions do not differ from the conclusions drawn from the median values.

We have also re-estimated equation (5) using quantile regression methods with q=.25 and q=.75. Appendix Tables A3.1b and A3.1c present these results which confirm the findings in Table 3.1. For families with 401(k)s, non-401(k) assets including stocks and bonds change from $550 to 508 between 1987 and 1991 at the 25th percentile, and from $7,950 to $8,000 at the 75th percentile. The 401(k) balances changed from $1,000 to $1,301 at the 25th percentile and from $7,000 to $13,000 at the 75th percentile. Similarly, we find no evidence for declining non-IRA balances among families with IRAs, despite the substantial increase in IRA balances during the 1984-1991 period.

19

4.   THE NET SAVING EFFECTS OF 401(K)S: EVIDENCE USING 401(K) ELIGIBILITY AS A NATURAL EXPERIMENT

The natural experiment that is provided by the essentially exogenous determination of 401(k) eligibility provides an alternative means of evaluating the net saving effects of 401(k) plans. Eligibility is determined by employers.   If household saving behavior is largely independent of individual characteristics related to the probability of working at firms with 401(k) plans, then comparison of the financial assets of families with and without 401(k) eligibility can be used to infer the saving effect of these plans. If there are no net saving effects of 401(k)s, then families who have the 401(k) option should have similar net worth, but less in non-401(k) assets, than families without 401(k) eligibility. This section presents both cross-sectional evidence on this question, as well as evidence on changes over time in the total financial assets of 401(k) eligibles and ineligibles.

4.1   401(K) ELIGIBLES VERSUS NON-ELIGIBLES IN PARTICULAR YEARS

We begin by comparing the total financial assets of 401(k) eligible and non-eligible families for a given year, controlling for income. We stratify by income because 401(k) eligibility increases with income.   If, given income, eligibility is determined exogenously, then the data allow strong inferences about the saving effect of 401(k) plans. Estimates are based on the relationship

$$A_{ai} = \sum_{j=1}^{7} \beta_{aj} * INCCAT_{ij} + \sum_{j=1}^{7} \gamma_{aj} * INCCAT_{ij} * ELIG_i + \epsilon_i$$

$$(6)$$

where A_{ai} denotes household i's balance in asset category a, $INCCAT_{ij}$ is an indicator variable set equal to one if household i's income is in interval j, and zero otherwise, and $ELIG_i$ is an indicator variable for 401(k) eligibility of household i. The term ϵ_i is a random error. We focus on seven different income categories, denoted by subscript j: < 10K, 10-20, 20-30, 30-40, 40-50, 50-75, and 75+. Median regression is used to obtain estimates of the parameters in equation (6).

Table 4.1 presents the results for 1991, 1987, and 1984. The standard errors in parentheses under the balances for the eligible group pertain to the difference between the eligible and non-eligible balances, not the standard error of the eligible balance. Differences that are significant at the five percent level are noted with an asterisk. We focus on the estimates for 1991, although the results for 1987 are very similar. The first row presents the estimates of $\beta_{aj} + \gamma_{aj}$ for total financial assets, while the second row presents the estimates of β_{aj} alone. The median total financial asset balance of the 401(k) eligibles is much larger than the balance of the non-eligibles in each income interval, and the differences are all statistically significant. On the other hand, the difference in other financial asset balances is small for each income interval, although

21

it is statistically significant in three intervals. Figure 4.1 presents this comparison in graphical form.

To explain the findings, consider the set of households with incomes above $75,000. The median level of financial assets for families in this group who were eligible for a 401(k) was $52,500, whereas the median for families who were not eligible was only $31,000. If families reduced saving in other forms when they became eligible for a 401(k) plan, the typical family eligible for a 401(k) in 1991 should have less accumulated wealth in other financial assets than the typical family who had not been eligible for a 401(k). This was not the case.

The table shows that there was little difference in the other financial assets of families who were and were not eligible for a 401(k). Indeed, the eligible families had somewhat higher levels of other financial assets. Looking over all income intervals, the total financial assets of the eligible families were typically two to eight times as large as the financial assets of the non-eligible families. The data show no substitution of 401(k) contributions for other financial asset saving.

The estimates in Table 4.1 pertain to median asset levels by 401(k) eligibility status. The effect of 401(k) eligibility over the whole distribution of assets is shown in Figure 4.2. The figure shows the inverse of the cumulative distribution function of total assets for eligible (shaded bars) and not eligible (unshaded bars) households. The figure highlights the low asset levels of typical households, even those with relatively high incomes. For example,

22

the median total assets of families earning between \$50,000 and \$75,000 is less than \$11,000, and the 95th percentile is only about \$100,000. Figure 4.2 shows that the total assets of all eligible households is much greater than the total for all non-eligible households. The graph also shows that the total assets of eligibles is greater than the total assets of non-eligibles at each percentile level, while there is very little difference in other assets at any percentile level. This pattern appears for virtually all income groups. Only for the top percentiles in the open-ended greater than \$75,000 income group are the total assets of the eligible households no greater than the total assets of non-eligible households. This group of course includes households with extremely high incomes.

Our inferences about the net saving effect of 401(k) contributions depend on the exogenous determination of 401(k) eligibility status, given income. It is important that the eligible group not be composed disproportionately of those who save more than the typical person in all forms. The data show little evidence of this type of heterogeneity in saving behavior. Eligible and non-eligible families had about the same level of other financial assets in 1991 and in 1987, although the differences are statistically significant in some income intervals. The two groups also had about the same level of other financial assets in 1984. Thus near the outset of the 401(k) program families that were newly eligible for a 401(k) exhibited about the same previous saving behavior as families that did not become eligible. These data suggest that 401(k)

23

status is indeed largely independent of overall saving propensity, given income.

4.2. CHANGES IN ASSET BALANCES BY 401(K) ELIGIBILITY STATUS

The foregoing analysis compares the assets of 401(k) eligible and non-eligible families in a given year. An alternative test of the extent of substitutability between 401(k) saving and other forms of financial saving is the <u>change</u> between 1984 and 1991 in median asset balances.[8] Because eligible families have higher income than non-eligible families on average, the median of the other assets of eligible families should be higher than the median of non-eligible families, uncorrected for income differences. The focus is on other financial assets. We consider whether the non-401(k) saving of families with 401(k)s declined between 1984 and 1991, as it would have if 401(k) saving substituted for other saving. A comparable question is posed with respect to IRA saving.

Table 4.2 reports the findings, which are also shown graphically in Figure 4.3.[9] Consider first all families <u>not</u> eligible for a 401(k). For this group there was essentially no change in the

---

[8]This analysis does not control for family income.

[9]The standard errors in parentheses under the 1984 and 1991 estimates pertain to the <u>difference</u> between these estimates and the 1987 estimate. Differences that are statistically significant at the five percent level are noted with an asterisk. Data on 401(k) asset balances are not available for 1984, but it may be assumed that the median balance was relatively low in that year.

24

median of total financial assets, or non-IRA assets, between 1984 and 1991. This suggests that the attributes of non-eligible families did not change much over time and in particular that their saving behavior did not change. In contrast, the median total assets of 1991 eligible families was 30 percent larger than the median for 1987 eligible families. But the median of other financial assets of the eligibles changed little, increasing slightly from $3,740 to $4,398 between 1984 and 1991. These data show no evidence of substitution of 401(k) saving for other financial asset saving.

Table 4.3 disaggregates families by whether or not they have an IRA. The data highlight both the low saving of the typical family without an IRA, as well as the potential for 401(k) plans to dramatically increase their saving. The table shows that our earlier finding that other financial assets of both 401(k) eligibles and ineligibles changed little between 1984 and 1991 is independent of whether the family had an IRA. In addition, for families with IRAs but not eligible for 401(k)s, total financial assets rose over time while other financial assets remained essentially constant. This confirms earlier evidence suggesting little substitution between IRAs and other saving.

Families who have chosen to open an IRA account have the highest levels of financial asset saving. The total financial assets of non-eligible families with an IRA increased from $16,250 to $26,793 between 1984 and 1991. The median total financial assets of families eligible for a 401(k) who also had an IRA increased by

$12,900 between 1987 and 1991 alone, from \$30,500 to \$43,500, while there was no decline in other financial assets.

Table 4.3 also shows that the increase in IRA assets for families with these accounts was essentially unrelated to 401(k) eligibility status. IRA assets for those not eligible for a 401(k) increased from \$4,500 to \$11,000 between 1984 and 1991. For those who were eligible for 401(k)s, the increase was from \$4,500 to \$10,000. The fact that both eligibility groups had the same level of IRA assets in 1984, and almost identical increases, suggests little substitution between 401(k) and IRA assets.

5.   SUBSTITUTION BETWEEN 401(K)S AND IRAs

The evidence in the preceding two sections suggests that 401(k) saving does not substitute to any substantial degree for other types of personal saving. In this section, we focus on a particular type of substitution that could be more substantial: that between 401(k) and IRA saving. If different forms of saving are viewed as close substitutes in general, then surely these plans, with their similar provisions and focus on retirement saving, should be very close substitutes.

We consider two aspects of the substitution between 401(k)s and IRAs. First, we examine the relationship between 401(k) eligibility and the IRA contribution rate in 1982, at the outset of the 401(k) and IRA programs, and again in 1987, after the 1986 legislation. Second, we consider the relationship between 401(k)

eligibility and the fall in the IRA contribution rate between 1982 and 1987.[10]

Because employer matching makes the typical 401(k) plan more advantageous than an IRA, one might expect the IRA contribution rate to be lower for persons who could take advantage of the more generous 401(k) opportunity. One might also expect that the 1986 legislation would reduce IRA contributions more for persons who had the option of making a 401(k) contribution than for those who do not. Actual experience, however, is not consistent with these expectations.

We estimate the difference in IRA contribution rates by 401(k) eligibility status and income level in 1982 and in 1987, as well as the <u>difference</u> in the change in IRA contribution rates for 401(k)-eligibles and non-eligibles between 1982 and 1987.

Our basic specification takes the form

$$
\begin{aligned}
\mathrm{CONTRIB}_i = &\sum_{j=1}^{7} \delta_j * \mathrm{INCCAT}_{ij} + \sum_{j=1}^{7} \theta_j * \mathrm{INCCAT}_{ij} * \mathrm{ELIG}_i \\
&+ \sum_{j=1}^{7} \phi_j * \mathrm{INCCAT}_{ij} * \mathrm{DUM87}_i \qquad (7) \\
&+ \sum_{j=1}^{7} \psi_j * \mathrm{INCCAT}_{ij} * \mathrm{ELIG}_i * \mathrm{DUM87}_i + \epsilon_i
\end{aligned}
$$

---

[10]The data for the 1982 tax year were obtained from the May 1983 Current Population Survey and supplemental Survey of Retirement and Pension Plan Coverage. The data for the 1987 tax year were obtained from the May 1988 Current Population Survey and supplemental Survey of Employee Benefits.

where $CONTRIB_i$ is an indicator variable for whether household i contributed to an IRA, $DUM87_i$ is an indicator variable for 1987, and the other variables are defined as in (6). For a given income subgroup (j), equation (7) implies IRA contribution rates by year and 401(k) eligibility status as follows:

	1982	1987
Not Eligible	δ_j	$\delta_j + \phi_j$
Eligible	$\delta_j + \theta_j$	$\delta_j + \theta_j + \phi_j + \psi_j$

This table shows that to test whether IRA participation is lower among 401(k) eligibles than non-eligible households, we need to test whether $\theta_j = 0$ and $\theta_j + \psi_j = 0$. To test whether IRA participation declined more after 1986 among 401(k) eligibles than ineligibles, we need to test whether $\psi_j = 0$. Negative values of ψ_j would imply lower post-1986 participation rates for 401(k) eligibles.

Table 5.1 presents median regression estimates of equation (7), using data from the 1983 and 1988 Current Population Surveys. The parameter estimates can be used to find IRA contribution rates in 1982 and in 1987 by income interval, following the decomposition in the boxes above. The rates are graphed in Figure 5.1 Three features of the results are important. First, controlling for income, the percent of 401(k) eligibles who contributed to an IRA in 1982 was very close to the percent of non-eligibles who contributed. The contribution rates are significantly different only for the less than $10,000 and greater than $75,000 income groups, and for these groups the percent of eligibles contributing to IRAs is

28

higher than the percent of non-eligibles. This fact casts doubt either on standard assumptions about household saving behavior, or on the assumption that IRAs and 401(k)s are close substitutes.

Second, the pattern of decline in IRA contributions after 1986 is inconsistent with a high degree of substitution between IRAs and 401(k)s. Given the changes in the Tax Reform Act of 1986, one would have expected little change in IRA contribution behavior at low income levels, and the greatest response among high-income households that were eligible for a 401(k) plan. The estimates of ϕ_j show that actual IRA contribution percentages fell dramatically for all income groups after 1986. Moreover, the data show that the decline in the IRA contribution rate was largely independent of 401(k) eligibility. Only for the greater than $75,000 income group was the fall in the contribution rate for 401(k) eligibles significantly greater than the fall in the contribution rate for the 401(k) non-eligibles. The growing utilization of the 401(k) option between 1985 and 1987 therefore cannot explain the drop in IRA contributions during this period.

Third, the pattern of contribution rates in 1987 suggests only a modest relationship between IRA contributions and 401(k) eligibility. The difference between 1987 contribution rates for eligibles and ineligibles is given by $\theta_j + \psi_j$ in equation (7). The estimates of this parameter sum, and the associated standard errors, are shown on the next page.

Income Category	$\hat{\theta}_j + \hat{\psi}_j$
< 10K	0.0558 (0.0187)
10-20	0.0259 (0.0112)
20-30	-0.0177 (0.0109)
30-40	-0.0082 (0.0133)
40-50	-0.0892 (0.0198)
50-75	-0.0700 (0.0237)
75+	-0.0858 (0.0394)

These results show that the contribution rates for 401(k) eligibles are significantly lower than the rates for non-eligibles in income categories above $40,000. At lower income levels, however, there is little relationship between IRA participation and the availability of a 401(k) plan. Indeed, the rate for eligibles is significantly higher than the rate for non-eligibles in the two lowest income intervals. This suggests that for households that remained eligible for tax-deductible IRAs after the 1986 tax reform, 401(k) saving did not displace IRA saving. Taken together, the results suggest that IRA contributions were curtailed as a result of the 1986 tax reform but not displaced by 401(k)s. Even these two saving instruments that would appear to be close substitutes apparently are not treated by savers as substitutes. One explanation for this finding is that because 401(k) contributions are made by payroll deduction, households do not view them as equivalent to IRAs.

6. CONCLUSIONS AND DISCUSSION

Contributions to 401(k) plans grew continuously over the 1980's, and these plans are still growing rapidly. In 1980, IRAs and 401(k)s accounted for less than 5 percent of targeted retirement saving, and employer-provided defined benefit pension plans accounted for 59 percent. By 1988, however, 401(k)s and IRAs accounted for 47 percent of retirement saving. Although IRAs have been the topic of considerable public debate and economic analysis, 401(k)s have received little attention.

Our analysis of household saving data from the SIPP yields two basic conclusions. The first is that 401(k)s and IRAs, although both intended for retirement saving and with similar tax incentive and other provisions, do not appear to be close substitutes. The second is that neither of these programs are treated as close substitutes for conventional forms of financial asset saving. This implies that contributions to 401(k) plans, as well as IRAs, represent mostly net additions to personal saving. In 1991, families that were eligible to contribute to a 401(k) plan had several times as much in total financial wealth as families that were not eligible, controlling for differences in income between the two groups.

A more general conclusion of our analysis is that standard assumptions about the determinants of saving behavior leave important aspects of actual saving unexplained. For example, the Tax Reform Act of 1986 led to reductions in IRA contributions even by taxpayers for whom these contributions remained tax-deductible. The contribution rate of persons unaffected by the legislation was

31

reduced by 40 to 50 percent. Higher income families virtually stopped contributing. These results suggest that the promotion of saving plans may have an important effect on their use, and that an up-front tax deduction may be an important determinant of contribution behavior.

A second example of anomalous saving behavior is that even though the 401(k) plan is more attractive than the IRA for the typical family, we find no evidence of lower IRA contributions among families eligible for a 401(k) than among non-eligible families. In addition, the rise in 401(k) contributions was largely unrelated to the fall in the IRA contributions following the Tax Reform Act of 1986. These findings question the extent to which different forms of saving are treated as perfect substitutes, as well as the extent to which individual saving behavior is "rational," determined largely by rate of return calculations. Our results provide an invitation to look more broadly for explanations of saving behavior.

REFERENCES

Bernheim, B. Douglas, and John B. Shoven. 1988. "Pension Funding and Saving," in Z. Bodie, J. Shoven, and D. Wise (eds.), *Pensions in the U.S. Economy*. University of Chicago Press.

Hausman, Jerry A., and James M. Poterba. 1987. "Household Behavior and the Tax Reform Act of 1986." *Journal of Economic Perspectives* 1:101-119.

Kusko, Andrea, James Poterba, and David Wilcox. 1992. "Employee Participation in 401(k) Plans: Evidence from Firm Employment Records." Mimeo, Federal Reserve Board of Governors.

Papke, Leslie. 1992. "Participation in and Contributions to 401(k) Plans." Mimeo, Michigan State University.

Piacentini, Joseph S. and Jill D. Foley. 1992. *EBRI Data book on Employee Benefits*, 2nd edition, Washington, DC.

Poterba, James M., Steven F. Venti, and David A. Wise. 1992. "401(k) Plans and Tax-Deferred Saving," NBER Working Paper No. 4181, October (forthcoming in D. Wise (ed.), *Economics of Aging* (tentative title), University of Chicago Press).

Shefrin, Hersh M. and Richard Thaler. 1988. "The Behavioral Life-Cycle Hypothesis," *Economic Inquiry* 26: 609-643.

U.S. General Accounting Office. 1988. *401(k) Plans: Incidence, Provisions, and Benefits*. Washington: General Accounting Office.

Venti, Steven F., and David A. Wise. 1990. "Have IRAs Increased U.S. Saving?: Evidence from the Consumer Expenditure Surveys." *Quarterly Journal of Economics* 105:661-698.

_____. 1991. "The Saving Effect of Tax-Deferred Retirement Accounts: Evidence From SIPP," in B.D. Bernheim and J.B. Shoven (eds.), *National Saving and Economic Performance*. University of Chicago Press.

_____. 1992. "Government Policy and Personal Retirement Saving." *Tax Policy and the Economy* 6:1-41.

Table 2.1: Eligibility and Participation for Selected Years: 401(k) and IRA Compared				
	Percent Eligible for a 401(k)	Percent 401(k) Participation Given Eligibility	Percent 401(k) Participation	Percent with IRA Account
1984	13.3	58.1	7.7	25.4
1987	20.0	62.6	12.5	28.8
1991	34.7	70.8	24.6	27.1

Source: Authors' tabulations from the SIPP, as described in the text.

Table 2.2: Eligibility and Participation Rates by Age and Income in 1991: 401(k) and IRA Compared

Age	Income							
	< 10	10-20	20-30	30-40	40-50	50-75	> 75	All
Percent Eligible for a 401(k)								
25-35	5.1	14.8	30.2	40.1	38.9	51.3	51.2	31.4
35-45	11.2	20.2	34.6	42.8	46.0	53.9	47.1	39.2
45-55	2.1	16.5	27.6	32.8	48.7	56.4	52.5	35.9
55-65	7.9	14.4	20.9	36.5	37.7	51.9	37.0	28.9
All	6.4	16.6	29.7	39.0	43.7	53.8	48.1	34.7
Percent 401(k) Participation Given Eligibility								
25-35	79.8	63.2	70.3	74.1	73.8	76.1	86.2	73.5
35-45	58.4	67.7	59.8	63.7	68.7	67.2	83.8	67.7
45-55	72.5	51.5	57.6	58.5	81.6	75.1	88.1	72.3
55-65	85.2	68.3	49.0	72.5	67.8	84.0	85.7	72.3
All	70.8	63.0	61.7	67.3	72.9	73.3	85.8	70.8
Percent 401(k) Participation								
25-35	4.1	9.4	21.2	29.7	28.7	39.1	44.2	23.0
35-45	6.6	13.6	20.7	27.3	31.6	36.3	39.5	26.5
45-55	1.5	8.5	15.9	19.2	39.8	42.3	46.3	25.9
55-65	6.7	9.8	10.2	26.5	25.6	43.6	31.7	20.9
All	4.5	10.5	18.4	26.2	31.8	39.4	41.3	24.6
Percent with IRA Account								
25-35	3.8	4.8	9.3	14.8	17.9	23.6	43.2	13.2
35-45	10.1	6.8	15.4	20.0	33.0	38.7	59.9	26.3
45-55	6.0	12.9	24.9	31.3	47.3	50.2	66.3	35.3
55-65	14.8	24.1	37.6	45.7	59.5	63.4	75.5	43.8
All	7.9	9.7	18.6	24.7	35.6	41.1	61.6	27.1

Table 3.1a: Median 401(k) & IRA Balances vs. Other Financial Asset Balances, 1984, 1987, & 1991						
Family and Asset Category	Excluding Stocks and Bonds			Including Stocks and Bonds		
	1984	1987	1991	1984	1987	1991
Families with 401(k):						
Total Fin. Assets	--	6061	8858*	--	7299	10449*
			(765)			(585)
Other Than 401(k)	1800	1500	1500	3000*	2149	2209
or IRA	(243)		(150)	(229)		(370)
401(k)	--	2800	4560*	--	2800	4560*
			(349)			(349)
Debt	1000	1200	1500	1000	1200	1500
	(220)		(189)	(220)		(189)
Families Without 401(k):						
Total Fin. Assets	1500	1500	1500	1949	2000	2000
	(64)		(86)	(87)		(116)
Non-IRA	1000	1050	1150	1400	1430	1500
	(58)		(78)	(87)		(116)
*Significantly different from 1987 estimate, at 0.95 confidence level.						

Table 3.1b: Median 401(k) & IRA Balances vs. Other Financial Asset Balances, 1984, 1987, & 1991						
Family and Asset Category	Excluding Stocks and Bonds			Including Stocks and Bonds		
	1984	1987	1991	1984	1987	1991
Families With IRA:						
Total Fin. Assets	13000*	16000	22000*	16170*	19300	26000*
	(562)		(788)	(807)		(562)
Other Than IRA	6550	6100	7867*	9400	9483	10900
	(432)		(605)	(586)		(821)
IRA	4500*	7400	10500*	4500*	7400	10500*
	(224)		(316)	(224)		(316)
Debt	500	500	500	500	500	500
	(100)		(110)	(100)		(110)
Families Without IRA:						
Total Fin. Assets	650	754	1200*	800*	960	1500*
	(57)		(71)	(53)		(66)
Non-401(k)	650	600	800*	800	800	1000*
	(30)		(37)	(17)		(21)
Families With IRA and 401(k):						
Total Fin. Assets	--	32499	44000*	--	38276	50000*
			(3401)			(3286)
Other Than IRA or 401(k)	8499	8188	8875	13000	14350	16500
	(1294)		(1214)	(2282)		(2142)
IRA	5000*	9000	10000	5000*	9000	10000
	(858)		(810)	(858)		(810)
401(k)	--	6000	10500*	--	6000	10500*
			(845)			(845)
IRA and 401(k)	--	18000	27000*	--	18000	27000*
			(1169)			(1169)
Debt	500	700	903	500	700	903
	(137)		(130)	(137)		(130)
Families With Neither IRA Nor 401(k):						
Total Financial	600	550	600	750	700	750
	(46)		(61)	(59)		(77)

*Significantly different from 1987 estimate, at 0.95 confidence level.

Table 4.1: Median Asset Balances By 401(k) Eligibility and Income							
Asset Category and	Income						
Eligibility Status	< 10	10-20	20-30	30-40	40-50	50-75	>75
Results for 1991:							
Total Financial Assets							
Eligible for 401(k)	1499*	2800*	4608*	8649*	15005*	26000*	52500*
	(545)	(198)	(154)	(156)	(179)	(154)	(198)
Not elig. for 401	30	350	1124	2260	5600	10675	31000
Non-IRA-401(k) Assets							
Eligible for 401(k)	300	500	1099	2550*	5000*	8839*	18100
	(329)	(119)	(93)	(95)	(109)	(94)	(121)
Not elig. for 401(k)	20	310	1000	1750	4000	5800	18000
401(k) Assets							
Eligible for 401(k)	1000	600	600	2000	2800	5000	14000
Not elig. for 401(k)	0	0	0	0	0	0	0
IRA Assets							
Eligible for 401(k)	0	0	0	0	0	0	6000
Not elig. for 401(k)	0	0	0	0	0	0	4000
Results for 1987:							
Total Financial Assets							
Eligible for 401(k)	1090*	1190*	4000*	9205*	12650*	25343*	58119*
	(281)	(120)	(95)	(93)	(109)	(99)	(151)
Not elig. for 401(k)	22	400	1366	4000	6630	14650	30900
Non-IRA-401(k) Assets							
Eligible for 401(k)	361	305	1250*	3250*	5800*	11200*	25500*
	(279)	(119)	(94)	(92)	(107)	(98)	(148)
Not elig. for 401(k)	20	350	1052	2800	4245	8737	21200
401(k) Assets							
Eligible for 401(k)	0	0	150	1000	1000	1500	8500
Not elig. for 401(k)	0	0	0	0	0	0	0
IRA Assets							
Eligible for 401(k)	0	0	0	0	0	2500	11204
Not elig. for 401(k)	0	0	0	0	0	2000	6000
Results for 1984:**							
Non-IRA-401(k) Assets							
Eligible for 401(k)	25	509	1749*	3740*	5049	11500*	30400*
	(210)	(92)	(71)	(70)	(90)	(92)	(139)
Not elig. for 401(k)	30	400	1400	3000	5138	11000	21950
IRA Assets							
Eligible for 401(k)	0	0	0	0	0	2700	4000
Not elig. for 401(k)	0	0	0	0	0	2000	4000

*Difference between eligibles and non-eligibles is statistically significant at the 95% confidence level.

**401(k) assets are not available for 1984.

Table 4.2: Median Asset Balances By 401(k) Eligibility, 1984, 1987, and 1991			
Eligibility Status and Asset Category	1984	1987	1991
Eligible for a 401(k)			
Total Financial Assets	--	10330	13486*
	(645)		(610)
Non-IRA-401(k) Assets	3740	4000	4398
	(409)		(256)
IRA	0	0	0
	--		--
401(k)	--	1000	2500*
			(220)
Not Eligible for a 401(k)			
Total Financial Assets	1850	1870	1700
	(135)		(185)
Non-IRA-401(k) Assets	1400	1300	1300
	(88)		(64)
IRA	0	0	0
	--		--

*Significantly different from the 1987 level at the 95% level.

Table 4.3: Median Asset Balances By 401(k) Eligibility and IRA Status, 1984, 1987, and 1991			
Eligibility Status and Asset Category	1984	1987	1991
Families With an IRA:			
Eligible for a 401(k)			
Total Financial Assets	--	30600	43500*
	(2696)		(2640)
Non-IRA-401(k) Assets	11500	12000	14362
	(1807)		(1770)
IRA	4500*	8000	10000*
	(334)		(325)
401(k)	--	2900	6000*
			(338)
Not Eligible for a 401(k)			
Total Financial Assets	16250*	19646	26793*
	(831)		(583)
Non-IRA-401(k) Assets	9450	9700	10645
	(589)		(844)
IRA	4500*	7500	11000*
	(228)		(327)
Families Without an IRA:			
Eligible for a 401(k)			
Total Financial Assets	--	3900	6794*
			(450)
Non-401(k) Assets	1774	1923	2115
	(156)		(145)
401(k)	--	225	1300*
Not Eligible for a 401(k)			
Total Financial Assets	700	623	650
	(43)		(58)
Non-401(k) Assets	700	623	650
	(43)		(58)

*Significantly different from the 1987 level at the 95% level.

Table 5.1: IRA Contribution Rates by 401(k) Eligibility Status		
Variable	Parameter Estimate	Standard Error
INCCAT:		
< 10K	0.1186	0.0048
10-20	0.1607	0.0049
20-30	0.2427	0.0064
30-40	0.3679	0.0102
40-50	0.5046	0.0177
50-75	0.5924	0.0211
75+	0.6446	0.0292
INCCAT * ELIG:		
< 10K	0.0904	0.0232
10-20	0.0238	0.0165
20-30	-0.0133	0.0173
30-40	0.0239	0.0268
40-50	-0.0420	0.0436
50-75	-0.0402	0.0554
75+	0.2092	0.0958
INCCAT * DUM87:		
< 10K	-0.0464	0.0079
10-20	-0.0644	0.0073
20-30	-0.0849	0.0091
30-40	-0.1848	0.0136
40-50	-0.2625	0.0228
50-75	-0.3269	0.0269
75+	-0.2721	0.0412
INCCAT * ELIG * DUM87:		
< 10K	-0.0345	0.0298
10-20	0.0021	0.0199
20-30	-0.0044	0.0205
30-40	-0.0321	0.0299
40-50	-0.0472	0.0479
50-75	-0.0297	0.0602
75+	-0.2950	0.1036

Source: Authors' estimates using 1983 and 1988 Current Population Surveys. Estimates are based on equation (7) in the text.

Appendix Table A3.1a: Mean IRA & 401(k) Versus Other Financial Asset Balances, 1984 , 1987, & 1991						
Family and Asset Category	Excluding Stocks and Bonds			Including Stocks and Bonds		
	1984	1987	1991	1984	1987	1991
Families With 401(k):·						
Total Fin. Assets	--	11819	16842*	--	16567	21280*
			(923)			(2182)
Other Than 401(k) or IRA	5851	4953	5603	8259	9702	10040
	(635)		(516)	(2195)		(1784)
401(k)	--	6865	11239*	--	6865	11239*
			(699)			(699)
Debt	3014	3071	3751*	3014	3071	3751*
	(406)		(330)	(406)		(330)
Families Without 401(k):						
Total Fin. Assets	8942*	9729	13528*	12239	13375	17759*
	(361)		(477)	(602)		(796)
Non-IRA	7488	7231	9726*	10785	10878	13957*
	(317)		(192)	(566)		(748)
Families With IRA:						
Total Fin. Assets	23725*	26427	42736*	32954	35617	55944*
	(1137)		(1527)	(1908)		(2560)
Other Than IRA	17695	16886	26583*	26925	26076	39791*
	(1036)		(1391)	(1823)		(2447)
IRA	6030*	9542	16153*	6030*	9542	16153*
	(270)		(363)	(270)		(363)
Debt	3938	3850	6018	3938	3580	6018
	(918)		(1232)	(918)		(1232)
Families Without IRA:						
Total Fin. Assets	4343	4553	7110*	5815	6519	9198*
	(214)		(264)	(422)		(520)
Non-401(k)	4343*	3914	4760*	5815	5880	6868
	(197)		(243)	(410)		(506)
Families With IRA and 401(k):						
Total Fin. Assets	--	43177	65706*	--	59224	79011*
			(3365)			(5154)
Other Than IRA or 401(k)	19063	18969	28424*	33606	35016	41729
	(2807)		(2344)	(5161)		(4309)
IRA	6305*	10992	16061*	6305*	10992	16061*
	(785)		(656)	(785)		(656)
401(k)	--	13216	21220*	--	13216	21220*
			(1273)			(1273)
IRA and 401(k)	--	24208	37281*	--	24208	37281*
			(1409)			(1409)
Debt	3551	3552	3567	3551	3552	3567
	(933)		(779)	(933)		(779)
Families With Neither IRA Nor 401(k):						
Total Fin. Assets	4245*	3808	4537*	5656	5488	6004
	(208)		(273)	(168)		(516)

*Significantly different from 1987 estimate, at 0.95 confidence level.

Appendix Table A3.1b: 25th Quantile IRA & 401(k) Versus Other Financial Asset Balances, 1984 , 1987, & 1991					
	Excluding Stocks and Bonds			Including Stocks and Bonds		
Family and Asset Category	1984	1987	1991	1984	1987	1991
Families With 401(k):						
Total Fin. Assets	--	2200	3439* (327)	--	2503	4012* (365)
Other Than 401(k) or IRA	450 (98)	435	400 (83)	608 (91)	550	508 (79)
401(k)	--	1000	1301* (63)	--	1000	1301* (63)
Debt	200 (93)	150	150 (83)	200 (93)	150	150 (83)
Families Without 401(k):						
Total Fin. Assets	180 (24)	184	153 (31)	200 (25)	200	200 (33)
Non-IRA	150 (15)	120	110 (20)	200 (22)	200	182 (30)
Families With IRA:						
Total Fin. Assets	--	6824*	10000 (435)	--	7857	11000* (490)
Other Than IRA	2000 (174)	1700	2050 (237)	2800 (226)	2548	3000 (311)
IRA	2200* (78)	3000	4000* (109)	2200* (78)	3000	4000* (109)
Debt	0 (--)	0	0 (--)	0 (--)	0	0 (--)
Families Without IRA:						
Total Fin. Assets	55 (16)	70	125* (19)	100 (17)	100	168* (19)
Non-401(k)	55 (3)	50	100 (4)	100 (7)	94	100 (9)
Families With IRA and 401(k):						
Total Fin. Assets	--	15952	20511* (1508)	--	18320	24876* (1637)
Other Than IRA or 401(k)	2310 (540)	2500	2500 (509)	3200 (778)	4560	5000 (705)
IRA	2500* (298)	4000	4000 (265)	2500* (298)	4000	4000 (265)
401(k)	--	1800	3500* (496)	--	1800	3500* (496)
IRA and 401(k)	--	9100	11000* (946)	--	9100	11000* (946)
Debt	40 (21)	0	0 (21)	40 (21)	0	0 (21)
Families With Neither IRA Nor 401(k):						
Total Fin. Assets	50 (7)	49	50 (9)	75 (12)	54	75 (16)

*Significantly different from 1987 estimate, at 0.95 confidence level.

Appendix Table A3.1c: 75th Quantile IRA & 401(k) Versus Other Financial Asset Balances, 1984 , 1987, & 1991						
Family and Asset Category	Excluding Stocks and Bonds			Including Stocks and Bonds		
	1984	1987	1991	1984	1987	1991
Families With 401(k):						
Total Fin. Assets	--	14201	21100* (1715)	--	17535	26000* (2234)
Other Than 401(k) or IRA	6345 (801)	5000	5500 (683)	10000 (1293)	7950	8000 (1081)
401(k)	--	7000	13000* (956)	--	7000	13000* (956)
Debt	3200 (537)	4000	4200 (461)	3200 (537)	4000	4200 (461)
Families Without 401(k):						
Total Fin. Assets	8000* (485)	9520	10800 (662)	10000* (447)	11700	13500* (318)
Non-IRA	5500 (298)	5300	6000 (405)	7500 (394)	7900	8307 (536)
Families With IRA:						
Total Fin. Assets	--	32000	51500* (2279)	--	41150	61500* (2591)
Other Than IRA	20900 (997)	20000	26000* (1385)	29100 (1629)	29000	37000* (2269)
IRA	8000* (492)	13500	22000* (708)	8000* (402)	13500	22000* (708)
Debt	2200 (199)	2425	3000* (267)	2200 (199)	2425	3000* (267)
Families Without IRA:						
Total Fin. Assets	3000* (166)	3350	5973* (209)	3920* (229)	4500	7970* (289)
Non-401(k)	3000 (126)	2920	3300* (159)	3920 (207)	3800	5000* (258)
Families With IRA and 401(k):						
Total Fin. Assets	--	58200	80000* (6202)	--	75250	94500* (6831)
Other Than IRA or 401(k)	22000 (3090)	21124	30400* (2969)	37400 (4973)	37200	47000* (4736)
IRA	8600* (1187)	15850	21000* (1133)	8600* (1187)	15850	21000* (1133)
401(k)	--	16000	29000* (1997)	--	16000	29000* (1997)
IRA and 401(k)	--	32000	53500* (2765)	--	32000	53500* (2765)
Debt	3450 (505)	3100	3200 (471)	3450 (505)	3100	3200 (471)
Families With Neither IRA Nor 401(k):						
Total Fin. Assets	2800 (141)	2620	3000* (186)	3500 (200)	3380	4000* (265)

*Significantly different from 1987 estimate, at 0.95 confidence level.

Figure 1.1. 401(k) & IRA Contributions
In Billions, 1980 to 1990
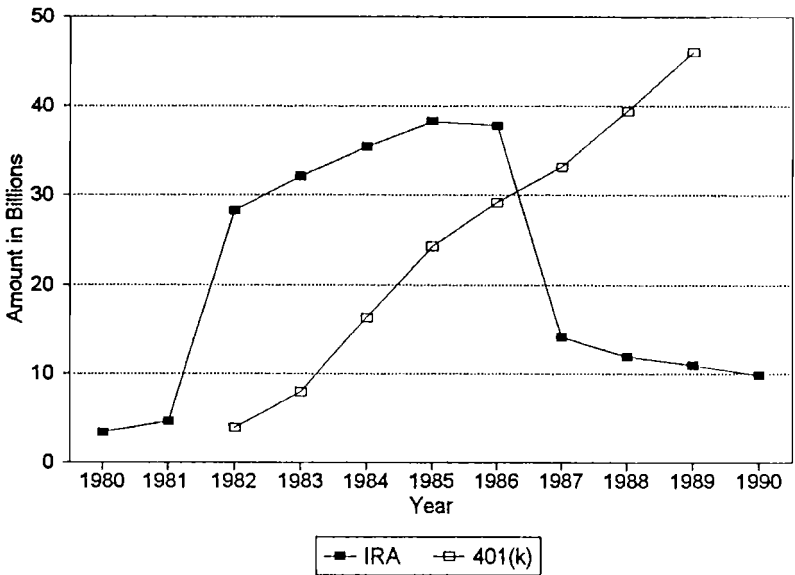
Figure 2.1. 401(k) versus IRA
Participation Rates, By Income
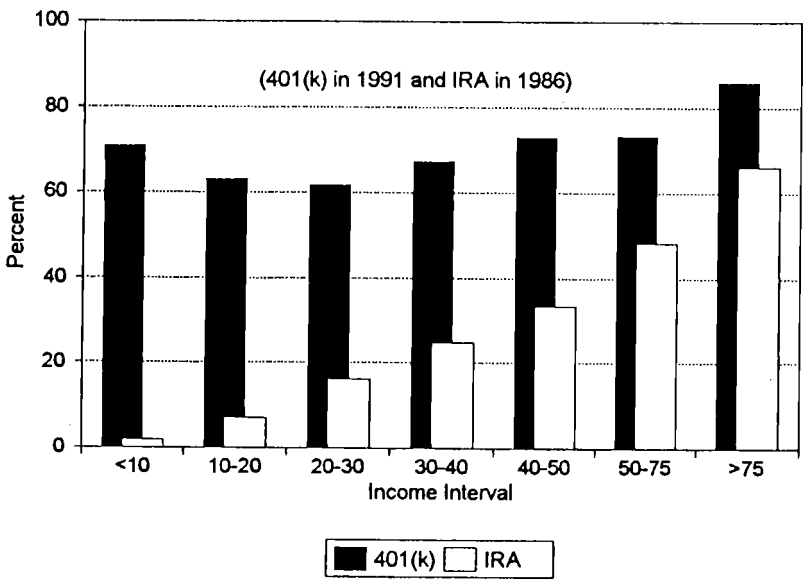
Figure 2.2. IRA Contribution Rate
By Income Interval 1985 and 1988
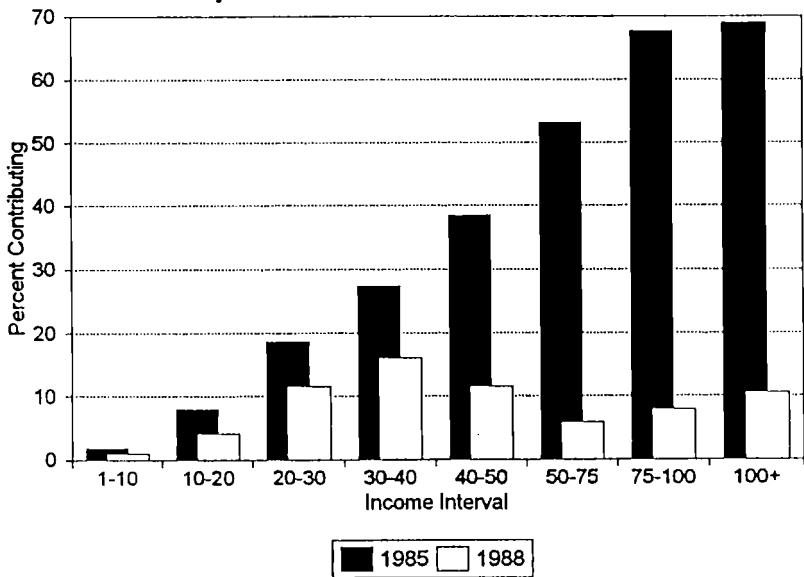
Figure 2.3a. Retirement Saving
By Saving Plan, 1980 to 1988

(401(k) Estimated in 1982 & 1983)
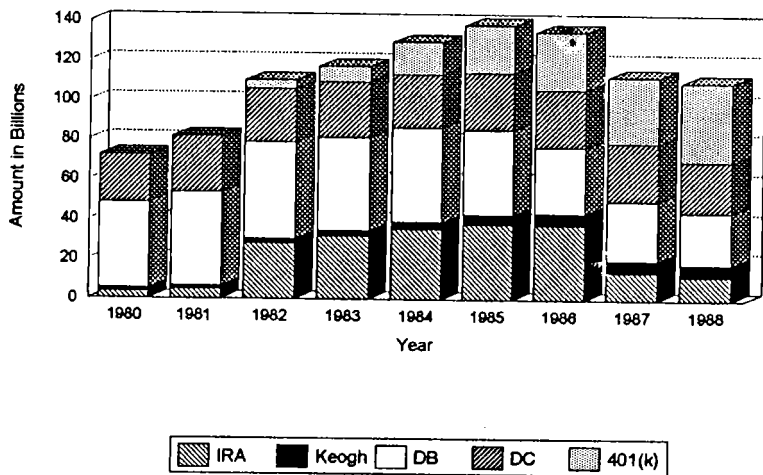
Figure 2.3b. Retirement Saving Percent
By Saving Plan, 1980 to 1988

(401(k) Estimated in 1982 & 1983)
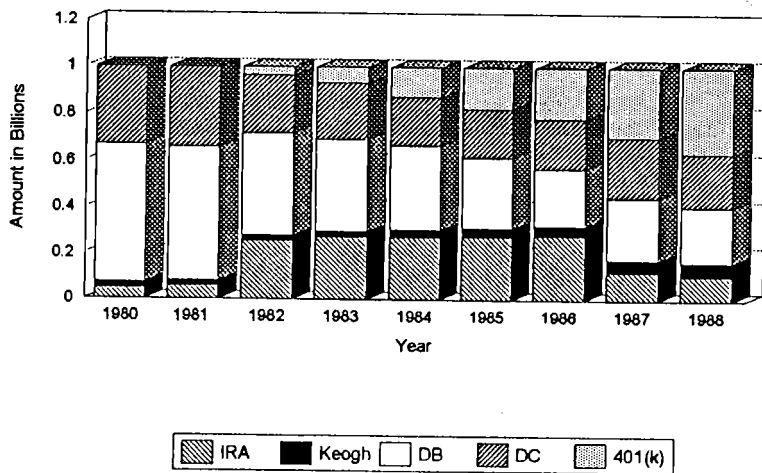
Figure 3.1 Total and Other Assets
By Saver Type
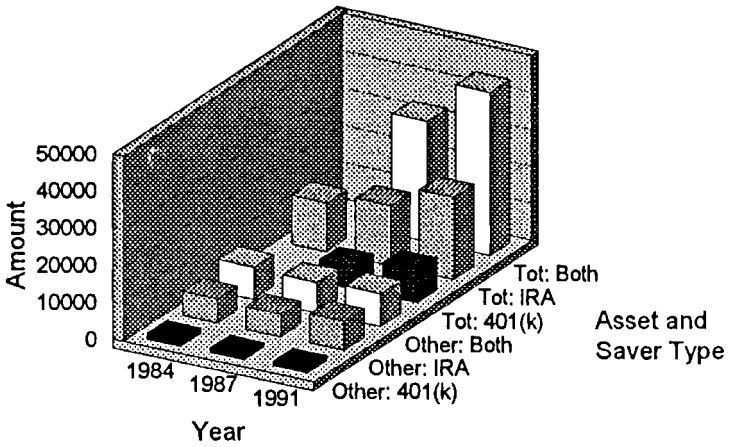
Families with both 401(k)s and IRAs had large increases in total financial assets but little change in other assets. Families with IRAs only or with 401(k)s only also had substantial increases in total financial assets but no decline in other fianancial assets.

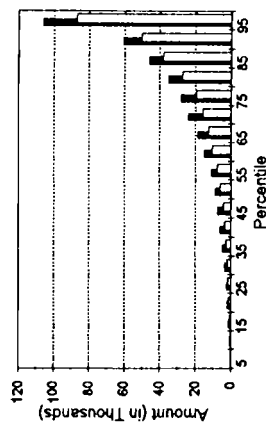Figure 4.1. Total and Other Assets
By 401(k) Eligibility and Income, 1991
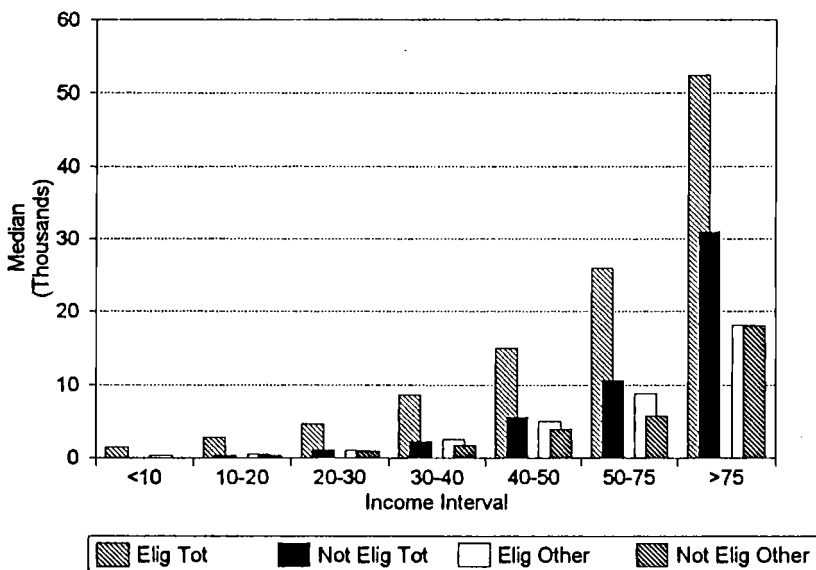
Figure 4.2 Distribution of Total and Other Assets, by Income Interval
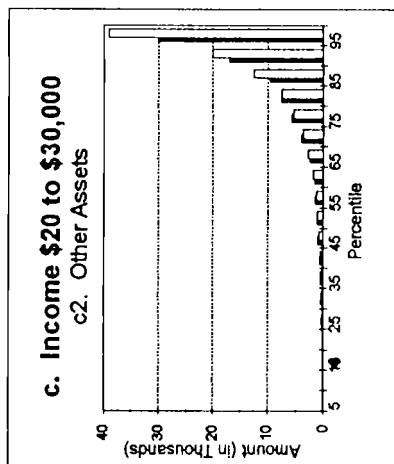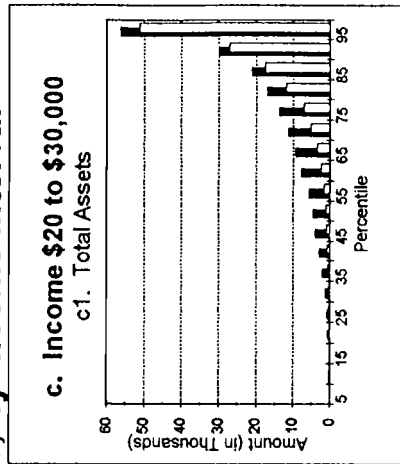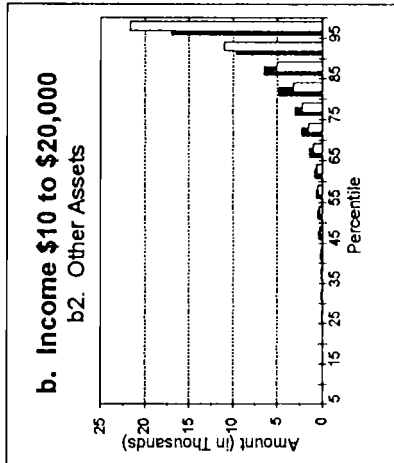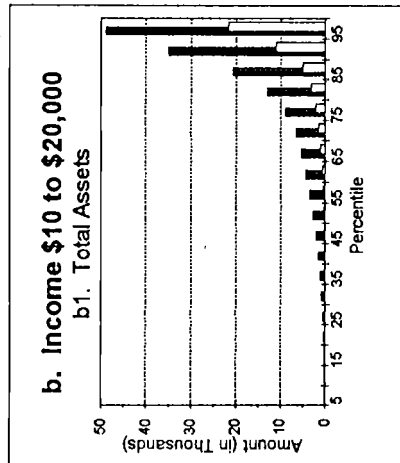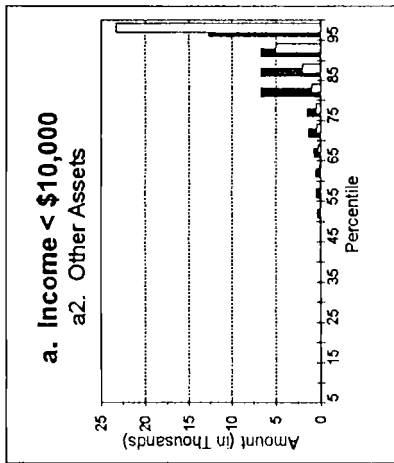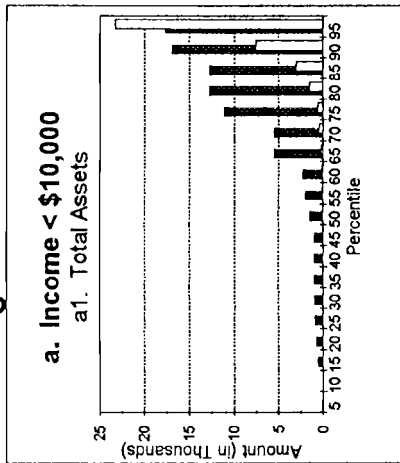
a. Income < $10,000
a1. Total Assets

b. Income $10 to $20,000
b1. Total Assets

c. Income $20 to $30,000
c1. Total Assets

a. Income < $10,000
a2. Other Assets

b. Income $10 to $20,000
b2. Other Assets
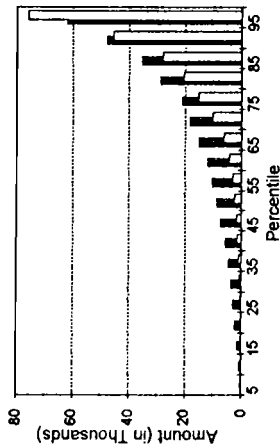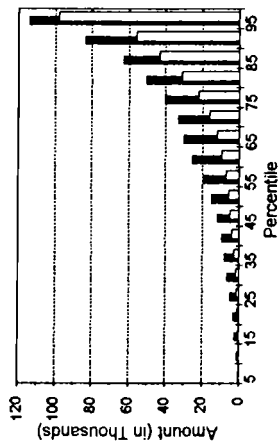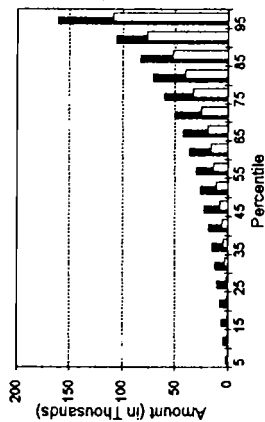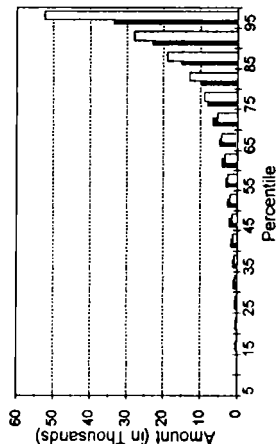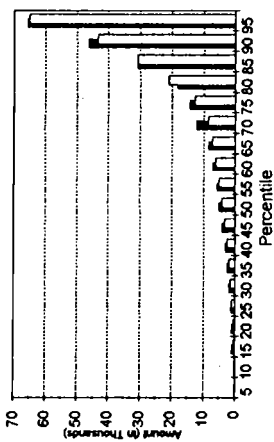
c. Income $20 to $30,000
c2. Other Assets

Figure 4.2 Distribution of Total and Other Assets, by Income Interval, Continued

Figure 4.2 Distribution of Total and Other Assets, by Income Interval, Continued

g. Income $75,000 +
g1. Total Assets

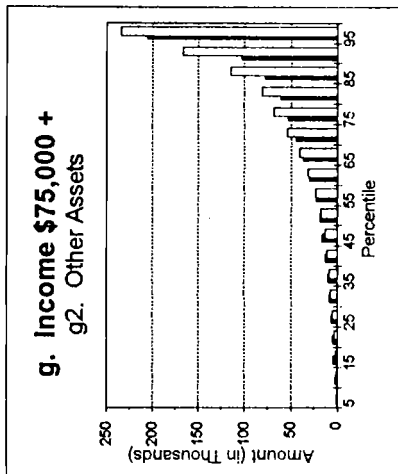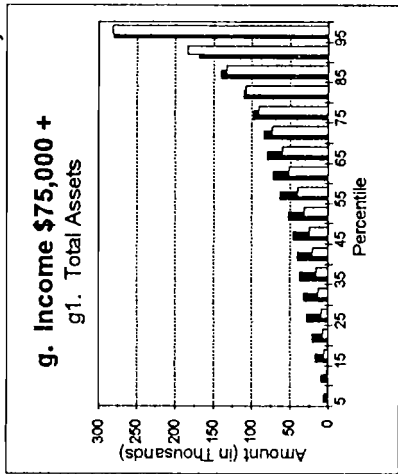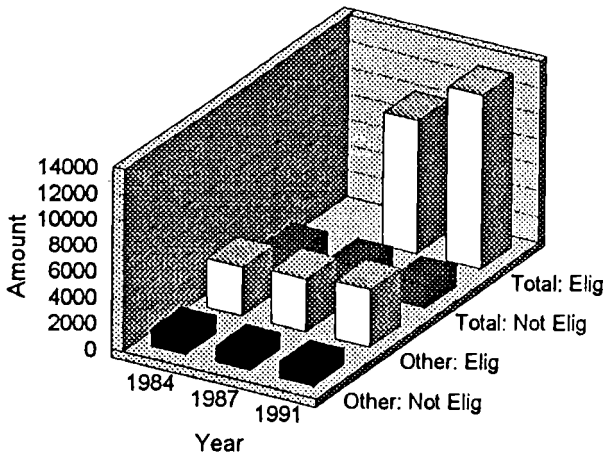g. Income $75,000 +
g2. Other Assets

Figure 4.3. Total and Other Assets
By 401(k) Eligibility, 1984 to 1991

There was a large increase in the total financial assets of eligible families, but little change in other assets of eligible families. There was little change in the total or in the other assets of the not eligible families. Thus there is no indication of substitution.

Figure 5.1. IRA Contribution Rate
By 401(k) Eligibility, 1982 and 1987