

Preliminary Draft

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## **Education Saving Incentives and Household Saving: Evidence from the 2000 TIAA-CREF Survey of Participant Finances**

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### **Abstract**

This paper examines the effects of education saving incentives on the level of private saving by households. Little is known about this subject. One explanation for this gap in the literature is that because education saving incentives are relatively new, data on education saving are not readily available. Using wealth data from a survey of TIAA-CREF participants, this paper attempts to estimate whether saving in education saving programs offset other household saving. As in the extant literature of the impact of retirement saving programs on household saving, an empirical challenge is how to deal with the issue of saver heterogeneity. In this paper, savers are distinguished from non-savers by whether households have an IRA or a supplemental pension plan. Results suggest that education saving incentives do not seem to offset other household saving.

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# 1 Introduction

College tuition inflation in the past thirty years has averaged two to three percentage points higher than the general price inflation and is showing no sign of slowing down. For the 2001-2002 academic year, the average in-state tuition and fees at four-year public colleges and universities was \$3,754, a 7.7 percent increase from the previous year. For the same academic year, the average tuition and fees at four-year private colleges and universities was \$17,123, a 5.5 percent increase from the previous year.<sup>1</sup>

As the cost of college continues to rise at a fast pace, financing a college education has become a growing concern for many families. In order to help families save for college, the federal government has introduced two tax-favored education saving instruments in recent years: the 529 plan and the Education IRA (recently renamed the Coverdell Education Savings Account). These education saving instruments, the 529 plans in particular, have grown rapidly since their inception and will likely grow even more quickly under the new tax law passed in 2001.

Education saving instruments are only one of the government's interventions in the capital market for higher education investments. However, they are an important one. The new education saving instruments represent an important redirection of state and federal efforts toward saving and away from state-subsidized public tuition prices and needs-based federal financial aid such as grants and student loans—two major forms of public subsidy to higher education. For example, while state and local appropriations accounted for 48 percent of the total current-fund revenue for public degree-granting institutions in the 1980-81 academic year, they accounted for only 36 percent in the 1996-97 academic year.<sup>2</sup>

Enthusiasm for the tax-favored education saving instruments was partly spurred by the idea that they would raise households' saving rate by targeting a segment of the population that is not

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<sup>1</sup> Source: *Trends in College Pricing 2001*, the College Board.

targeted already by IRAs and 401(k)s. Moreover, by offering tax incentives, education saving instruments may encourage marginal families to save and plan for college, which may have a positive influence on students' college experience.<sup>3</sup>

As in the case of other tax-favored saving programs, whether saving in education saving instruments represents new saving is an empirical issue. In the last two decades, a large and contentious literature has developed over the impact of IRAs and 401(k)s on private and national saving. Some researchers (Poterba, Venti, and Wise) have found evidence that suggests the majority of saving in tax-favored retirement accounts represents new saving while other researchers (Gale and Scholtz) have found evidence that suggests just the opposite.

While the debate on the impact of retirement saving programs has continued for years, little is known about how education saving programs affect household saving. One explanation for this gap in the literature is that because education saving programs are relatively new, data on education saving are not readily available. Using wealth data from a survey of TIAA-CREF participants, this paper attempts a first check on whether education saving incentives offset other household saving, controlling for saver heterogeneity. Results suggest that education saving incentives do not seem to offset other forms of household saving.

The remainder of the paper is structured as follows. Section 2 describes the 529 plan and the recently renamed Coverdell Education Savings Account. Section 3 describes the data and presents some summary statistics. Section 4 provides a brief summary of the IRA and 401(k) literature and discusses the empirical strategy used in this paper to identify savers from non-savers. Section 5

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<sup>2</sup> Source: *Digest of Education Statistics 2001*, Department of Education.

<sup>3</sup> Despite the fact that loans are available and can be made the responsibility of the student himself, anecdotal evidence suggests that many families with a record of successful college attendance make considerable use of internal family financing (i.e. parental savings). Although the greater college success of savers may be due to their greater incomes or superior planning, it is also possible that saving and debt do not have parallel effects on students' college experience. Perhaps piling up debt worries students and causes them to disengage from college in order to earn money. It is also possible that act of saving for college causes a family to think more concretely about college and prepare for it better.

presents the regression results and some sensitivity analysis. Section 6 provides some concluding remarks.

## **2 The 529 Plan and the Coverdell Education Savings Account**

### **2.1 The 529 Plan**

Named after the section of the Internal Revenue Code (IRC) that created them, 529 plans are qualified tuition programs designed to help families save for college expenses. Two types of 529 plans are available: savings and prepaid. Savings plans are investment programs that typically offer a variable rate of return. Prepaid plans usually allow the plan purchaser to prepay future tuition credits at current prices. All of the existing 529 savings and prepaid plans are sponsored by individual states. However, some private colleges and universities may establish their own prepaid plans in the near future.

Although the first prepaid plan (Michigan Education Trust) was introduced in 1988, it was not until 1996 that Section 529 was added to the IRC to clarify the federal tax treatment of state-sponsored plans. Under Section 529, earnings in state-sponsored plans grow federal and state tax-free until withdrawal. Contributions to 529 plans are not deductible for federal income tax purposes. However, they are deductible (usually subject to an annual maximum) in some states for state income tax purposes.

Before 2002, when withdrawals from a 529 plan were made to pay for qualified higher education expenses, the earnings portion was subject to federal income tax at the beneficiary's rate. The state tax treatment on earnings of qualified withdrawals depended on the state. While some states followed the federal tax treatment, many exempted earnings of qualified withdrawals from state tax to provide additional tax benefits.

The *Economic Growth and Tax Reconciliation Act of 2001* (the *2001 Tax Act*) provided more

favorable tax treatment for 529 plans, as the earnings of qualified withdrawals from state-sponsored plans were made exempt from federal income tax, starting in 2002. States that currently do not exempt earnings from state income taxes may follow suit and exempt earnings from state taxes. Starting in 2004, prepaid plans established by private colleges and universities will also be eligible for the same benefits as state-sponsored plans.<sup>4</sup>

The 529 plan is also more flexible than most tax-favored saving vehicles. There is no income restriction on participation or tax benefits. Anyone, regardless of income, can contribute to a 529 plan. Withdrawals may be used to pay for tuition, fees, room and board, books, supplies, and equipment required for enrollment or attendance at an eligible undergraduate, graduate, or professional institution of higher education, or any approved vocational/technical school. Eligible postsecondary institutions include those that are accredited and are eligible to participate in student aid programs administered by the Department of Education.

While most state-sponsored prepaid plans are open to state residents only, most savings plans allow anyone from any state to open an account. There is generally no annual contribution limit for 529 plans. Most plans impose a lifetime limit per beneficiary on account balances (the sum of contributions and earnings less fees and expenses); a few plans impose a lifetime limit on gross contributions. Lifetime limits vary widely across states and are usually adjusted once a year to reflect inflation. Table A1 shows as of July 2002, the lowest lifetime limit on account balances was \$122,484 (California) and the highest was \$305,000 (South Dakota).<sup>5</sup> Table A1 also shows that minimum contribution requirements are generally low.

Awareness of and interest in 529 plans have increased considerably after the *2001 Tax Act*

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<sup>4</sup> Note that many provisions of the *2001 Tax Act* are scheduled to expire on December 31, 2010. Congress may or may not extend the tax benefits beyond this date. If the law is not extended the federal tax treatment of 529 plans will revert to its status prior to January 1, 2002.

<sup>5</sup> See Ma, Warshawsky, Ameriks, and Blohm (2001) for a study of using an economic approach to set the contribution limits for 529 plans. In practice, limits are set by states according to broad considerations set forth in the IRC and regulations. In states with lifetime limits on account balances, once the combined balance

made the earnings of qualified withdrawals exempt from federal income tax. As of March 2002, there were approximately 3.1 million accounts with a total asset value of \$18.9 billion across all 529 savings and prepaid plans, an increase of 75 percent compared to June 2001. As of July 2002, forty-seven states had 529 savings plans in operation. The rest of the states had 529 savings plans under development. Twenty-two states had 529 prepaid plans either in operation or under development.<sup>6</sup>

The earnings of non-qualified withdrawals from 529 plans are subject to federal and state income taxes at the distributee's rate in addition to a ten-percent penalty. However, the account owner may make a penalty-free, tax-free rollover by designating another "member of the family" as the new beneficiary. The ten-percent penalty does not apply in the event there is a withdrawal due to the beneficiary's death or disability. If the beneficiary receives a tax-free scholarship, educational assistance allowance, or other tax-free educational benefits, then the distribution from a 529 plan is not subject to the ten-percent penalty to the extent that the distribution is not more than the amount of the scholarship, educational allowance, or other similar benefits.

## **2.2 *The Coverdell Education Savings Account***

The recently renamed Coverdell Education Savings Account was introduced as part of the *Taxpayer Relief Act of 1997*. Contributions to the Coverdell are not tax-deductible. However, earnings are exempt from federal and state income taxes if withdrawals are used to pay for qualified education expenses. Before 2002, qualified expenses included higher education expenses only. The *2001 Tax Act* provided that starting in 2002, qualified expenses would also include elementary and secondary school expenses at public, private, or religious schools.<sup>7</sup>

There is an income restriction on participation in the Coverdell. For 2001, the phase-out range

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for a designated beneficiary reaches the maximum limit, the program will stop taking new contributions.

<sup>6</sup> Source: College Savings Plan Network.

<sup>7</sup> Allowable higher education expenses are the same as those for 529 plans. Allowable elementary and secondary school expenses include tuition, fees, academic tutoring, books, supplies, other equipment, "special

was between \$95,000 and \$110,000 for single tax filers and between \$150,000 and \$160,000 for joint tax filers. In 2002, more families are eligible for the Coverdell, as the *2001 Tax Act* raised the income phase-out range for married couples to between \$190,000 and \$220,000. The *2001 Tax Act* also raised the annual contribution limit for the Coverdell from \$500 to \$2,000 per beneficiary, starting in 2002.

The earnings on non-qualified withdrawals from Coverdells are subject to federal and state income taxes at the distributee's rate in addition to a ten-percent penalty (with similar exceptions as those for 529 plans). Before the tax law changes in 2001, an excise tax was imposed if individuals contributed to both a 529 plan and a Coverdell on behalf of the same beneficiary in the same year. The new law provided that starting in 2002, the excise tax would no longer apply. However, the federal law prohibits the use of same education expenses to support tax-free distributions from both a 529 plan and a Coverdell. Furthermore, the education expenses used to support tax-free distributions from a 529 plan or a Coverdell may not be used to claim a Hope or Lifetime Learning Credit.

Table 1 summarizes some key features of the 529 plan and Coverdell. Table 2 illustrates how families may use the 529 plan and Coverdell to save for future college expenses. Column 1 indicates a monthly contribution of \$22 over an 18-year investment horizon would be sufficient to fund the average cost of a two-year education at a public two-year college. Columns 2 and 3 indicate that monthly contributions of \$240 and \$630 over an 18-year investment horizon would be sufficient to fund the average cost of a four-year education at a public four-year and private four-year college, respectively.

It is also worth noting that the Registered Education Savings Plans (RESPs) in Canada are similar to the 529 and Coverdell. Contributions to the RESPs are not tax-deductible. However, earnings grow tax-free until withdrawal. When withdrawals are used to pay for qualified higher education expenses, earnings are taxed as the beneficiary's income. Earnings on non-qualified withdrawals (withdrawals not used for higher education) are taxable as the account subscriber

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needs services", room and board, uniforms, transportation and "supplementary items and services".

(owner)'s income. For each beneficiary, the annual contribution limit is CAD4,000 and the lifetime limit is CAD42,000.

### **3 The 2000 TIAA-CREF Survey of Participant Finances**

To examine the impact of education saving incentives on other household saving, information on contributions or accumulations in education saving, other saving, and demographics is required. Currently, there is no publicly available wealth data that contain information on contributions or accumulations in education saving programs. The 2001 Survey of Consumer Finances (SCF) conducted by the Federal Reserve Board includes questions on education saving programs such as the 529 plans and Coverdells. However, the 2001 SCF data will not be available until 2003.

The data used in this study are drawn from the 2000 TIAA-CREF Survey of Participant Finances (SPF) conducted by TIAA-CREF. TIAA-CREF is a non-profit organization that provides retirement plans at more than 12,000 colleges, universities, research centers, medical organizations and other nonprofit institutions throughout the United States. The 2000 TIAA-CREF SPF sample consists mostly of employees of colleges and universities. A small portion of the sample consists of employees of research and other nonprofit organizations.

The 2000 TIAA-CREF SPF was conducted among members of the TIAA-CREF "Research Panel". The TIAA-CREF Research Panel was established in 1993 when 60,000 TIAA-CREF participants were randomly selected to participate in the TIAA-CREF Research Panel Project. The purpose of the Research Panel Project was to select a sample of TIAA-CREF participants for future studies of participant financial decisions. A brief questionnaire was mailed to these 60,000 randomly selected participants asking information about themselves and their families. Of these 60,000 individuals selected, 9,847 responded to the 1993 Research Panel questionnaire and formed the initial TIAA-CREF Research Panel. In the subsequent years, some members were dropped from the



Research Panel due to death, change of participant status, or change of address. Several sample replenishment efforts were made in 1995, 1997, and 1999.

The 2000 TIAA-CREF SPF is a comprehensive survey of household finances. It was designed to examine in detail the types and amounts of financial assets owned by TIAA-CREF participants, and apply this information to the study of household asset allocation and other financial decisions. Survey packets containing a cover letter and an eight-page questionnaire were mailed in January 2000 to a total of 9,234 Research Panel members. A total of 2,835 completed questionnaires (2,793 usable) were received representing an overall response rate of 31 percent.

The 2000 TIAA-CREF SPF gathered a wide range of information on household finances and demographics. The demographic information gathered includes respondent's age, gender, education, employment status, occupation, marital status, and the number of children for whom the respondent's household is financially responsible. The financial information gathered includes the amount and sources of the respondent's income, the types of retirement investments, non-retirement financial accounts, real estate holdings in the household, and the estimates of the current value for each of those investments. Information on household mortgages and other types of financial commitments was also gathered. For married respondents, information on the spouse's employment status, income, and retirement assets was also collected. Most importantly, respondents were asked whether anyone in his/her household had a Coverdell, a 529 savings account, or a 529 prepaid contract. Respondents were asked to provide a value if they answered yes to any of these questions. Respondents were also asked to measure on a 1-10 scale how important it was for them to leave a bequest.

### ***3.1 A Comparison of the 2000 TIAA-CREF SPF with the 1998 SCF***

Table 3 shows the summary statistics of households from the 1998 SCF and the non-annuitant households from the 2000 TIAA-CREF SPF. Only non-annuitant households from the 2000 TIAA-CREF SPF are included in the analysis in this study mainly because for annuitants who were already

receiving life-annuity income from TIAA-CREF, it is difficult to interpret their self-reported values of retirement assets. In other words, it is unlikely that they wrote down the present values of their future annuity income when filling out the survey. Therefore, including annuitants in the analysis may contaminate the results. The total number of non-annuitant respondents is 1,856.

Clearly, households from the two surveys are quite different in terms of both demographic and financial characteristics. As Table 3 shows, the respondents in the 2000 TIAA-CREF SPF are older and much more educated than the respondents in the 1998 SCF. For example, while only 33.2 percent of the 1998 SCF respondents have a college degree, 91.6 percent of the 2000 TIAA-CREF SPF respondents have at least a college degree and 34.4 percent have a Ph.D. degree.

Table 3 also shows that households from the 2000 TIAA-CREF SPF on average earned much higher income than those from the 1998 SCF. The median 1999 household income from the 2000 TIAA-CREF SPF was more than twice as much as the median 1997 household income from the 1998 SCF. Even when the median household income from the 1998 SCF is inflated by 10 percent to the 1999 level, it is still only half of that from the 2000 TIAA-CREF SPF. (The March Current Population Survey data suggest that for households with householders 25 years and older, the median income in current dollars rose by 10.1 percent between 1997 and 1999 while the mean income in current dollars rose by 10.6 percent.) Moreover, households from the 2000 TIAA-CREF SPF are much wealthier than those from the 1998 SCF. The median net worth for households from the 1998 SCF is only \$71,700, compared to \$414,625 for those from the 2000 TIAA-CREF SPF.

The above comparisons suggest that the sample in the 2000 TIAA-CREF SPF is quite different from the general population. The respondents in the 2000 TIAA-CREF SPF are older, much more educated and wealthier than the general population. These unique characteristics make the 2000 TIAA-CREF SPF particularly well suited to the task of assessing the effectiveness of education saving programs mainly for two reasons. First, the TIAA-CREF sample is more likely to be saving-prone and more likely to plan for college. Thus, they are more likely to use the new education saving

instruments than the typical American household, especially when the instruments are new and unfamiliar to most people. In fact, as of December 1999, while 2.6 percent of the TIAA-CREF non-annuitant households reported owning a 529 plan, less than 1.2 percent of the U.S. households owned a 529 plan.<sup>8</sup> This confirms the TIAA-CREF sample is much more likely to use education saving instruments than the general population. The proneness of the TIAA-CREF sample to use saving instruments allows one to find a sufficient number of users in a small sample.

Second, estimates from the TIAA-CREF sample will likely overstate the extent to which education saving crowds out other saving. Research on retirement saving suggests that reshuffling of assets is more likely to occur for high-income households (Gale and Scholtz, 2000). Moreover, not only is the TIAA-CREF sample wealthier and has accumulated higher levels of saving (and more saving to crowd out), it also consists largely of education-sector workers who are very consciously dedicated to ensuring their children's college opportunities. These individuals are far more likely to have been saving explicitly for college even in the absence of tax-favored instruments, which also raises the likelihood of crowding out. Therefore, one can confidently predict that there would be much less crowding out in the overall population than in the TIAA-CREF sample.

### ***3.2 Non-responses in the Survey and Sample Selection***

Although missing data are common for many wealth surveys, the item response rates in the 2000 TIAA-CREF SPF are quite high. Table 4 presents the proportions of non-responses to financial asset questions in the 2000 TIAA-CREF SPF survey for non-annuitants. As Table 4 shows, the item response rates for non-annuitants in the 2000 TIAA-CREF SPF are over 90 percent for most financial assets (Column 4).

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<sup>8</sup> Source: Author's calculation. Data on the total number of 529 accounts and the total number of U.S. households are from the College Savings Plans Network and the Census Bureau, respectively. It is worth noting that to the extent that some households may have multiple 529 accounts, the percentage of households owning 529 plans may be slightly lower than the calculated 1.2 percent.

Missing data could arise as a result of non-response to ownership questions or value questions, or sometimes, both. Column 1 in Table 4 indicates that between 1.3 and 14.9 percent of non-annuitant respondents did not provide an answer to the ownership question for various types of financial assets. Column 3 suggests that among those who answered yes to the ownership questions, between 5.1 and 20.4 percent did not provide a value. As a result, between 5.4 and 15.5 percent of non-annuitant respondents had missing data for various assets (Column 4). Non-responses become more of an issue when one calculates aggregate wealth levels, even though the non-response rates for individual assets are rather low. For example, when one calculates households' non-education net worth, 46.2 percent of non-annuitant respondents have missing data due to non-responses to the ownership and/or value questions for at least one of the assets.

Of special attention are the non-responses for the three education saving questions. At first glance, the non-response rates for the three education saving questions seem much higher than those for other financial assets. Further investigation of the data reveals that majorities of the non-responses to education saving questions represent non-responses to all three education saving questions (270 cases). Of these 270 cases, household's non-education net worth (the sum of net non-education financial assets and real estate equity) is available for 132 cases. This indicates that these 132 respondents filled out all the necessary information needed for the calculation of household non-education net worth, but left the education saving questions blank. Because these education saving incentives were rather new at the time of the survey (approximately two years after their introduction), it is likely that many respondents were not familiar with these incentives and did not understand the questions. However, those respondents who did report having such education saving seemed to understand the questions and most of them provided a valid and positive answer for the value. Therefore, it seems reasonable to assume that these 132 respondents did not have such accounts. Under such an assumption, the non-response rate for the education ownership questions dropped to less than eight percent.

Of the 1,856 non-annuitant respondents, 125 reported having at least one of the three education saving vehicles. The number of respondents reported having a Coverdell, a 529 savings account, and a 529 prepaid contract was 83, 39, and 9, respectively. Moreover, 73, 36, and 8 provided a non-zero account balance. The reported median balance for the three types of accounts was \$2,000, \$8,000, and \$7,500, respectively. Due to the small number of respondents who reported having these education saving accounts, it is difficult to empirically distinguish the impact of each of these education incentives on household wealth. Therefore, all three education saving incentives are treated equally in the empirical analysis. In other words, the balances of all education saving accounts are aggregated to create a variable that measures a household's total education saving.

Observations with missing values for net worth are excluded from the regression analysis (858 cases). Also excluded from the regression analysis are observations with extreme values of net worth (over \$4 million, 4 cases) and observations with missing values for explanatory variables (88 cases). The final regression sample includes 917 cases.

#### **4 Empirical Strategy – How to Identify Savers?**

As mentioned earlier, one important public policy question for tax-favored saving programs is whether saving in these tax-favored programs represents new saving. In other words, does saving in education saving programs offset other household saving? The answer to this question in large part depends on the source of contributions to these programs. If the source of contributions is reduced consumption or tax saving, then saving in these programs represents new saving. However, if the source of contributions is borrowing, existing assets, or the portion of wealth that would have been saved anyway even in the absence of these tax-favored saving programs, then tax-favored saving programs do not stimulate new saving.

In empirically estimating the saving effects of tax-favored retirement or education saving

programs, a challenging issue is how to deal with saver heterogeneity. Individuals' saving behaviors may be different due to unobservable individual-specific preferences such as their propensity to save. For example, participants in tax-favored saving programs may have stronger tastes for saving than others and may tend to save more in all forms. Econometric models that do not control for saver heterogeneity are likely to overestimate the saving effects of tax incentives.

In the retirement saving literature, a substantial amount of research has been devoted to estimate the impact of IRAs and 401(k) plans on households' wealth. Section 3.1 provides a summary of selected studies in the retirement saving literature. Section 3.2 describes the identification strategy used in this study to distinguish savers from non-savers and presents the empirical model and specifications.

#### ***4.1 A Summary of Selected Studies in the Retirement Saving Literature***

Two major retirement saving incentives, the IRA and the 401(k) have been the subject of substantial public discussion and economic analysis. When first introduced in 1974, IRAs were only available to individuals not covered by an employer pension plan. There was no income restriction. Contributions were tax deductible and capped at \$1,500 per year. The entire proceeds were subject to income taxes upon withdrawals. There was a 10 percent penalty on withdrawals made before the owner turned 59½.

The IRAs grew rapidly after the *Economic Recovery Act of 1981* raised the annual contribution limit to \$2,000 and made all wage earners and their spouses eligible. However, the *Tax Reform Act of 1986* reduced the tax benefits so that contributions were no longer deductible for higher-income individuals covered by a pension plan. Consequently, contributions to IRAs dropped sharply.

The 401(k) plan became popular in the 1980s and is one of the most important retirement saving programs. Sponsored by employers, only employees of firms that offer such plans are eligible to participate in a 401(k) plan. The 401(k) plan offers tax deduction on contributions, tax-free growth

on earnings, and very often, employer matching contributions. The entire proceeds are subject to income taxes upon withdrawal. There is a 10 percent penalty on withdrawals made before the owner turned 59½. Before 1987, participants were allowed to contribute up to \$30,000 per year. The *Tax Reform Act of 1986* reduced the annual contribution limit to \$7,000. The limit is adjusted annually to reflect inflation. The contribution limit for the 2002 tax year is \$11,000.

Since the introduction of the IRA and 401(k), there has been a growing literature on the saving effects of these tax-favored retirement programs. The focus has been whether and to what extent IRA and 401(k) saving represents new saving. A central theme of this body of research is how to deal with saver heterogeneity. In dealing with saver heterogeneity, various methods have been used to identify savers from non-savers, some of them described below. For more detailed reviews of this literature, see Bernheim (1999), Poterba, Venti, and Wise (1996), and Engen and Gale (2000).

#### *Comparing the Same Individuals or Similar Individuals Using Multiple Waves of Data*

When panel data are available, one method to control for saver heterogeneity is to follow the same households and compare the retirement and non-retirement assets of the same households over time. This method relies on the assumption that any unobserved individual-specific preferences in tastes for saving can be “differenced out” when one calculates the change in wealth levels of the same individuals over a certain time period. Studies that have used this identification strategy include Venti and Wise (1992, 1995), and Gale and Scholz (1994). Venti and Wise (1995) estimate whether IRA contributions reduce other non-IRA financial assets, using two waves of the Survey of Income and Program Participation (SIPP) data. They find that whether households contributed to IRAs had little impact on their non-IRA financial assets.

Another strategy to identify savers is to compare households with similar characteristics, using multiple waves of cross-section data. Using data from the 1984, 1987 and 1991 waves of the SIPP, Poterba, Venti and Wise (1995) estimate the saving effects of retirement programs. They group

households by whether households participated in IRA or 401(k) saving programs. They find that after controlling for age, income, education, and marital status, a family's IRA or 401(k) ownership or contribution status does not affect other non-IRA non-401(k) financial assets. Therefore, they conclude that contributions to IRAs or 401(k)s do not reduce other saving.

Engen and Gale (1995) use the 1987 and 1991 waves of the SIPP data and compare the wealth accumulations of the same comparison groups as Poterba, Venti and Wise (1995). They find that controlling for some demographics and income, 401(k)-eligible households accumulated more financial assets than other households. However, when they use a broad measure of wealth that includes net financial assets and home equity, 401(k)-eligible households did not accumulate more wealth than other households. They find similar results when comparing the wealth accumulations of IRA owners and non-owners. They argue that between 1987 and 1991, the housing value of 401(k)-eligible households rose compared to non-eligible households, but the mortgage debt level of those households rose even more. As a result, the home equity of 401(k)-eligible households fell during that period. Their results suggest that 401(k)-eligible households substitute 401(k) assets for home equity.

### *The Eligibility Experiment*

Another identification strategy, employed by Poterba, Venti, and Wise (1995) and Engelhardt (2000), relies on the assumption that the determination of 401(k) eligibility status is exogenous and uncorrelated with the observed or unobserved household characteristics.

Poterba, Venti, and Wise (1995) estimate whether 401(k) contributions offset other conventional personal financial asset saving and IRA saving, assuming the 401(k) eligibility status is independent of households' preferences for saving, given income. Using data from the 1984, 1987, and 1991 waves of SIPP, they find little substitution between 401(k) saving and other conventional personal financial asset saving. They also find very little substitution between 401(k) saving and IRA saving. They conclude that most 401(k) contributions represent net new saving.



Using the 1992 Health and Retirement Study, Engelhardt (2000) finds results that are similar to those in Poterba, Venti, and Wise (1995), when non-401(k) pension wealth is not taken into account. However, when non-401(k) pension wealth is included in the wealth measure, he finds that the total wealth levels of eligible and non-eligible families are similar. Thus, his results suggest that families tend to substitute 401(k) pension wealth for non-401(k) pension wealth.

In an effort to reconcile the discrepancies in findings of different studies, Engen and Gale (2000) estimate the effects of 401(k) plans on household wealth. Their new econometric specification allows the impact of 401(k) to vary over both time and earnings groups. Using data from the 1987 and 1991 waves of the SIPP, they find that 401(k) contributions by low earning groups are more likely to represent new saving than those by high earning groups. Because high earning groups hold the majorities of 401(k) balances, they estimate that only between 0 and 30 percent of 401(k) balances represents net additions to private saving between 1987 and 1991.

Given the wide range of estimates of the impact of retirement saving programs on household saving, what studies' results are closer to the "truth"? In a review of several studies, Hubbard and Skinner (1996) argue that the saving effects of retirement programs are likely to lie somewhere between the extremes of "no new saving" and "all new saving". Their conservative estimate is that 26 cents per dollar of IRA contribution represent new saving.

#### **4.2 *The Empirical Strategy to Identify Savers in This Study***

To examine the issue of saver heterogeneity in this study, Table 5 presents some summary statistics of non-annuitant respondents to the 2000 TIAA-CREF SPF by the ownership status of education saving vehicles. Clearly, households who own education saving have quite different economic and demographic characteristics than those that do not own. Households who own education savings tend to be slightly more educated, earn higher incomes, more likely to own a home, to be married, and to have an IRA or Keogh. For example, the median 1999 household income for

households who own education saving was \$104,500, compared to \$80,000 for households who do not own education saving. The difference is statistically significant at the one percent level. Not surprisingly, households who own education saving on average have more and younger children than those who do not own.

Table 5 also shows that households with education saving have slightly more net worth than those without education saving. But this does not necessarily mean that education saving programs stimulate new saving. It is possible that there may be systematic differences between households who own and do not own education saving. Therefore, analyses that do not take into account these fundamental differences are likely to attribute higher levels of wealth of the participant group to education saving participation and thus lead to an upward bias in the estimates of the effectiveness of education saving incentives.

Generally, panel data or multiple waves of cross-sectional data are better suited to assessing the impact of saving programs than a single wave of cross-sectional data in that they allow one to compare changes in household saving over time. Unfortunately, because only one wave of the survey data is available for this study, any longitudinal, “over time” comparisons are not feasible for this paper.<sup>9</sup> Furthermore, unlike 401(k) plans, almost anyone is eligible for saving with 529 plans and Coverdells. Therefore, there is no eligibility experiment here, either.

However, whether households have an IRA account may be used to identify savers.<sup>10</sup> IRA participation is entirely voluntary and therefore may be considered a reasonable signal of taste for saving. For example, Poterba, Venti and Wise (1994, 1995) use whether households participated in IRA or 401(k) saving programs as a signal of taste for saving in their studies. In addition, IRA

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<sup>9</sup> Although a previous wealth survey was conducted among the Research Panel members in 1996, less than 400 members responded to both the 1996 and the 2000 surveys, not enough to conduct a longitudinal comparison. See Bodie and Crane (1997) for a paper that used data from the 1996 Survey to analyze household asset allocation decisions.

<sup>10</sup> Retirement Annuities (RAs) are not a good signal of taste for saving for the 2000 TIAA-CREF SPF sample due to the fact many employers match employee contributions and thus provide additional incentives for

participation is also a good signal for households' familiarity with tax-favored saving instruments. As Table 5 shows, over 90 percent of the households who owned education saving also reported owning an IRA, compared to only 67 percent for households who did not own education saving.

### 4.3 *Empirical Model and Specifications*

The empirical model to be estimated is as follows:

$$W_s = \alpha_s + \beta_s * X_s + (\gamma_s * Edsave\_balance + \theta_s * No\_edsave + g$$

$$W_{ns} = \alpha_{ns} + \beta_{ns} * X_{ns} + (\gamma_{ns} * Edsave\_balance + \theta_{ns} * No\_edsave + g_{ns}$$

The above model specifications allow the coefficient estimates to be different for saver and non-saver groups. The subscripts *s* and *ns* represent saver and non-saver groups as defined by the ownership status of IRA. *W* is a wealth measure; *Edsave\_balance* measures a household's total education saving. The dummy variable *No\_edsave* differentiates households who do not own education saving from those who do own. *X* is a vector of household demographic variables including respondent's age, education, occupation, marital status, household income, number of children, bequest motive, whether the household has two full-time workers, and whether the household is covered by a defined benefit pension. For married respondents, the household income is the sum of the respondent and the spouse's income. For other respondents, household income is set equal to the respondent's income. The income measure includes labor income, pension and social security income, rental income, interests, dividends, and capital gains.

In the regression analysis, two wealth measures are employed as the dependent variable. The first measure is net non-education financial assets, which is the total of non-education retirement and non-retirement assets including stock mutual funds, bond mutual funds, money market mutual funds, individual stocks, bonds, savings account, checking account, and certificate of deposit less personal

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saving.

loans, educational loans, and credit card balances. The second wealth measure is net worth, which is the sum of net non-education financial assets and real estate equity. Real estate equity is defined as the difference between the total value of the household's primary home and other properties the household owns and the mortgage debt against these real estate properties. Summary statistics of variables in the regression analysis are presented in Table 6.

## 5 Results

This section presents results from estimating the model described in Section 4.3. The model is estimated separately for savers and non-savers. Because wealth distribution is skewed, mean regressions are very often driven by outliers. Therefore, median regressions are used instead. Heteroscedasticity in the error term is corrected by estimating the standard errors using bootstrap estimation with 1000 iterations.

### 5.1 *Using IRA Ownership to Identify Savers*

Table 7 presents results from using net non-education financial assets as the dependent variable. The coefficient estimates of most explanatory variables have the expected signs. Not surprisingly, net non-education financial assets increase with household income and age for both IRA owner and non-owner groups. For both groups, education saving is positively correlated with net non-education financial assets, but the estimates are not statistically different from zero. This suggests that saving with education saving vehicles seem to have a negligible impact on other household financial assets. For both groups, the estimates of most education and occupation variables are statistically insignificant. The number of children in the household does not matter, either.

Bequest motive (measured on a 0-10 scale) seems to be positively correlated with net non-education financial assets for both groups. However, the estimate is insignificant for non-owners.

Having a defined benefit retirement plan has a negative and statistically significant impact on net non-education financial asset for IRA owners. This indicates that households who are covered by a defined benefit plan may save less in other forms.

Because there is a penalty on non-qualified withdrawals from tax-favored education saving vehicles, education saving may be considered illiquid. Furthermore, education saving may be considered long-term investment because many households are saving for their young children's future college expenses, which very often will occur many years later. To the extent that both housing and education saving may be considered illiquid and long-term investment, households may increase education saving by taking out more home mortgage debt. Therefore, regressions that use wealth measures that do not include home equity may overestimate the impact of saving incentives.

To address this issue, the model is estimated using non-education net worth (the sum of net non-education financial assets and real estate equity) as the dependent variable. Results are presented in Table 8. Most parameter estimates are similar to those presented in Table 7. Again, the estimates of the education saving variable for both groups are statistically insignificant.

## ***5.2 Using the Ownership Status of Supplemental Pension to Identify Savers***

Another identification strategy to distinguish savers from non-savers is to use the ownership status of Supplemental Retirement Annuities (SRAs) or Group Supplemental Retirement Annuities (GSRAs) as a signal for households' taste for saving. SRAs or GSRAs are offered by TIAA-CREF and available through employers. SRAs or GSRAs provide similar tax benefits as 401(k)s. Contributions are voluntary and tax-deductible. The annual contribution limit for a SRA or GSRA account is \$11,000 in 2002 and \$12,000 in 2003. Earnings in SRAs or GRSAs grow tax-free and the entire proceeds are subject to income taxes upon withdrawal.

As in the previous section, the model is estimated separately for SRA/GSRA owners and non-owners. Again, two wealth measures are used as the dependent variable.

Table 9 presents results from using net non-education financial assets as the dependent variable. The coefficient estimates of many explanatory variables are similar to those presented in Table 7. For both SRA/GSRA owner and non-owner groups, net non-education financial assets increase with income and age. Moreover, education saving is positively correlated with net non-education financial assets, but the estimates are not statistically significant.

Table 10 presents results from using net worth as the dependent variable. Table 10 suggests that results do not seem to change much when real estate equity is taken into account.

### **5.3 *Using TIAA-CREF Accounting Data vs. Self-reported Data on Retirement Assets***

How reliable are the self-reported data on wealth? Table 11 presents results using net worth after replacing the respondent's self-reported data on retirement assets with TIAA-CREF accounting data. The results are similar to those obtained from self-reported data (Table 7). This suggests that mis-reporting in the self-reported data seems to be rather random and minor. The same regressions were also run for a subsample of respondents that include only those for whom the difference between self-reported retirement assets and TIAA-CREF accounting data is less than 10 percent or less than \$10,000. Again, the results are very similar to those reported in Table 7.<sup>11</sup> It is also worth noting that approximately 74 percent of the respondents in the regression sample satisfy this selection criterion, indicating the self-reported data are rather accurate for majorities of respondents.

## **6 Concluding Remarks**

Whether saving incentives increase total private and public saving has been the subject of an ongoing debate. In the last two decades, a substantial amount of research has been devoted to address this issue with a focus on the saving effects of retirement saving incentives on total household saving.

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<sup>11</sup> See Ameriks, Caplin, and Leahy (2002) for a detailed discussion of comparing the self-reported data

In recent years, the federal government has introduced several education saving incentives in support of saving for education expenses. As in the case of retirement saving incentives, an important public policy issue is whether these education saving incentives stimulate new saving. Because these education saving incentives are relatively new, data are not readily available. The lack of data makes it difficult to empirically estimate the saving effects of these education saving incentives.

Using wealth data from a survey of TIAA-CREF participants, this paper attempts to estimate the impact of education saving incentives on household non-education assets. Results show that education saving incentives do not seem to offset other household saving at the outset of the programs. In the analysis, the ownership status of IRA or SRA/GSRA is used as a signal of household's taste for saving. It is worth noting the ownership status of IRA or SRA/GSRA only distinguishes savers from non-savers to a certain extent. Heterogeneity in individuals' propensities to save may still exist within the owner or non-owner group. Nevertheless, this study is an important first step in examining the impact of these saving programs.

Also of considerable interest are the potential institutional responses to tax-favored education saving programs. Some researchers argue that these saving programs may have long-term impact on admission policies. For example, Olivas (2000) argue that some higher education institutions may predicate admissions on ability to pay. These programs may also present an opportunity for some institutions to raise tuition even more.

As 529 plans and Coverdells continue to grow, new data may become available. With new and hopefully better data, alternative and possibly more robust methods may be used to control for saver heterogeneity. One possible data source for future research on this issue is the 2001 SCF, which is scheduled to be released in 2003. Future follow-ups of the TIAA-CREF SPF may also be used to revisit the issues addressed in this paper.

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with TIAA-CREF accounting data.

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**Table 1**  
**Key Features of the 529 Plan and Coverdell Education Savings Account\***

	<b>(1)</b> <b>529 Plan</b>	<b>(2)</b> <b>Coverdell Education Savings Account</b>
<b>Tax Benefits</b>	Earnings federal and state income tax deferred and federal income tax free, if withdrawals are used for qualified higher education expenses.	Earnings federal and state income tax free, if used for qualified elementary, secondary and higher education expenses.
<b>Is the Value of the Account <u>Excluded</u> from the Owner's Taxable Estate?</b>	Yes.	Yes.
<b>How Much Can Be Invested ?</b>	Varies by state. Some states allow new contributions until the account balance reaches \$306,000.	Up to \$2,000 per year.
<b>Qualified Education Expenses</b>	Tuition, fees, books, supplies, room and board, and equipment at an eligible post-secondary education institution.	Same as (1) for higher education expenses. Elementary and secondary education expenses also qualify.
<b>Financial Aid Treatment</b>	Savings plans: parents' assets if the account is under a parent's name; prepaid plans may reduce aid dollar-for-dollar.	Student's assets.
<b>Who Makes Investment Decision?</b>	State sponsor with input from program manager.	Owner.
<b>Income Restriction</b>	No.	Yes.
<b>Impact on Hope and Lifetime Tax Credits</b>	Education expenses used to support tax-free distributions from a 529 plan may not be used to claim a Hope or Lifetime Learning credit.	Education expenses used to support tax-free distributions from a Coverdell may not be used to claim a Hope or Lifetime Learning credit.
<b>Flexibility</b>	Earnings on non-qualified withdrawals taxed at the distributee's income tax rate plus an additional 10% tax.	Earnings on non-qualified withdrawals taxed at the distributee's income tax rate plus an additional 10% tax.

Note: The information provided in this table reflects the 2001 tax law changes.

Table 2  
Examples of Saving for a College Education

	Type of College		
	Public two-year	Public four-year	Private four-year
<u>Current annual cost:</u>			
2001-2002 average total charges including tuition, fees, and room and board <sup>1</sup>	\$1,738	\$9,008	\$23,578
<u>Projected cost (savings goal)<sup>2</sup>:</u>			
Average cost of a four-year education (or two-year for public two-year colleges) for a student enrolling in 2019	\$8,575	\$93,438	\$244,571
Investment period (years)	18	18	18
Monthly saving needed to meet the goal <sup>3</sup>	\$22	\$240	\$630
Saving instruments may be used	Coverdell or 529 plan	529 plan or combination of 529 plan and Coverdell	529 plan or combination of 529 plan and Coverdell

Note:

- 1) Tuition and fees only for a public two-year college. Source: *Trends in College Pricing 2001*, the College Board.
- 2) Assuming a 5% college inflation rate.
- 3) Assuming a 6% annual nominal rate of return for saving.

Table 3  
Summary Statistics of Households from the 1998 SCF and 2000 TIAA-CREF SPF

	Median	25th percentile	75th percentile	Mean
<u>1998 SCF</u>				
<u>Financial characteristics</u>				
Household Income	\$33,000	\$17,000	\$60,000	\$52,296
Total financial assets	\$17,320	\$1,500	\$85,000	\$134,234
Total personal debt	\$1,530	\$0	\$11,000	\$9,920
Total real estate assets	\$70,000	\$0	\$140,000	\$109,063
Total mortgage debt	\$0	\$0	\$55,000	\$37,621
Total net worth	\$71,700	\$9,920	\$208,850	\$282,592
Percent own primary residence	--	--	--	66.3%
<u>Demographics</u>				
Respondent's age	46.0	35.0	61.0	48.7
Respondent's education level				
Less than high school	--	--	--	16.5%
High school or GED	--	--	--	31.9%
Some college	--	--	--	18.5%
College and above	--	--	--	33.2%
<u>2000 TIAA-CREF SPF<sup>1</sup></u>				
<u>Financial characteristics</u>				
Household Income	\$82,000	\$53,000	\$120,000	\$102,203
Total financial assets	\$311,000	\$101,000	\$862,000	\$681,009
Total personal debt	\$0	\$0	\$8,000	\$11,833
Total real estate assets	\$160,000	\$90,000	\$300,000	\$242,278
Total mortgage debt	\$41,000	\$0	\$102,000	\$75,427
Total net worth	\$414,625	\$146,000	\$1,038,000	\$827,096
Percent own primary residence	--	--	--	84.4%
<u>Demographics</u>				
Respondent's age	52.0	43.0	60.0	51.3
Respondent's education level				
High school or less	--	--	--	1.8%
Some college	--	--	--	6.7%
College graduate	--	--	--	20.6%
Master or first professional	--	--	--	36.6%
Ph.D.	--	--	--	34.4%

Source: Author's calculations based on the 1998 SCF and the 2000 TIAA-CREF SPF.

Note: 1) For 2000 TIAA-CREF SPF, financial assets and demographic information was as of December 31, 1999.

Table 4  
Non-responses to Financial Asset Questions for Non-annuitants in the 2000 TIAA-CREF SPF

Type of Asset	Non-response to Ownership questions (%) (Column 1)	"Yes" to ownership questions (%) (Column 2)	Among those who answered "yes" to ownership, did not provide a value (%) (Column 3)	Observations with missing information (%) (Column 4)
<u>Respondent's Retirement Assets</u>				
(1) TIAA-CREF Employer-Sponsored Retirement Accounts	3.2	90.1	10.7	12.8
(2) Non-TIAA-CREF Employer-sponsored Retirement Accounts	3.7	37.0	12.4	8.3
(3) IRA or KEOGH Account	3.8	46.8	9.3	8.1
(4) Other Tax-Deferred Annuities	5.9	16.2	13.3	8.1
<u>Other Financial Assets</u>				
(5) Stock mutual funds	4.3	48.2	9.8	9.1
(6) Publicly traded stock	3.0	47.1	9.3	7.4
(7) Tax-free bond mutual funds	4.6	13.0	14.9	6.6
(8) Other bond mutual funds	5.0	10.3	20.4	7.1
(9) U.S. government savings bonds	4.6	28.0	11.8	7.9
(10) Corporate bonds or foreign bonds	5.4	4.5	22.6	6.4
(11) Savings accounts	1.3	76.9	5.3	5.4
(12) Checking accounts	1.3	96.7	5.1	6.2
(13) Certificates and deposit	2.4	25.9	7.1	4.2
(14) Money market mutual funds	3.8	41.4	9.5	7.8
<u>Education Saving</u>				
(15) Education IRA	14.9	4.5	12.0	15.5
(16) 529 Savings plan	14.7	2.1	7.7	14.8
(17) 529 Prepaid contract	14.6	0.5	11.1	14.7

Source: Author's calculations based on the 2000 TIAA-CREF SPF data.  
Total number of non-annuitants: 1,856.

Table 5  
Summary Statistics of Non-annuitant Respondents to the 2000 TIAA-CREF SPF,  
by Ownership of Education Saving

	Own at least one of the three types of education saving accounts (125 cases)	Do not own any education saving accounts (1,710 cases)	Full non- annuitant sample <sup>1</sup> (1,836 cases)
<i>Median</i>			
Respondent's age (years)	47.0	52.0 **	52.0
Household 1999 income	\$104,500	\$80,000 ***	\$82,000
Household net non-education financial assets	\$323,125	\$327,625	\$325,000
Household non-education net worth	\$450,500	\$413,750	\$414,625
Number of children the household is financially responsible for	1	0 ***	0
Age of oldest child in the household	8.0	11.0 ***	11.0
<i>Mean</i>			
Respondent's age (years)	49.2	51.4 **	51.3
Household 1999 income	\$122,295	\$100,734 **	\$102,203
Household net non-education financial assets	\$678,636	\$676,518	\$676,279
Household non-education net worth	\$869,686	\$824,562	\$827,096
Number of children the household is financially responsible for	1.36	0.59 ***	0.65
Age of oldest child in the household	7.5	11.8 ***	11.2
Percent with a Ph.D. degree	39.5%	34.0%	34.4%
Percent own home	92.8%	83.7% ***	84.4%
Percent with IRA or Keogh	90.4%	66.6% **	68.2%
Percent married	65.0%	55.2% ***	55.9%

Source: Author's calculations based on the 2000 TIAA-CREF SPF data.

Note:

- 1) The full non-annuitant sample includes one household whose ownership of education is missing.
- 2) \*\* indicates the medians (means) of the two groups are statistically different at the 5% level.
- 3) \*\*\* indicates the medians (means) of the two groups are statistically different at the 5% level.

Table 6  
Summary Statistics of Dependent and Explanatory Variables

Variable	By IRA Ownership				Full Regression	
	Own		Do Not Own		Sample	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
Net worth	940.245	867.675	436.882	570.077	702.561	783.239
Net financial assets (in \$000's)	769.907	767.780	328.318	454.125	561.392	675.829
Education saving (in \$000's)	0.786	8.681	0.144	0.750	0.483	6.333
Dummy for not owning education savings account	0.928	0.259	0.947	0.225	0.937	0.244
Respondent's age <sup>1</sup>						
35-44	0.207	0.405	0.231	0.422	0.218	0.413
45-54	0.312	0.464	0.321	0.467	0.316	0.465
55-64	0.238	0.426	0.178	0.383	0.209	0.407
65 and older	0.134	0.341	0.072	0.258	0.105	0.306
Household income (in \$000's)	117.052	126.726	83.210	87.126	101.072	111.058
Respondent's education <sup>2</sup>						
College graduate	0.221	0.415	0.236	0.425	0.228	0.420
Master's degree	0.366	0.482	0.342	0.475	0.354	0.479
Doctorate degree	0.360	0.480	0.303	0.460	0.333	0.471
Respondent's occupation <sup>3</sup>						
Teaching faculty	0.318	0.466	0.323	0.468	0.321	0.467
Professional or technical	0.442	0.497	0.404	0.491	0.424	0.494
Other household variables						
Covered by a DB plan	0.357	0.480	0.296	0.457	0.328	0.470
Number of children	0.572	0.929	0.788	1.078	0.674	1.007
Bequest motive	4.605	3.147	4.979	3.327	4.782	3.237
Two full-time earners	0.302	0.459	0.275	0.447	0.289	0.454
Respondent's marital status <sup>4</sup>						
Single	0.178	0.383	0.233	0.423	0.204	0.403
Divorced	0.093	0.291	0.122	0.328	0.107	0.309
Widowed	0.025	0.156	0.014	0.117	0.020	0.139
Number of Observations	484		433		917	

Note:

- 1) The reference group consists of those respondents who are younger than 35.
- 2) The reference group consists of those respondents with less than a college degree.
- 3) The reference group consists of those respondents with occupations including administrative support, maintenance, and others.
- 4) The reference group consists of respondents who are married.



Table 7  
 Median Regression Estimates by IRA Ownership Status  
 Dependent Variable: Net Non-education Financial Assets

Explanatory Variable	<u>IRA Ownership</u>					
	Own			Do Not Own		
	Coefficient	Standard Error	Pr >  t	Coefficient	Standard Error	Pr >  t
Total education saving	6.117	10.166	0.548	7.403	40.735	0.856
Dummy for not owning education savings account	75.978	106.864	0.477	27.570	80.755	0.733
Respondent's age						
35-44	60.696	66.774	0.364	35.058	19.491	0.073
45-54	318.319	76.531	0.000	161.889	34.725	0.000
55-64	537.510	103.479	0.000	475.134	81.761	0.000
65 and older	837.874	185.738	0.000	362.968	107.594	0.001
Household income	2.244	0.885	0.012	2.397	1.151	0.038
Respondent's education						
College graduate	58.407	87.104	0.503	95.204	40.486	0.019
Master's degree	129.040	95.914	0.179	66.281	41.843	0.114
Doctorate degree	209.459	116.994	0.074	50.478	47.334	0.287
Respondent's occupation						
Teaching faculty	79.809	69.797	0.253	17.133	32.985	0.604
Professional or technical	-17.643	58.035	0.761	-2.346	20.598	0.909
Other household variables						
Covered by a DB plan	-133.369	61.214	0.030	-32.657	27.298	0.232
Number of children	-6.734	36.042	0.852	-3.973	12.214	0.745
Bequest motive	18.415	9.647	0.057	2.239	2.788	0.422
Two full-time earners	-17.214	75.857	0.821	-57.498	43.249	0.184
Respondent's marital status						
Single	-75.218	88.562	0.396	-26.565	39.545	0.502
Divorced	-214.986	98.513	0.030	-82.300	51.135	0.108
Widowed	-142.851	345.546	0.680	-355.990	139.819	0.011
Constant	-196.709	147.775	0.184	-155.422	101.008	0.125
Pseudo R-squared	0.286			0.259		
Number of Observations	484			433		

Table 8  
 Median Regression Estimates by IRA Ownership Status  
 Dependent Variable: Non-education Net Worth

Explanatory Variable	<u>IRA Ownership</u>					
	Own			Do Not Own		
	Coefficient	Standard Error	Pr >  t	Coefficient	Standard Error	Pr >  t
Total education saving	6.222	18.282	0.734	-4.927	60.102	0.935
Dummy for not owning education savings account	-13.128	137.076	0.924	-32.923	106.919	0.758
Respondent's age						
35-44	84.207	76.643	0.272	51.448	24.453	0.036
45-54	405.047	93.834	0.000	190.859	42.989	0.000
55-64	598.164	112.471	0.000	526.791	92.185	0.000
65 and older	830.655	210.836	0.000	426.029	101.700	0.000
Household income	3.926	1.000	0.000	3.456	1.336	0.010
Respondent's education						
College graduate	87.622	97.331	0.368	114.582	48.507	0.019
Master's degree	151.363	107.094	0.158	93.468	50.185	0.063
Doctorate degree	157.497	124.753	0.207	66.998	59.408	0.260
Respondent's occupation						
Teaching faculty	120.845	81.145	0.137	-0.838	38.580	0.983
Professional or technical	34.495	73.008	0.637	-8.268	24.896	0.740
Other household variables						
Covered by a DB plan	-102.316	74.707	0.171	-42.598	34.730	0.221
Number of children	-29.982	45.807	0.513	-13.682	16.046	0.394
Bequest motive	30.258	10.878	0.006	3.550	3.849	0.357
Two full-time earners	-111.909	93.307	0.231	-86.610	53.240	0.105
Respondent's marital status						
Single	-87.150	105.353	0.409	-61.198	49.947	0.221
Divorced	-237.276	121.049	0.051	-95.910	55.701	0.086
Widowed	-154.813	439.971	0.725	-251.514	119.278	0.036
Constant	-241.429	192.215	0.210	-114.975	127.558	0.368
R-squared	0.303			0.282		
Number of Observations	484			433		

Table 9  
 Median Regression Estimates by SRA/GSRA Ownership Status  
 Dependent Variable: Net non-education Financial assets

Explanatory Variable	<u>SRA/GSRA Ownership</u>					
	Own			Do Not Own		
	Coefficient	Standard Error	Pr >  t	Coefficient	Standard Error	Pr >  t
Total education saving	64.831	44.224	0.143	6.278	9.189	0.495
Dummy for not owning education savings account	91.529	152.107	0.548	36.075	57.739	0.532
Respondent's age						
35-44	42.907	37.535	0.254	55.431	27.251	0.043
45-54	223.975	66.747	0.001	197.459	36.498	0.000
55-64	521.019	86.761	0.000	478.643	77.024	0.000
65 and older	799.085	206.718	0.000	530.550	137.314	0.000
Household income	3.510	0.995	0.000	2.673	0.767	0.001
Respondent's education						
College graduate	115.273	94.131	0.221	51.001	40.000	0.203
Master's degree	95.013	93.775	0.312	85.848	43.791	0.051
Doctorate degree	205.546	122.202	0.093	67.207	47.622	0.159
Respondent's occupation						
Teaching faculty	-60.892	59.478	0.307	42.899	40.893	0.295
Professional or technical	-13.327	43.941	0.762	20.807	25.719	0.419
Other household variables						
Covered by a DB plan	-46.317	44.995	0.304	-74.406	33.187	0.025
Number of children	-12.502	25.953	0.630	-14.227	14.557	0.329
Bequest motive	7.418	7.242	0.306	2.880	3.674	0.434
Two full-time earners	-30.605	68.090	0.653	-68.406	45.763	0.136
Respondent's marital status						
Single	-15.141	65.889	0.818	-44.195	41.307	0.285
Divorced	-13.430	83.387	0.872	-138.559	48.685	0.005
Widowed	-299.185	524.757	0.569	-99.662	201.459	0.621
Constant	-308.583	186.721	0.099	-159.417	88.067	0.071
Pseudo R-squared	0.299			0.297		
Number of Observations	421			490		

Table 10  
 Median Regression Estimates by SRA/GSRA Ownership Status  
 Dependent Variable: Non-education Net Worth

Explanatory Variable	<u>SRA/GSRA Ownership</u>					
	Own			Do Not Own		
	Coefficient	Standard Error	Pr >  t	Coefficient	Standard Error	Pr >  t
Total education saving	58.188	51.606	0.260	7.253	15.491	0.640
Dummy for not owning education savings account	19.028	153.950	0.902	32.010	68.088	0.638
Respondent's age						
35-44	59.111	43.716	0.177	76.845	36.038	0.033
45-54	331.393	75.214	0.000	231.321	47.033	0.000
55-64	646.128	94.749	0.000	533.991	77.103	0.000
65 and older	919.926	242.498	0.000	625.292	133.543	0.000
Household income	3.871	1.103	0.001	2.724	1.105	0.014
Respondent's education						
College graduate	120.927	95.954	0.208	53.512	45.644	0.242
Master's degree	132.135	98.262	0.179	89.772	47.850	0.061
Doctorate degree	220.727	126.366	0.081	78.010	59.880	0.193
Respondent's occupation						
Teaching faculty	-47.386	62.595	0.449	41.193	51.568	0.425
Professional or technical	34.472	50.423	0.495	16.678	32.576	0.609
Other household variables						
Covered by a DB plan	-62.092	54.761	0.258	-60.304	38.895	0.122
Number of children	-2.404	31.308	0.939	-14.029	18.938	0.459
Bequest motive	7.293	7.829	0.352	5.301	5.050	0.294
Two full-time earners	-44.445	79.112	0.575	-89.549	49.257	0.070
Respondent's marital status						
Single	-62.707	79.150	0.429	-67.410	55.262	0.223
Divorced	-62.892	93.196	0.500	-192.375	63.246	0.002
Widowed	-302.175	491.297	0.539	-82.444	268.356	0.759
Constant	-248.121	196.752	0.208	-125.466	115.663	0.279
Pseudo R-squared	0.330			0.314		
Number of Observations	421			490		

Table 11  
 Median Regression Estimates Using TIAA-CREF Accounting Data on Retirement Assets  
 Dependent Variable: Non-education Net Worth

Explanatory Variable	<u>IRA Ownership</u>					
	Own			Do Not Own		
	Coefficient	Standard Error	Pr >  t	Coefficient	Standard Error	Pr >  t
Total education saving	6.363	18.493	0.731	7.641	58.245	0.896
Dummy for not owning education savings account	42.772	139.185	0.759	34.717	116.418	0.766
Respondent's age						
35-44	94.573	70.866	0.183	38.870	24.340	0.111
45-54	408.875	89.778	0.000	189.414	35.921	0.000
55-64	598.810	106.106	0.000	486.377	109.835	0.000
65 and older	824.544	187.294	0.000	442.853	103.214	0.000
Household income	3.454	0.954	0.000	3.407	1.355	0.012
Respondent's education						
College graduate	52.217	90.848	0.566	93.903	47.730	0.050
Master's degree	125.923	94.372	0.183	75.073	49.552	0.131
Doctorate degree	153.735	122.162	0.209	89.965	64.877	0.166
Respondent's occupation						
Teaching faculty	103.643	75.668	0.171	-18.521	41.865	0.658
Professional or technical	10.512	68.555	0.878	-17.197	25.234	0.496
Other household variables						
Covered by a DB plan	-118.387	69.641	0.090	-32.564	35.324	0.357
Number of children	7.908	45.866	0.863	-7.155	16.542	0.666
Bequest motive	21.930	11.484	0.057	2.637	3.699	0.476
Two full-time earners	-37.619	92.658	0.685	-79.692	54.781	0.147
Respondent's marital status						
Single	-62.784	104.839	0.550	-36.417	48.793	0.456
Divorced	-213.573	112.399	0.058	-71.780	51.826	0.167
Widowed	-195.251	229.386	0.395	-172.050	136.554	0.208
Constant	-247.249	196.837	0.210	-176.339	138.356	0.203
R-squared	0.301			0.292		
Number of Observations	482			429		

## Appendix

Table A1: Minimum and Maximum Contribution Limits in 529 Savings Plans  
(As of July 2002)

<i>State</i>	<i>Name of the Program</i>	<i>First Date of Operation</i>	<i>Minimum Lump-sum initial contribution</i>	<i>Minimum Automatic Payment</i>	<i>Current Lifetime Account Balance Limit</i>
Alabama	The Higher Education 529 Fund	July 2002	\$250	\$25	\$269,000
Alaska	University of Alaska College Savings Plan	1991, revised May 2001	\$250	\$50	\$250,000
Arizona	Arizona Family College Savings Program	June 1999	\$250	\$25 (payroll) \$100 (bank account)	\$177,000
Arkansas	GIFT College Investing Plan	Dec. 1999	\$250 (resident) \$1000 (nonresident), each subsequent contribution must be at least \$50	N/A	\$245,000
California	Golden State Scholar-Share Trust	Oct. 1999	\$25	\$15	\$124,799 to \$174,648, based on age of beneficiary
Colorado	Scholars Choice	Oct. 1999	\$25, each subsequent contribution must be at least \$15	\$0	\$235,000
Connecticut	Connecticut Higher Education Trust	Dec. 1997	\$25	\$15	\$235,000
Delaware	Delaware College Investment Plan	July 1998	\$500	\$50	\$250,000
Georgia	Georgia Higher Education Savings Plan	April 2002	\$25	\$15	\$235,000
Hawaii	Tuition-EDGE	April 2002	\$15 <sup>1</sup>	\$15 per investment option	\$253,000
Idaho	Idaho College Savings Program	2001	\$25	\$15	\$235,000
Illinois	Bright Start College Savings Program	March 2000	\$25	\$15 <sup>1</sup>	\$235,000

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<sup>1</sup> Additional contributions to Illinois plan need not be automatic payments.

Indiana	College-Choice 529 Plan	1997 (revised in 2002)	\$50	\$25 <sup>2</sup>	\$114,548 (\$236,750 after July 1, 2002)
Iowa	College Savings Iowa	Sep. 1998	\$25	\$25 <sup>3</sup>	\$146,000
Kansas	Learning Quest Education Savings Program	July 2000	\$500 (res.) \$2,500 (nonres.)	\$25 (res.) \$50 (nonres.)	\$235,000
Kentucky	Education Savings Plan Trust	1990	\$25	\$15	\$235,000
Louisiana	Louisiana START	July 1997	\$10	\$10 <sup>4</sup>	\$173,065
Maine	NextGen College Investing Plan	Aug. 1999	\$250	\$50	\$225,000
Maryland	Maryland College Investment Plan	Nov. 2001	\$250	\$25	\$175,000
Massachusetts	U. Fund	March 1999	\$1,000	\$50	\$230,000
Michigan	Michigan Education Savings Program	2000	\$25	\$15	\$235,000
Minnesota	Minnesota College Savings Plan	Sep. 2001	\$25	\$15	\$235,000
Mississippi	Mississippi Affordable College Savings	Fall 2000	\$1,147	\$12	\$235,000
Missouri	MO\$T (Missouri Saving for Tuition Program)	Nov. 1999	\$25	\$15	\$235,000
Montana	Montana Family Education Savings Program	1998	\$250	\$25 (payroll) \$100 (bank account)	\$177,000 (contribution limit)
Nebraska	College Savings Plan of Nebraska	Jan. 2001	\$0	\$0	\$250,000
Nevada	America's College Savings Plan	Sep. 2001	\$250	\$50	\$246,000
New Hampshire	Unique College Investing Plan	July 1998	\$1,000	\$50	\$233,240
New Jersey	New Jersey's Better Educational Savings Trust	Aug. 1998	\$300	\$25	\$185,000

<sup>2</sup> Additional minimum contributions to Indiana plan need not be automatic payments.

<sup>3</sup> Additional minimum contributions to Iowa plan need not be automatic payments; total yearly contributions to Iowa plan must exceed \$50.

<sup>4</sup> Additional minimum contributions to Louisiana plan need not be automatic payments.

New Mexico	Education Plan of New Mexico	Oct. 2000	\$250	\$25	\$251,000
New York	New York's College Savings Program	Sep. 1998	\$25	\$15	\$100,000 (contribution limit)
North Carolina	North Carolina's National College Savings Program	June 1998	\$5	\$5	\$268,804
North Dakota	College SAVE	Sep. 2001	\$25	\$25 (per month)	\$269,000
Ohio	Ohio College Advantage Savings Plan	Fall 2000	\$15	\$15	\$232,000
Oklahoma	Oklahoma College Savings Plan	Apr. 2000	\$25	\$15	\$235,000
Oregon	Oregon College Savings Plan	Jan. 2001	\$250	\$25	\$250,000
Pennsylvania	TAP 529 Investment Plan	July 2002	\$1,000	\$50	\$290,000
Rhode Island	College-BoundFund	Sep. 1998	\$1,000	\$50	\$265,620
South Carolina	Future Scholar 529 College Savings Plan	March 2002	\$250	\$50 (no min. if through payroll)	\$250,000
South Dakota	College Access 529	April 2002	\$250	\$50	\$305,000
Tennessee	Tennessee BEST Savings Plan	March 2000	\$25	\$15	\$235,000
Utah	Utah Educational Savings Plan Trust	1996	\$25	\$25	\$175,000 (contribution limit)
Vermont	Vermont Higher Education Savings Plan	Dec. 1999	\$25	\$15	\$240,100
Virginia	Virginia Education Savings Trust	Dec. 1999	\$25	\$20 (\$250 min. for 1 <sup>st</sup> year)	\$250,000
West Virginia	Smart 529 Plan	March 2002	\$100 (direct) \$500 (broker)	\$15 (direct) \$50 (broker)	\$265,620
Wisconsin	EDVEST Wisconsin College Savings Program	1997	\$250	\$25	\$246,000
Wyoming	Wyoming College Achievement Plan	May 2000	\$250 (res.) \$1,000 (nonres.)	\$50	\$245,000