Who Benefits from the Education Saving Incentives?
Income, Educational Expectations and the Value of the 529 and Coverdell

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Abstract

This paper calculates the incentives created by the 529 and Coverdell tax-advantaged savings accounts and how these incentives vary by income. I find that the advantages of the 529 and ESA rise sharply with income, for three reasons. First, those with the highest marginal tax rates benefit the most from sheltering income, gaining most in both absolute and relative terms. Second, the accounts are risky for families for whom the college attendance of children is uncertain, since account holders are penalized if the accounts are not used for schooling. I calculate the minimum probabilities of college attendance that are required for the 529 and ESA to have expected returns at least as high as alternative saving vehicles and find that for households with incomes below $57,000 these breakeven probabilities are higher than the observed rates at which their children go to college. Third, the financial aid system reduces aid disproportionately for those families that hold their assets in the 529 or ESA rather than conventional saving vehicles. The financial aid "tax" is particularly high for the ESA; for families on the margin of receiving need-based financial aid, ESA returns net of income and aid taxes are negative. Since the highest-income families are unaffected by the aid tax, this further intensifies the positive correlation between income and the advantages of the tax-advantaged college savings accounts.

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1. Introduction

In the past few years, a new breed of tax-advantaged savings vehicle has emerged. The federal Coverdell Education Savings Account (ESA) allows annual, after-tax deposits of up to $2,000 a year, with asset earnings untaxed so long as withdrawals are used for educational expenses. At the state level, nearly every state offers a tax-advantaged 529 savings plan. These accounts allow participants to make annual, after-tax deposits of up to $11,000 a year per child, comparable to the annual ceilings on the 401(k).[1] The tax treatment is like that of the ESA: earnings are untaxed by the federal government, and by almost every state, when the funds are used for postsecondary education. In about half the states, deposits are exempt from state taxation, further increasing the income tax advantages of the 529.

This paper calculates the incentives created by these new savings vehicles and how they vary by income. I find that the advantages of the 529 and ESA rise sharply with income, for three reasons. First, those with the highest marginal tax rates benefit the most from sheltering income, gaining most in both absolute and relative terms. Second, the accounts are risky for families for whom the college attendance of children is uncertain, since account holders are penalized if the accounts are not used for schooling. I calculate the minimum probabilities of college attendance that are required for the 529 and ESA to have expected returns at least as high as alternative saving vehicles and find that for households with incomes below $57,000 these breakeven probabilities are higher than the observed rates at which their children go to college. Third, the financial aid system reduces aid disproportionately for those families that hold their assets in the 529 or ESA rather than conventional saving vehicles. The financial aid "tax" is particularly high for the ESA; for families on the margin of receiving need-based financial aid, ESA returns net of income and aid taxes are negative. Since the highest-income families are unaffected by the aid tax, this further intensifies the positive correlation between income and the advantages of the tax-advantaged college savings accounts.

[1] This is the largest amount that can be deposited in a 529 without triggering a gift tax. I further discuss 529 contribution limits below.

The paper is organized as follows. In Section 2, I provide some background on the tax-advantaged college savings plans, as well as evidence from the 2001 Survey of Consumer Finances on the characteristics of those who invest in these accounts. In section 3, I calculate returns on various savings vehicles net of income taxes for a typical household. In Section 4, I examine how the benefit of the education savings accounts varies by income, exploring in turn the impact of marginal tax rates, college-going propensities and the financial aid tax. Section 5 discusses and concludes.

2. Tax Incentives for College Saving: Background

2.1 History of the Coverdell Education Savings Accounts

In 1997, the Education IRA was established. The Education IRA was structured much like the then-new Roth IRA. In both types of vehicles, after-tax dollars grow tax-free. Earnings are never taxed if Education IRA withdrawals are used for postsecondary expenses or if Roth funds are withdrawn after age 59 ½. Annual contributions to the Education IRA were capped at $500 per child until 2001, when the contribution limit was raised to $2,000, educational expenses were expanded to include primary and secondary education, and the name was changed to Coverdell Education Savings Account (ESA).

2.2 History of the 529 Savings Plans

While the ESA is a product of federal legislation, the 529 savings plans are an innovation of the states. The 529 savings plans have their roots in prepaid tuition plans, the first of which was introduced by Michigan in 1986. Those who purchased shares in Michigan's plan were guaranteed that their investment would cover the cost of a certain number of semesters at Michigan schools. Essentially, Michigan created a savings plan whose rate of return was linked to tuition costs at the state's public postsecondary schools, thereby allowing parents to insure against the risk of rising tuition prices.[2] Michigan exempted investment returns in its prepaid plan from state taxes, and argued to the Internal

[2] A key drawback of the prepaid plans is that the tuition guarantee is only for in-state schools. Funds can used at out-of-state schools, but the implied rate of return on funds used in this way is quite low.

Revenue Service (IRS) that returns should also be exempted from federal taxes. The IRS disagreed, but Michigan went forward with the plan and sued the IRS for a refund of taxes paid, winning its case in 1994. While the Michigan case was wending through the courts, several other states introduced their own prepaid tuition plans.

In 1997, Congress codified the federal tax treatment of the tuition plans in Internal Revenue Code Section 529. IRC 529 also contains language that recognized a variant on the prepaid plans that had been introduced by a handful of states: the tax-advantaged college savings plan. Like the ESA, these new savings plans allowed after-tax investments to grow free of federal and state taxes; however, withdrawals used for postsecondary costs were exempt only from state taxation. With the passage of tax reform in 2001, the federal tax on withdrawals from 529 savings plans was eliminated.[3] States that did not already have a savings plan quickly established one. As of summer 2003, every state except Washington had a 529 savings plan, as does the District of Columbia. The growth of the 529 savings plans has far outstripped that of the prepaid plans, likely because of their greater fungibility and potentially higher returns. In this paper, I focus on the 529 savings plans.

2.3 Eligibility for and Tax Advantages of the 529 and ESA

The tax treatments of the ESA and 529 are quite similar: after-tax dollars put into savings and earnings are not taxed as they accrue, or at withdrawal, if the withdrawal is used for educational expenses. However, there are some key differences between the two savings vehicles.

First, there is an income limit on participation in the ESA. Joint-filer households with incomes above $220,000, and single-filer households with incomes above $110,000, cannot contribute to an ESA;

[3] This federal tax treatment of the 529 savings plans sunsets in 2010. The present analysis assumes that the provision will be extended indefinitely.

eligibility begins to phase out at $190,000 and $95,000, respectively. There is no income limit on contributions to a 529 savings plan.[4]

A second distinguishing characteristic of the 529 is that its contribution limits are much higher than that on the ESA. The annual contribution limit to an ESA is $2,000 per child. By contrast, each parent can make an annual deposit of $11,000 per child into a 529 without triggering a gift tax. A two-parent family with three children can therefore move $66,000 per year into a tax-advantaged 529 account. Grandparents, or any relative, can also make deposits up to these limits, further expanding the assets that can be shielded from taxation.[5] Each state has a lifetime limit on contributions that can be made to its 529 plan in the name of a beneficiary. This limit averages $241,000 and ranges from $182,000 in Louisiana to $305,000 in South Dakota.[6]

Third, while families can invest their ESAs as they wish, they are constrained in their ability to allocate assets in a 529. Each state determines the investment options open to investors in its plan and, by federal law, assets can be reallocated by the investor only once a year. Until recently, most 529 savings plans provided only a single investment option, an age-based portfolio that grew less aggressive as the child neared college age. Most plans now offer several investment options.

Finally, the 529s are creatures of state government, with each state sponsoring its own plan. Individuals are free to participate in any state's plan. Many of the states encourage their residents to invest in the local plan by allowing them to deduct contributions to its 529 savings plan from state taxable income. Each state contracts with a mutual fund company to run its plan, chooses the mutual funds that will be available to investors, decides upon the treatment of deposits and earnings for the purposes of state taxation, and negotiates fees that will be paid by the investor to the state and fund company.

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[4] No state has an income cap on eligibility for the exclusion of 529 earnings from taxation. Only Georgia has an income cap on eligibility for the deduction of contributions from state taxable income; the income cap is $100,000 for joint-filer households.

[5] $55,000 per account owner can be deposited in a single year for a beneficiary if no deposits are made for the next four years.

[6] Cerulli Associates (2003).

There is therefore heterogeneity across the states in 529 characteristics, particularly in portfolio choice and net returns. Variation in net returns is driven not only by the fact that some states allow the deduction of contributions from taxable income, but by differences in state marginal tax rates and the fees charged by the states for 529 accounts. In ongoing work, I examine these sources of cross-state variation in 529 returns and their impact on savings decisions. Of note, I have found that much of the cross-state variation in net returns on 529s is driven by fees, which not only vary considerably across the states but appear higher, on average, than those on retail mutual funds or ESAs. A comprehensive analysis of 529 fund fees, their level relative to fees on other savings vehicles, and their variation by state is beyond the scope of this paper. In order to focus on variation in returns to the 529 and ESA across income groups, I assume here that pretax returns on the various savings vehicles are identical. However, for those cases in which I find only a small advantage to the 529, it should be kept in mind that this advantage may be erased by higher fees.

2.4 Profile of the 529 and ESA Investor

In this section, I present evidence on the type of household that invests in the education savings accounts. Since the 529 has become broadly available only in recent years, data on 529 investors are scarce. The 2001 Survey of Consumer Finances is the first representative survey to gather information on 529 savings plans. However, the 2001 SCF predates the recent expansion of the tax advantages of the 529 and ESA and resulting surge in account volume. At the start of 2001, about twenty states did not even have a 529 savings plan in place, while today every state but Washington has established one.
As a result, much of the growth in 529 savings plan accounts occurred after the 2001 SCF was administered. From the end of 2000 to the end of 2002, the number of 529 savings plan accounts grew from half a million to 3.1 million. Over the same period, assets held in these accounts grew from $3.1 billion to $20 billion.[7] The SCF therefore understates the current incidence of investment in 529s and

[7] Cerulli Associates (2003).

ESAs. Further, the portrait of the typical savings plan investor that emerges from the SCF may not accurately reflect the profile of today's typical investor, since the early adopters may differ systematically from later investors.

Summary statistics for the SCF sample are shown in Table 1.[8] Column (1) shows the statistics for all households with children 16 and under, while Column (2) shows statistics for only those households that hold a 529 or ESA. As of 2001, three percent of households with children report holding an ESA or 529.[9] Education savers are 41 years old, on average, and their oldest child is nine. They have two children and are well-educated, with over 90 percent having at least 16 years of education. Their median income is $81,000 and their median net worth $281,000. Among education savers, the median balance in 529 accounts is $15,000 and in IRA or Keogh accounts is $21,000.[10]

Column (4) shows the difference in characteristics between the college savers and the rest of the population with children; the standard errors of these differences are also shown. The education savers are older, and have younger children. Most notably, their median household income is $41,000 above the sample median of $50,000. They are also better-educated; just 37 percent of all households with children have a BA or more, as compared to 91 percent of the education savers.

It is not surprising to find that education savers have higher incomes and education than the rest of the population, as in any dataset these characteristics strongly predict a higher incidence and level of saving. A more interesting question is whether those who invest in the 529 and ESA differ from those who save in other tax-advantaged vehicles. If the income and education of education savers are lower

[8] The SCF provides multiple imputations, each of which produced statistically identical versions of Table A. I use imputation two, and also use the sample weights provided.

[9] The SCF is a relatively small survey. Once the sample is limited to households with children under sixteen, there are just fifteen hundred observations. The three percent holding an ESA or 529 translates into fewer than 50 households. These small numbers preclude any fine cuts of the data.

[10] A single question was asked about balances in all forms of IRAs, including Roth IRAs, Traditional IRAs and Education IRAs, the former name for ESAs. As a result, it is not possible to separately calculate holdings in ESAs.

than those of other savers, this would suggest that the education savings accounts may be attracting those who might not otherwise save at all.

A particularly illuminating comparison is between education savers and those savers who make use of the Roth IRA, Traditional IRA and Keogh. These accounts closely resemble the 529 and ESA: their tax advantages are similar and none of these accounts are employer-provided. This is important because employer-provided accounts, such as the 401(k), ease the saving process: employers automatically set up accounts for employees, choose a mutual fund provider, select a menu of mutual funds, provide payroll deduction, and may match employee contributions. By contrast, investing in the education savings accounts, like investing in the Keogh and IRAs, requires considerable effort and initiative. An investor in a 529 or ESA must actively decide to open an account, research the available options, choose a financial provider, and arrange for deposits.

Column (3) shows the characteristics of the retirement savers, the 38 percent of households with children who invest in an IRA or Keogh. The retirement savers have a median income somewhat lower than that of the education savers – $75,000 vs. $91,000. The median net worth of the retirement savers is also lower – $228,000 vs. $281,000. Column (5) shows these differences between the education savers and the retirement savers. Education savers have incomes, education and wealth that are higher than those of both the retirement savers and the general population.

The picture that emerges, then, at least as of 2001, is that those who take up 529 and Coverdell accounts are a relatively elite group. Their characteristics suggest that they are not new savers, but those who already have substantial savings in other vehicles.[11] This may be true, in part, because of the relative youth of the programs. Those who seek out information about these new instruments – the early adapters – may differ systematically from those who join in when the programs are more well-established. College

[11] What we cannot learn from this table is whether the 529/ESA accounts are new dollars saved or dollars shifted from other vehicles. In ongoing work, I attempt to answer this question by making use of cross-state variation in net returns to and timing of the introduction of the 529 savings plans.

savers may become more similar to the typical household with children, and to other savers, as the programs widen in popularity.

3. Calculation of After-Tax Returns on Coverdell, 529 and Alternative Savings Vehicles

In this section, I calculate returns, net of the income tax, on the 529 and ESA, in absolute terms and relative to other vehicles. I first show variation in net returns across vehicles for a single household type, with an AGI of $75,000 and two dependent children. Since the benefits of tax-advantaged accounts vary with marginal tax rates, I then calculate returns for a range of household incomes.

3.1 Assumptions

For the purposes of assigning tax rates, I consider a household that consists of a married couple, filing jointly, with two dependent children. All earned income is assumed to come from one earner.[12] The children are assumed to have no income other than that produced by any college savings held in their name. The marginal federal and state tax rates on earned income, capital gains and interest for this household, as well as for the other income groups I will be analyzing below, are shown in Table 1. The state tax rates used in the calculations, shown in Table 2, are the average of the states' marginal tax rates for each AGI, as calculated by the National Bureau of Economic Research's TAXSIM program.[13]

For each savings vehicle, I calculate the return to $1,000 of pretax income placed in an account at the time of a child's birth. All earnings are reinvested. A family saving for college will likely start with a portfolio heavily weighted toward stocks, moving toward a more conservative mix as college nears. Every state's 529 savings plan offers an age-based portfolio that follows this pattern. I use a portfolio mix

[12] Some assumption about the distribution of earned income within the household must be made in order to assign FICA rates. For each earner, the FICA rate is 7.65 percent up to $87,000 and 1.45 percent thereafter.

[13] The average is taken over the states that have an income tax. I use effective marginal state tax rates calculated by TAXSIM, rather than the bracket rates. The effective marginal rates account for the interaction of state and federal taxes as well as the phase-out of various credits and deductions.

typical of state 529s in calculating returns; this portfolio is shown in Table 3. I assume an identical portfolio mix for the other savings vehicles, so that any the variation in returns across the vehicles will be induced by variation in their treatment by the income tax system. To simplify the analysis, I assume that all stock returns are in the form of long-term capital gains.[14] The gains are realized when the funds are withdrawn from the account in order to pay for college; these withdrawals begin at the end of the eighteenth year.[15]

I calculate returns for the 529, ESA , a non-tax-advantaged mutual fund account in the name of the parent, a Uniform Transfer to Minors Act (UTMA) account in the name of the student, a Roth IRA and a Traditional IRA. Table 4 summarizes the income tax treatment of these savings vehicles. In about half the states, deposits to the 529 are excluded from state taxable income. I calculate returns for 529s both with and without this upfront deduction. Note that a Traditional IRA can be used for higher education expenses without the 10 percent penalty usually assessed on withdrawals before retirement age. Since I assume that all capital gains realizations are put off until the account is drawn down, and that there are no dividends earned, the only relevant tax on the inside buildup is that on bond interest.

3.2 Calculation of Returns Net of Income Taxes for the Savings Vehicles

I first calculate the nominal returns for a family with an AGI of $75,000, using the assumptions laid out above. The return for a non-advantaged mutual fund account, held in the name of the parent, will form the benchmark used to gauge the financial benefits of the other, tax-advantaged vehicles.

After paying Social Security and Medicare taxes (FICA), as well as federal and state income taxes, on $1,000 of pretax income, this household has $614 to deposit. The family uses the portfolio

[14] The 529 plan shifts investments from stocks toward bonds without any resulting capital gains realizations for the individual investor. As a result, all gains are unrealized until withdrawal. An individual investor making a one-time deposit would achieve roughly the same portfolio allocation outside of a 529 by starting with 90 percent of funds invested in stocks and investing all earnings in bonds.

[15] The family withdraws 1/*n*th of the remaining balance each year, with *n* representing the number of years remaining until college completion. For the calculations in the paper, I assume four years of college.

allocation shown in Table 3, putting 90 percent of the funds into stocks and the balance into bonds. Interest on the bonds is taxed as ordinary income; the interest net of taxes is reinvested in the account. After eighteen years, the account will have grown to $1,951, with 56 percent of the account's value consisting of unrealized capital gains. At the end of year eighteen, one-quarter of the account balance, or about $500, is withdrawn to pay for college. Capital gains taxes are paid on the $280 (=.56 x $500) of this withdrawal that represents unrealized capital gains. After four years of withdrawals, the account is empty. Taking into account income and payroll taxes, as well as taxes on interest and capital gains, a family following the investment path just described nets $918 on its $1,000 in pretax saving, as shown in the first bar in Figure 1.

The tax-advantaged vehicles, including the 529 and ESA, increase returns by reducing or eliminating the taxes assessed before the initial deposit, during the inside buildup, and/or at withdrawal. The return for each of these vehicles is shown in Figure 1. Below, I briefly discuss the tax advantages conferred by each of these vehicles.

The UTMA account shifts assets into the child's name and, thereby, the child's lower tax bracket.[16] The initial pretax savings are taxed at the parent's rate, and so $614 is deposited into the UTMA, as was true for the parental account discussed above. For a family with an AGI of $75,000, these tax advantages translate into a substantially higher return on the UTMA than a parental account. This family yields $1,216 in a UTMA, nearly a third more than in a parental account.

A 529 savings account confers even greater tax advantages than the UTMA, as the taxes on the inside buildup and withdrawals are not just reduced but eliminated. In a state that does not allow families to deduct 529 deposits from taxable income, $1,000 of pretax income translates into the same $614 deposit that was placed in the parental account and UTMA. Due to no taxes on the inside buildup, by the time the child enters college the family has a slightly higher balance in a 529 than they would in a

[16] In a UTMA, annual asset earnings up to $750 are untaxed. For a child younger than 14, the next $750 is taxed at the child's rate and the remaining earnings at the parent's rate. For children 14 and over, all earnings over $750 are taxed at the child's rate. Note that the tax advantages of the UTMA drop as asset holdings (and earnings) grow, since an ever-smaller share of earnings are taxed at a zero rate.

parental account or UTMA ($2,112 as compared to $1,951 and $2,079, respectively). The relative advantage of the 529 grows as the family begins to draw down the funds and is exempted from any taxes on the resulting capital gains realizations. Accounting for these taxes, the family nets a $1,404 return on its $1,000 in pretax savings, 53 percent more than in a parental account and 15 percent more than a UTMA.

The ESA confers the same tax advantages as the 529 without an upfront deduction and, therefore, yields the same return.[17] The return on these two college savings vehicles is also identical to that on the Roth IRA. For all three vehicles, post-tax income is allowed to grow tax free, and withdrawals are untaxed. The Traditional IRA is the mirror image of these three instruments, in that there are no upfront taxes on the $1,000 deposit, no taxes on the inside buildup, but withdrawals are taxed as ordinary income. The Traditional IRA therefore yields the same return as the ESA, 529, and Roth IRA, producing a return 53 percent greater than a non-advantaged parental account.[18]

The option with the highest return is a 529 in a state that allows deposits to be deducted from state taxable income. For a given $1,000 in pretax income, more can be deposited into this account than is true for a non-deductible 529 or ESA: with the typical state tax rate on earned income of 5.95 percent, the initial deposit is $653, rather than the $614. Going forward, the tax treatment is the same as for a standard 529, ESA or Roth IRA. The 529 with an upfront deduction yields a return of $1,775, or 70 percent more than a non-advantaged account in the parent's name.

As these calculations make clear, the education savings account provide new and substantial tax advantages. The 529 with the upfront reduction offers a higher return than any existing investment option. Further, the 529 and ESA, while yielding the same after-tax return as the older IRAs, substantially expand the assets that can be shielded from taxation. Finally, since the 529 has no eligibility requirements, it

[17] A key difference, however, is that much larger amounts can be deposited into a 529 than an ESA.

[18] To be precise, the return on the Traditional IRA is identical to that on the Roth IRA for those families that face the same marginal tax rate when they save and when they withdraw funds.

provides the first opportunity for tax-advantaged saving for those families ineligible for the IRAs or ESA due to their incomes or their access to a pension program at work.

4. Variation in the Benefit of the ESA and 529 across Income Groups

The previous section calculated the financial return to the education savings accounts for a typical family. However, the tax advantages vary with income. First, those facing high marginal tax rates benefit more from sheltering income from taxation than do those with low marginal tax rates. Second, the expected value of the education savings accounts depends on the probability that the child actually goes to college. Finally, returns for lower-to-middle-income families are affected by the way the financial aid system treats the tax-advantaged education savings accounts. In this section, I address each of these issues in turn.

4.1 Variation in the Value of the Education Savings Accounts Due to Marginal Tax Rates

In this section, I examine the advantages of the education savings accounts for a range of household incomes, ranging from the lowest federal tax bracket (AGI of less than $14,000) to the highest (AGI of over $325,000). The groups and their associated state and federal tax rates on earned income, capital gains, and interest are shown in Table 2.

I first show how returns vary by income in our benchmark, a non-advantaged account held in the name of the parent. In Figure 2, and Table 5, we see that the lowest-income household has the highest absolute returns. This is due to this group's relatively low tax rates on two types of income. First, this group's lower marginal tax rates on earned income produce a larger deposit for a given $1,000 of pre-tax income: they start with $793 in principal, compared to $570 for the highest-income family. This difference in the upfront taxation of income accounts for most of the variation across income groups in net returns. Second, the lowest-income household faces the lowest marginal tax rates on capital gains and interest.

Between these two factors, after-tax returns drop as income rises. The only deviation from monotonicity is between the $75,000 and $125,000 households, where the phase-out of FICA produces a drop in the marginal tax rate on earned income, allowing a higher after-tax deposit for the $125,000 household than for the $75,000 household. The highest-income household earns an after-tax return of $716 on its pretax savings of $1,000, while the lowest-income household earns 2.5 times as much, or $1,795.

By eliminating some forms of taxation, the tax-advantaged vehicles flatten this income gradient in after-tax returns. Figures 3 and 4 shows the after-tax return on the ESA and 529 for each income group. Figure 4 shows the returns in dollar terms, while Figure 3 scales the returns relative to the return in the non-advantaged account for that income group. Note that since their returns for the investment scenario laid out earlier are identical, I have collapsed the ESA, 529 without an upfront deduction and the IRAs into one category. It should be recalled, however, that the contribution limits are far higher on the 529 than the ESA or IRA, leading the 529 to be particularly advantageous to those who save above the ESA or IRA limits, or who participate in a retirement plan at work and are above the associated IRA income limits. Also, note that the highest income group (AGI of $325,000) does not qualify for the ESA but does qualify for the 529.

The largest increases in returns accrue to the highest income group, both in dollar terms (Figure 4) and relative terms (Figure 3). For those in the top federal tax bracket, the 529 with an upfront deduction delivers a net return almost twice as high as that on a non-advantaged account. The 529 without an upfront deduction and the ESA net an after-tax return 72 percent higher than funds held in a non-advantaged account, and 16 percent higher than funds held in a UTMA. For those in the lowest bracket, the proportional increases are much lower: the return on a 529 with an upfront deduction is 23 percent. The corresponding figure is 17 percent for the ESA and 529 with no upfront deduction. Note that the UTMA is of almost no benefit for this lowest-income household, since the child and parent are in the same low tax bracket.

These calculations make clear that both the relative and absolute advantages of the education savings accounts rise steeply with income. At the bottom of the income distribution, where marginal tax rates are the lowest, the new accounts offer after-tax returns 17 to 23 percent higher than that on a non-advantaged account. For an initial pretax investment of $1,000, this translates into an additional return of $310 to $408. At the top of the income distribution, the new accounts offer after-tax returns 72 to 94 percent higher than that on a non-advantaged account. For an initial pretax investment of $1,000, this translates into an additional return of $518 to $673. The income gradient of returns is much flatter for the 529 and ESA than for other accounts. While in a non-advantaged account the lowest-income family earns 2.51 as much as the highest-income family, the ratio for funds held in a 529 or ESA is 1.71 and for a 529 with a deduction is 1.59.

4.2 Variation in the Value of the Education Savings Accounts Due to College-Going Propensities

The previous sections have shown that the 529 and ESA can confer substantial financial advantages. However, the education savings accounts bear a risk that distinguishes them from other investment options: their tax benefits are contingent on the funds being used for educational expenses. If funds are put into one of these accounts and the child does not go to college, the net return on assets are reduced. This section examines how this risk affects the value of the education savings accounts relative to other savings options, and how this risk varies by income.

I first describe the statutory limits on the use of funds in each savings vehicle. In order to yield the after-tax returns discussed in the previous section, the 529 and ESA can be used only for educational expenses, with 529 use limited to postsecondary expenses. Expenses are quite broadly defined to include tuition, fees, books and other school supplies. In the case of the 529, withdrawals can also be used for living expenses of a college student.[19] Withdrawals not used for these "qualified educational expenses"

[19] Should a family want to use ESA funds to pay for living expenses of a college student, the funds can be rolled into a 529 without penalty.

lose tax advantages. For both the 529 and ESA, the earnings portion of a withdrawal that is not used for qualified expenses is taxed as ordinary income of the child, plus a 10 percent penalty.[20]

By contrast, funds held in a parental account, UTMA, or IRA can be used much more flexibly. The parental account can be used for any expense. UTMA withdrawals by the parent are limited to those that benefit the child, but this definition is quite broad. Funds can be withdrawn from the Roth IRA without penalty, for any purpose, once the account owner is 59½ . Even before that age, the contribution portion of the Roth can be withdrawn without penalty. Funds can be withdrawn from the Traditional IRA before age 59½ without incurring a 10 percent penalty if they are used for postsecondary expenses, the purchase of a first home, disability, or excessive medical expenses.[21]

Relative to the non-advantaged account, UTMA and IRA, then, the ESA and 529 are more risky for families in which the college attendance of the children is uncertain. In order to quantify this risk, I first calculate the return to non-qualified use of the 529 and ESA. In these calculations, I assume that the family follows the same investment strategy as a family that sends the child to college, but rather than begin withdrawals at age 18 the funds are held until the child is age 22, at which point the account is emptied.[22] Figure 5 and Table 6 show the after-tax return, net of penalties, to non-qualified use of the various college saving options. Note that the returns on all savings options, not just the 529 and ESA, differ from those shown on previous tables, since holding the funds for the full 22 years rather than

[20] An exception is if the child attends college but receives a scholarship. In this case, a withdrawal equal to the scholarship is treated as a qualified expense. If a child chooses not to attend college, the parent can also change the beneficiary of the 529 or ESA to a relative. "Relative" includes previous generations (parents or ancestors of parents, siblings of parents), the current generation (spouse, siblings and their spouses, first cousins) and the next generation (children and their spouses, children of siblings).

[21] While one can make withdrawals from an IRA for college, one can't do so from a 401(k), though one can take a loan from the 401(k) account.

[22] The calculations also assume that the state in which the 529 is held does not attempt to recapture the value of any upfront deduction. At least one state, Illinois, has shown a willingness to recapture the deduction under some circumstances; that state penalizes families that have taken the Illinois deduction but subsequently moved funds to another state's 529.

beginning withdrawals after 18 years implies more earnings in the last four years of the investment horizon.

Due to the penalty and income tax on non-qualified withdrawals, returns on the 529 and ESA drop substantially. For the highest-income family, the return is $1,054 on non-qualified use of a 529 with a deduction, as compared to a return of $1,389 for qualified use. For the lowest-income family, the return drops slightly more from a higher base, from $2,203 to $1,845. The decreases in returns are comparable for the ESA and 529 without a deduction. Looking across the income groups in Figure 5, we see that, in the upper four brackets, unqualified use of the 529 and ESA still produces higher returns than does a non-advantaged account, though it does produce lower returns than the UTMA and IRA. The same is not true in the bottom two brackets, where non-qualified use of the education savings accounts produces lower returns than a non-advantaged account; this is because the 10 percent penalty on non-qualified use is large relative to the taxes paid on asset earnings by low-income families. It appears, then, that the downside risk of the ESA and 529 are higher for low-income families that high-income families.

A risk-neutral family will choose the investment option with the highest expected value, taking into account not only the after-tax return to the savings vehicle but the probability that the child will attend college. For each vehicle, this expected value is a weighted average of the return if the child goes to college (V^c) and the return if she does not ($V^{\sim c}$), where the weights are the probabilities of each outcome:

$$EV = p^c V^c + (1 - p^c) V^{\sim c} \tag{1}$$

The decision rule for the family is to invest in the ESA or 529 if, in expectation, their return is greater than that on other options. By equating the expected value of two investment options, we can solve for the probability of college attendance that makes a family indifferent between the two:

$$\frac{V_1^{\sim c} - V_2^{\sim c}}{(V_1^{\sim c} - V_2^{\sim c}) - (V_1^c - V_2^c)} = p^c \tag{2}$$

In Table 6, I show the breakeven college-attendance probability for each family and set of investment choices. At probabilities of college attendance higher than those shown, the family will prefer the college savings accounts over the alternative listed.

The first thing to note in Table 6 is that, for every set of investment options, the breakeven attendance probability rises as income drops. This is because the relative benefit of the tax-advantaged accounts rises with income, and so a smaller college attendance probability is needed to offset the losses associated with a child not going to college. Consider the probabilities of college attendance necessary to give the 529 or ESA a higher expected return than a non-advantaged account held in the name of the parent. In the bottom two brackets, the breakeven probabilities are 4 to 44 percent for the 529 and ESA. For example, households with an income of $50,000 require an attendance probability of 32 percent in order for the ESA or 529 without a deduction to have an expected return that exceeds that of a non-advantaged account; the analogous figure is just four percent for the 529 with an upfront deduction.[23] For the top four brackets, the breakeven probability is zero, since (as seen in Figure 5) for these income groups the 529 and ESA have an advantage over the non-advantaged account even if the child does *not* go to college. As a result, there is no risk associated with investing in the 529 or ESA, relative to the non-advantaged account, for those with household AGI above $56,800.

The breakeven probabilities are higher if we consider the UTMA as the alternative to the education saving accounts. For every tax bracket, the returns on non-qualified use of the 529 and ESA are lower than the return on the UTMA (Figure 5). The attendance probabilities necessary to give the 529 with a deduction a higher expected return than the UTMA range from 17% in the top bracket to 40% in the bottom bracket. For an ESA or 529 without a deduction, the relevant figures are higher, 54 percent in the top bracket and 57 percent in the bottom bracket.

Since the IRA has a higher return than the UTMA, yet greater probabilities of college attendance are necessary to make the 529 and ESA, in expectation, a better choice. The 529 with a deduction has a

[23] The calculations in this section are based on average state tax rates for each bracket. Since actual rates vary substantially state, the breakeven probabilities will also vary by state.

higher expected value than the IRA only at quite-high attendance probabilities, ranging from 61% in the top bracket to 82% in the bottom bracket. At no attendance probability are the ESA or 529 without a deduction ever a better option than the IRA, since the IRA has the same after-tax return as these instruments without the associated penalty for non-educational use.

In order to place these breakeven probabilities in perspective, we can compare them to empirical attendance probabilities. The last column of Table 5 shows estimated rates of college attendance from the 1997 panel of the National Longitudinal Survey of Youth. This survey allows us to link the educational outcomes of young adults with the income of their parents. In 2001, 56 percent of 19- to 21-year-olds had attended college at some point. There is considerable variation around this mean, with the probability of college attendance rising steeply with family income. In the bottom AGI bracket (less than $14,000), the college attendance rate is 35 percent. In the next bracket (up to $56,800) the rate rises to 48%, while it jumps to 72 percent in the next bracket (up to $114,650). Above a household income of $114,650 (corresponding to the top three federal AGI brackets), 89 percent of youth age 19 to 21 have attended college.[24]

Comparing these empirical probabilities of college attendance with the calculated breakeven probabilities, we can see that, for households in the top four brackets (that is, above $56,800), the education savings accounts are a safe bet. At these household income levels, the probability that children will attend college is above the minimum probabilities required to give the 529 and ESA expected returns at least as high as those on other savings vehicles. For families in the bottom two brackets, the education savings accounts are considerably riskier. As we saw earlier in the paper, these families yield the lowest relative returns from the tax-advantaged vehicles, since their marginal tax rates are the lowest. Further, the probability that their children will go to college is also relatively low. As a result, in expectation the 529 and ESA have lower returns than other investment options in the lowest AGI bracket (less than $14,000). Given the empirical attendance probabilities of children in the second-lowest AGI bracket, the

[24] The top three brackets are collapsed for these purposes due to small cell sizes.

529 with an upfront deduction has a higher expected return that the UTMA and non-advantaged parental account, but not the IRA.

Parents may do a better job than the figures in Table 6 in predicting their own child's probability of college attendance, since they access to more information about the child than just household income. Parents observe their child's development and performance in elementary and secondary school. However, little of this information has arrived when the parent must make the decision about how to save for their child's college education. Further, even the parents of high school students, whose academic ability is well-established, do a poor job of predicting the college-going of their children. In 1997, the parents of the NLSY were asked about their expectations for their children's future education. Specifically, they were asked to estimate the likelihood that their child would have completed a bachelor's degree by age 30. At the time this question was asked, the children were between the ages of 15 and 17.

On average, parents believed their children had a 69 percent probability of completing a BA by age 30. To put this number in perspective, note that in 2002 just 29.6 percent of 30-year-olds had a BA.[25] Another 28.8 percent had completed some college credits. That is, on average about half of those who have any college experience have completed a BA. Since 55 percent of the NLSY have entered college, we would expect about half that number, of 27.5 percent, to eventually complete a college degree.

As these numbers make clear, parents grossly overestimate their children's ultimate educational attainment. Their predictions of their children's college attendance rates are well above the realized rates. At the rates of college-going predicted by parents, the education savings accounts are a safe bet for every income bracket, as at these quite-high probabilities of college attendance the expected returns for the 529 and ESA are above those of other investment option. If parents act on these predictions, then in expectation households will experience lower returns on assets than they would if the education savings accounts did not exist.

[25] Author's estimates from the March Current Population Survey.

4.3 Variation in the Value of the Education Savings Accounts Due to the Financial Aid Tax

A final source of variation across income groups in the value of the education savings accounts is the treatment of household assets in the determination of need-based financial aid for college.[26] The intent of the need-based financial aid system is to give more aid to those with fewer resources. Both assets and asset earnings are considered resources by the need-based aid formula, so each dollar increase in assets and asset earnings leads to a proportional reduction in financial aid. In this sense, the aid system "taxes" assets and asset returns of families potentially eligible for need-based aid.[27] Key to the present analysis is that this aid tax varies across savings instruments.

One might dismiss the aid tax as irrelevant by noting that the poor get aid but do not save, and the rich save but do not get aid. This common wisdom is wrong, as there is substantial overlap in the income distributions of those who save and those who get aid. First, note the 50 percent of those households holding 529 and ESA accounts have incomes below $81,000. Second, tabulations of the 2000 National Postsecondary Aid Survey (NPSAS) indicate that a substantial proportion of families with incomes above $80,000, and even $100,000, receive need-based aid, in the form of both grants and loans. Many of these students are at expensive, four-year colleges, which provide their own need-based grants to students.

Among students from families with incomes of $80,000 to $100,000, 15 percent get need-based grants. In the highest income category that the NPSAS data provide (over $100,000), 12 percent of students receive need-based grants. Of students from families with incomes of $40,000 to $80,000, 46 percent receive need-based aid in the form of grants, loans or work-study, with 29 percent receiving need-based grants. Families quite high up in the income distribution are therefore subject to the aid policies I describe in this section.

[26] This section uses results from Dynarski (2003). See that paper for detailed calculations and more information on the financial aid system and its treatment of different savings vehicles.

[27] See Edlin (1993) and Feldstein (1995) for more discussion of the aid tax.

Briefly, the aid tax has two components: a tax on asset balances and a tax on asset earnings, with the magnitude of each tax depending on the type of asset. Table 7 lists the components of the aid tax for various savings vehicles. To illustrate how the aid tax works, let us consider a non-advantaged account held in the name of the parent. The annual tax on asset balances, in this case, is 5.64 percent.[28] If the child goes to college for just one year, this 5.64 percent is the (marginal) aid tax on asset balances for this family. However, for each year of college, the asset balance is again taxed at the 5.64 percent rate. Assuming a student attends college for four years, a given dollar in assets held for this entire period is taxed at a rate of 21 percent [=1-(1-0.0564)^4]. This is the aid tax rate on balances in accounts considered to be owned by the parent (excluding retirement accounts and home equity, whose balances are not taxed). Balances in accounts considered to be owned by the student are taxed at a rate of 35 percent, or 82 percent over four years of college.

Any earnings from the non-advantaged account are also taxed, if they arrive in a year whose income is considered in determining college aid.[29] The aid tax rate on asset earnings (net of any income taxes) is 47 percent for a non-advantaged account held by the parent. This tax is applied to both earnings accruals and to any earnings realized upon withdrawals from the account. Note that, in an account that has been building value for 18 years, a substantial portion of the balance will consist of unrealized earnings. In an non-advantaged account, given the investment scenario we have been assuming throughout the paper, unrealized earnings will represent about 55 percent of account value. As the account is drawn down for college, earnings will be realized and after-income-tax realizations assessed by the aid formula.

[28] This tax rate is a function of the family's overall financial position, as summarized by the family's "adjusted available income" (AAI). AAI is a weighted sum of income and assets, net of allowable expenses, including taxes. The AAI tax is progressive and steep, with little distance between the lowest and highest tax rate. The lowest rate applies to an AAI of $11,000, while the schedule tops out at an AAI of $24,000. In the calculation of aid taxes, I assume that families are at the top of this schedule.

[29] Tax returns from the previous year are used to report income for the purposes of determining financial aid determination, so income is considered with a lag. For a child who attends college for four years, asset income received in the senior year of high school and first three years of college will be subject to the aid tax.

Table 8 shows the impact of the aid tax on after-tax returns for various savings vehicles. In the first column is the return on a given savings vehicle for a household that is unaffected by the aid tax; these are the returns we have seen in earlier tables. Two types of families are unaffected by the aid tax. The first type is extremely needy (with very low financial resources and/or very high schooling costs) and receiving the maximum aid allowed.[30] The second type of family is not at all needy (with very high financial resources and/or very low schooling costs) and receiving zero aid. For neither family will a marginal change in assets affect aid, and so their effective marginal aid tax is zero.

In the second column of Table 8 are returns net of the aid tax. I assume, as I have throughout the paper, that the account funds are drawn down over the four years of college. These results are shown for all but the top two tax brackets, in which I assume household income is sufficiently high (above $174,700) that the child is beyond the margin of eligibility of financial aid at even the most expensive institutions. Columns (3) and (4) express the aid tax as a percent of the asset balance at the start of college and as a percent of the after-tax return, respectively.

The impact of the aid tax on returns is enormous, especially for the UTMA and ESA, for which returns net of the aid tax are negative. Each of these assets is considered by the aid system to belong to the child. As a result, the *annual* aid tax rate on asset balances held in either of these vehicles is 35 percent, rather than the 5.64 percent applied to the other saving vehicles. When we consider only income taxes, an aid-marginal family with an AGI of $75,000 that puts $1,000 pretax dollars in an ESA nets a return of $1,404. This return is 53 percent higher than if the funds were invested in a non-advantaged account. But once we consider the aid tax, the financial advantage of the ESA disappears. The final return on the $1,000 pretax investment, net of income and aid taxes, is -$1,166. This family loses all principal and all earnings, plus an additional $166, to the aid and income taxes. The total aid tax on the ESA, expressed as a percentage of the return net of income tax, ranges from 158 percent for the family with $14,000 of

[30] Total aid is capped by a student's actual schooling costs, which includes tuition and fees plus an allowance for such items as food, rent and other living expenses.

income to 177 percent for the family with $125,000 of income. A similar story holds for the UTMA, with the aid tax on returns ranging from 177 to 204 percent.

The 529 savings plans are not as hard hit by the aid tax, as the aid system considers this asset to belong to the parent rather than to the child. The aid tax on net-of-income-tax returns for the 529 is 57 to 65 percent, lower than that on a non-advantaged account in the name of the parent (63 percent to 81 percent). Once we consider aid taxes, the 529, with or without an upfront deduction, nets higher returns than the non-advantaged account, the UTMA or the ESA. In the case of the non-advantaged account, the 529 performs better because its inside buildup is not taxed by the aid system. In the case of the UTMA and ESA, the 529 performs better because the tax on the asset balance is 5.64 percent rather than 35 percent (see Table 7).

The best performers of all, in terms of both the aid tax and net returns, are the retirement vehicles. Funds in retirement accounts are not subject to the aid tax on asset balances, hence their relatively low aid tax rates on returns: 51 to 57 percent.[31] A family with $75,000 in household income that is on the margin of aid receipt will, after income and aid taxes, net $579 on its $1,000 pretax savings in an IRA. The comparable figure for the 529 with a deduction is $560 and for a 529 without a deduction is $468. A non-advantaged account will yield $149, an ESA -$1,166 and a UTMA -$1,349.

5. Discussion and Conclusion

I have found that the advantages of the 529 and ESA rise sharply with income, for three reasons. First, those with the highest marginal tax rates benefit the most from sheltering income, gaining most in both absolute and relative terms. This distributional impact of the 529 and ESA is the same as that on all tax-advantaged savings vehicles, including the IRA and 401(k). The second reason that the advantages of

[31] *Ex ante*, returns net of income and aid taxes are identical for the Roth and Traditional IRAs, as can be seen in the second column of Table 6. However, if a family with a child in college has a choice between drawing down funds from a Traditional or Roth IRA in order to pay for college, withdrawals from the Traditional IRA will have a smaller impact on aid eligibility. Withdrawals from both types of IRAs are counted as income in the aid determination process. However, in the case of the Traditional IRA, this income is partially offset by the taxes that are paid at the time of withdrawal.

the ESA and 529 rise with income is more subtle and is driven by the fact that the 529 and ESA are *education* saving incentives. Both vehicles reward those who save and use the funds for postsecondary education. Both vehicles include provisions that punish those who do not use the funds for education. There is therefore some risk associated with using these accounts, as net returns are substantially reduced if the beneficiary does not use the funds for schooling. I find that among households with income below $57,000, the relatively low rates of college attendance of children cause the returns of the 529 and to be, in expectation, below those of other savings vehicles. Given how poorly families forecast the completed education of their children, we can expect that a good proportion of those in this income category will be worse off investing in the 529 or ESA than they would have been had they just put the funds in a standard savings account.

Low-income families also may face a reduction in returns even if their children do go to college. The need-based financial aid system reduces aid when a family holds assets. The financial aid "tax" applies to families who are on the margin of getting another dollar of need-based aid, and so does not apply to the very rich or the very poor. But, as I have shown, families all along the income distribution get need-based aid, which varies not with income but with schooling costs. Therefore, throughout the income distribution there are families who are on the margin of getting more aid, and who are therefore affected by the aid tax. The aid tax completely eliminates the tax advantages of the ESA; in fact, ESA returns net of income and aid taxes are negative. That is, families saving in an ESA who are on the margin of getting more aid all of their principal, all of their earnings, and then some, to income and aid taxes. Families saving in a 529 who are affected by the aid tax are still better off than they would have been in a regular savings account. Note, however, that since the very highest-income families are unaffected by the aid tax, the aid tax further intensifies the positive correlation between income and the advantages of the tax-advantaged college savings accounts.

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Table 1
Characteristics of Education Savings Account Investor Households with Children
2001 Survey of Consumer Finances

	All Households w/ Children 16 and under	Education Savers (529 or ESA)	Retirement Savers (IRA or Keogh)	Education Savers vs. All Households	Education Savers vs. Retirement Savers
	(1)	(2)	(3)	(4)	(5)
Has 529 or ESA	3%	100%	5%	-	-
Has IRA or Keogh	38%	70%	100%	-	-
Median Income	50,000	91,000	75,000	16,000	41,000
Median Net Worth	61,830	281,200	227,600	53,600	219,370
Mean Balance in IRA accounts	20,132	89,400	56,523	32,877	69,268
	(108,599)	(276,948)	(174,129)	(28,073)	(17,480)
Mean Balance in 529 Accounts	126	4,664	148	4,516	4,538
	(2,239)	(12,951)	(3,045)	(694)	(465)
Age of Oldest Parent	38.78	40.98	41	-0.02	2.2
	(8.50)	(6.59)	(8.05)	(1.22)	(1.26)
Age of Oldest Child	10.71	9.42	10.46	-1.04	-1.29
	(5.88)	(5.23)	(5.74)	(0.87)	(0.88)
Number of Children	2.08	1.99	2.07	-0.08	-0.09
	(1.05)	(0.86)	(0.99)	(0.15)	(0.16)
Highest Education of Parents	13.89	16.19	14.91	1.28	2.30
	(2.49)	(1.18)	(2.30)	(0.34)	(0.37)
Parent BA or Higher	0.37	0.91	0.59	0.32	0.54
	(0.48)	(0.29)	(0.49)	(0.07)	(0.07)
N	1533	46	588	-	-

Ntoes: Standard deviations in parentheses in first three columns. Standard errors in parentheses in last two columns. Imputation Two of SCF; weights used.

Table 2
Marginal Tax Rates Used in Calculations

AGI	Earned Income			Capital Gains		Interest Income	
	Federal	*State*	*FICA*	*Federal*	*State*	*Federal*	*State*
<$14,000	10%	3.07%	7.65%	5%	6.34%	5%	3.07%
$50,000	15%	5.46%	7.65%	5%	6.34%	5%	5.46%
$75,000	25%	5.95%	7.65%	15%	6.34%	15%	5.95%
$125,000	28%	6.26%	1.45%	15%	6.34%	15%	6.26%
$175,000	33%	6.34%	1.45%	15%	6.34%	15%	6.34%
$325,000+	35%	6.51%	1.45%	15%	6.34%	15%	6.51%

Notes: Federal rates are bracket rates. State rates are average of effective marginal rates calculated from NBER TAXSIM.

Table 3
Age-Based Portfolio Used in Return Calculations

Year:	1-3	4-6	7-8	9	10	11-12	13	14-15	16-22	Nominal Rate of Return
Stock Share	90%	85%	74%	68%	59%	58%	45%	42%	25%	**9%**
Bond Share	10%	15%	26%	32%	41%	42%	55%	58%	75%	**4%**

Note: Values reflect typical age-based 529 portfolio.

Table 4

Tax Treatment of College Saving Alternatives

Investment Option	**Income Limit** *married, filing jointly*	**Taxes Paid on Income, pre-deposit**	**Taxed Paid on Inside Build-up**	**Taxes Paid at Withdrawal**
Non-Advantaged Account, Parent		Federal and state, plus FICA	Federal and state	Federal and state on realized capital gains
Traditional IRA	$70,000 *No income limit if no work-related retirement plan.*	FICA		Federal and state on entire withdrawal
Roth IRA	$160,000	Federal and state, FICA		
529		Federal and state, FICA. No state taxes if 529 with deduction		
Coverdell	$220,000	Federal and state, FICA		
UTMA		Federal and state, FICA	Federal and state First $750 untaxed Child 14+: earnings >$750 at child's rate Child <14: next $750 at child's rate & >$1500 at parent's rate	Federal and state on realized capital gains, child's rate

Note: Unless otherwise indicated, applicable tax rate is that on parent's income.

Table 5
After-Tax Return to College Savings Alternatives

	Nominal Return	Return Relative to Parental Account
Non-Advantaged Account, Parent		
<$14k	$1,795	1.00
$50k	$1,472	1.00
$75k	$918	1.00
$125k	$985	1.00
$175k	$795	1.00
$325k+	$716	1.00
UTMA		
<$14k	$1,878	1.05
$50k	$1,597	1.09
$75k	$1,216	1.33
$125k	$1,319	1.34
$175k	$1,136	1.43
$325k+	$1,057	1.48
529 Plan (Deduction)		
<$14k	$2,203	1.23
$50k	$1,978	1.34
$75k	$1,557	1.70
$125k	$1,686	1.71
$175k	$1,476	1.86
$325k+	$1,389	1.94
529 Plan (No Deduction)		
<$14k	$2,105	1.17
$50k	$1,815	1.23
$75k	$1,404	1.53
$125k	$1,518	1.54
$175k	$1,319	1.66
$325k+	$1,234	1.72
ESA		
<$14k	$2,105	1.17
$50k	$1,815	1.23
$75k	$1,404	1.53
$125k	$1,518	1.54
$175k	$1,319	1.66
$325k+	$1,234	1.72
Roth IRA		
<$14k	$2,105	1.17
$50k	$1,815	1.23
$75k	$1,404	1.53
$125k	$1,518	1.54
$175k	$1,319	1.66
$325k+	$1,234	1.72
Traditional IRA		
<$14k	$2,105	1.17
$50k	$1,815	1.23
$75k	$1,404	1.53
$125k	$1,518	1.54
$175k	$1,319	1.66
$325k+	$1,234	1.72

Notes: Assumes portfolio mix of Table 2, with stock returns of 9% and bond returns of 4%. One-time investment of $1,000 of pretax income with all eanrings reinvested. Funds drawn down over the final four years of investment horizon.

Table 6:
Return to College Savings Options, Non-College Use

	529 with deduction					529 (no deduction) or ESA					Probability of Having Attended College, Respondents Age 19-21 in 2001 (NLSY)	Parent's Estimated Probability That Child Will Complete BA (NLSY)
	After-Tax Return		*Breakeven college attendance probability where investment alternative is:*			*After-Tax Return*		*Breakeven college attendance probability where investment alternative is:*				
AGI	Attend College	Not Attend	IRA	UTMA	Non-Advantaged Account	Attend College	Not Attend	IRA	UTMA	Non-Advantaged Account		
<$14k	$2,203	$1,845	82%	40%	27%	$2,105	$1,758	100%	57%	44%	35%	54%
$50k	$1,978	$1,623	68%	25%	4%	$1,815	$1,479	100%	55%	32%	48%	64%
$75k	$1,557	$1,225	65%	21%	0%	$1,404	$1,092	100%	54%	0%	72%	77%
$125k	$1,686	$1,328	63%	19%	0%	$1,518	$1,182	100%	54%	0%	89%	86%
$175k	$1,476	$1,134	62%	19%	0%	$1,319	$998	100%	54%	0%	89%	86%
$325k+	$1,389	$1,054	61%	17%	0%	$1,234	$920	100%	54%	0%	89%	86%

Note: Listed probability is minimum needed to give 529/ESA an expected return at least as high as that on listed investment option.

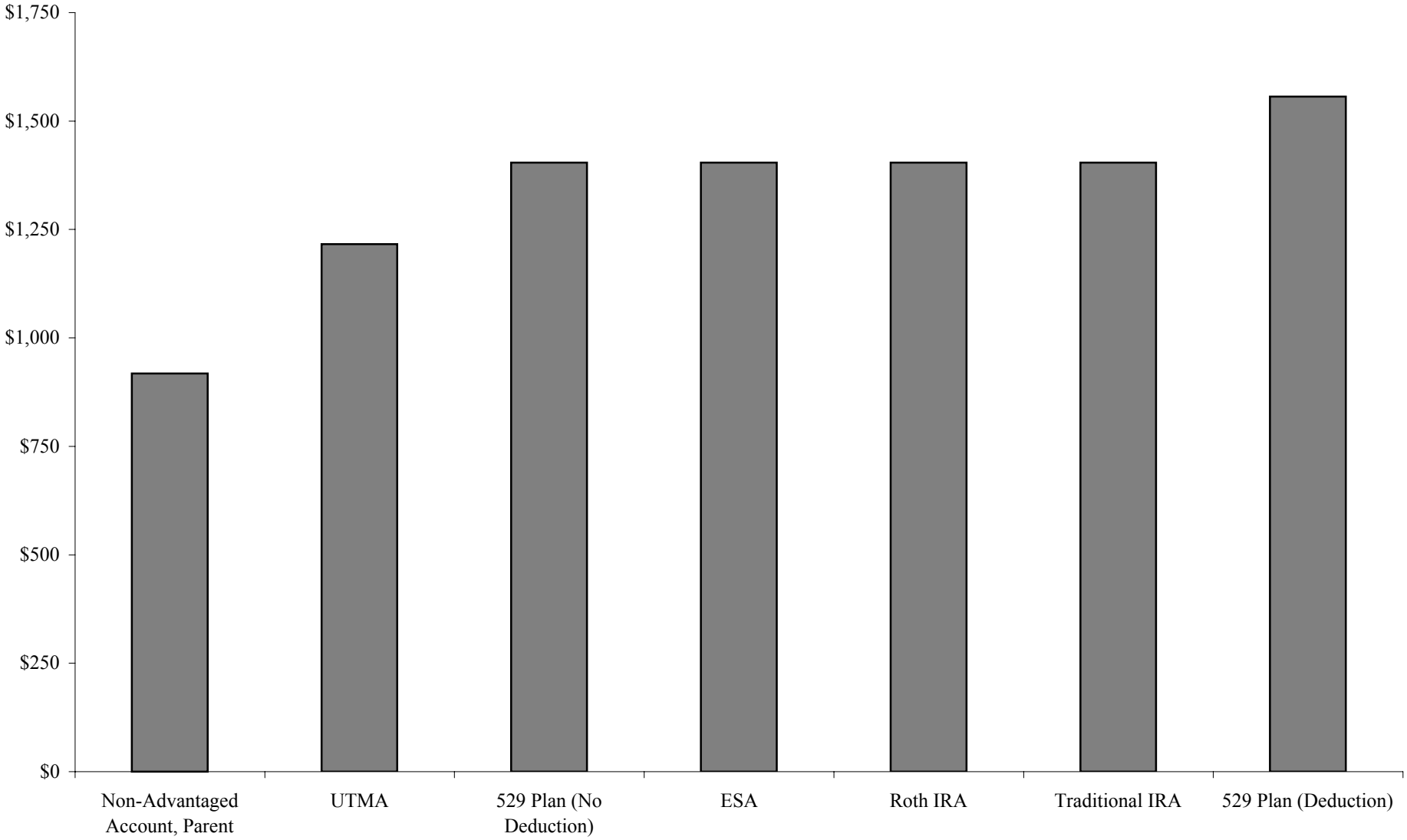
Table 7
Aid Tax on College Saving Alternatives

Investment Option	Annual Aid Tax on Asset Balance	Annual Aid Tax on Earnings Net of Income Tax	Aid Tax on Withdrawal
Non-Advantaged Account, Parent	5.64%	47%	47% of realized earnings net of income tax
Traditional IRA	0%	0%	47% of withdrawal net of income tax
Roth IRA	0%	0%	47% of withdrawal
529	5.64%	0%	50% of realized earnings
Coverdell	35%	0%	50% of realized earnings
UTMA	35%	50%	50% of realized earnings net of income tax

Table 8
After-Tax Return to College Savings Alternatives, Net of Financial Aid Tax

	After-Tax Return	After-Tax Return, Net of Aid Tax	Aid Tax As % of Asset Balance at Start of College	Aid Tax As % of After-Tax Return
Non-Advantaged Account, Parent				
<$14k	$1,795	$668	43%	63%
$50k	$1,472	$480	42%	67%
$75k	$918	$149	39%	84%
$125k	$985	$191	39%	81%
$175k	$795	-	-	-
$325k+	$716	-	-	-
UTMA				
<$14k	$1,878	-$1,454	124%	177%
$50k	$1,597	-$1,410	123%	188%
$75k	$1,216	-$1,349	123%	211%
$125k	$1,319	-$1,366	123%	204%
$175k	$1,136	-	-	-
$325k+	$1,057	-	-	-
529 Plan (Deduction)				
<$14k	$2,203	$955	44%	57%
$50k	$1,978	$818	44%	59%
$75k	$1,557	$560	44%	64%
$125k	$1,686	$639	44%	62%
$175k	$1,476	-	-	-
$325k+	$1,389	-	-	-
529 Plan (No Deduction)				
<$14k	$2,105	$895	44%	57%
$50k	$1,815	$718	44%	60%
$75k	$1,404	$468	44%	67%
$125k	$1,518	$537	44%	65%
$175k	$1,319	-	-	-
$325k+	$1,234	-	-	-
ESA				
<$14k	$2,105	-$1,215	122%	158%
$50k	$1,815	-$1,195	122%	166%
$75k	$1,404	-$1,166	122%	183%
$125k	$1,518	-$1,174	122%	177%
$175k	$1,319	-	-	-
$325k+	$1,234	-	-	-
Roth IRA				
<$14k	$2,105	$1,039	39%	51%
$50k	$1,815	$849	39%	53%
$75k	$1,404	$579	39%	59%
$125k	$1,518	$653	39%	57%
$175k	$1,319	-	-	-
$325k+	$1,234	-	-	-
Traditional IRA				
<$14k	$2,105	$1,039	34%	51%
$50k	$1,815	$849	31%	53%
$75k	$1,404	$579	27%	59%
$125k	$1,518	$653	26%	57%
$175k	$1,319	-	-	-
$325k+	$1,234	-	-	-

Figure 1:
After-Tax Return to College Savings Options
nominal return to $1,000 of pretax savings, household AGI of $75,000



Notes: Assumes portfolio mix of Table 3, with stock returns of 9% and bond returns of 4%. One-time investment of $1,000 of pretax income with all eanrings reinvested. Funds drawn down over the final four years of investment horizon.

Figure 2:
After-Tax Return to Non-Advantaged Account Held in Name of Parent
nominal return to $1,000 of pretax savings

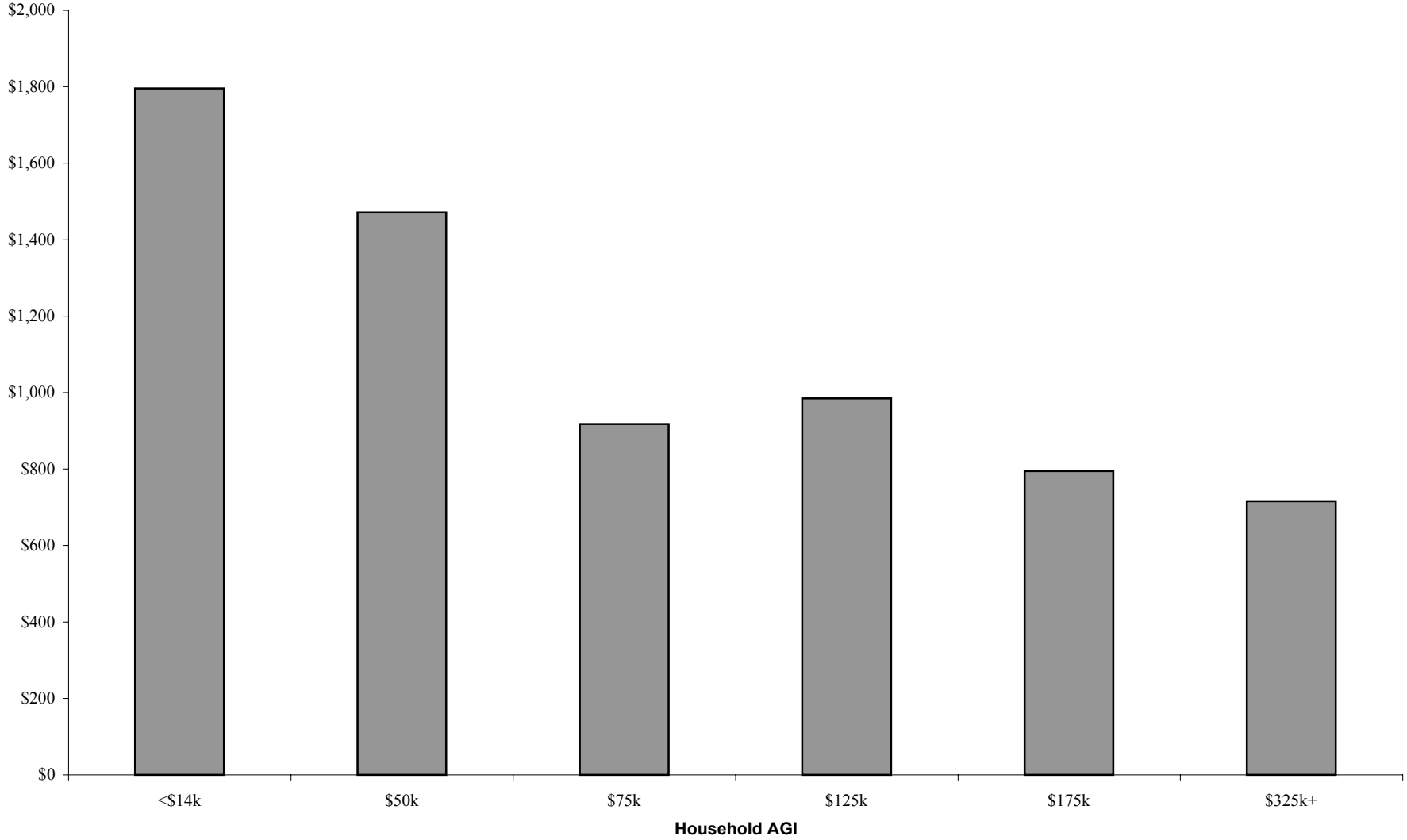
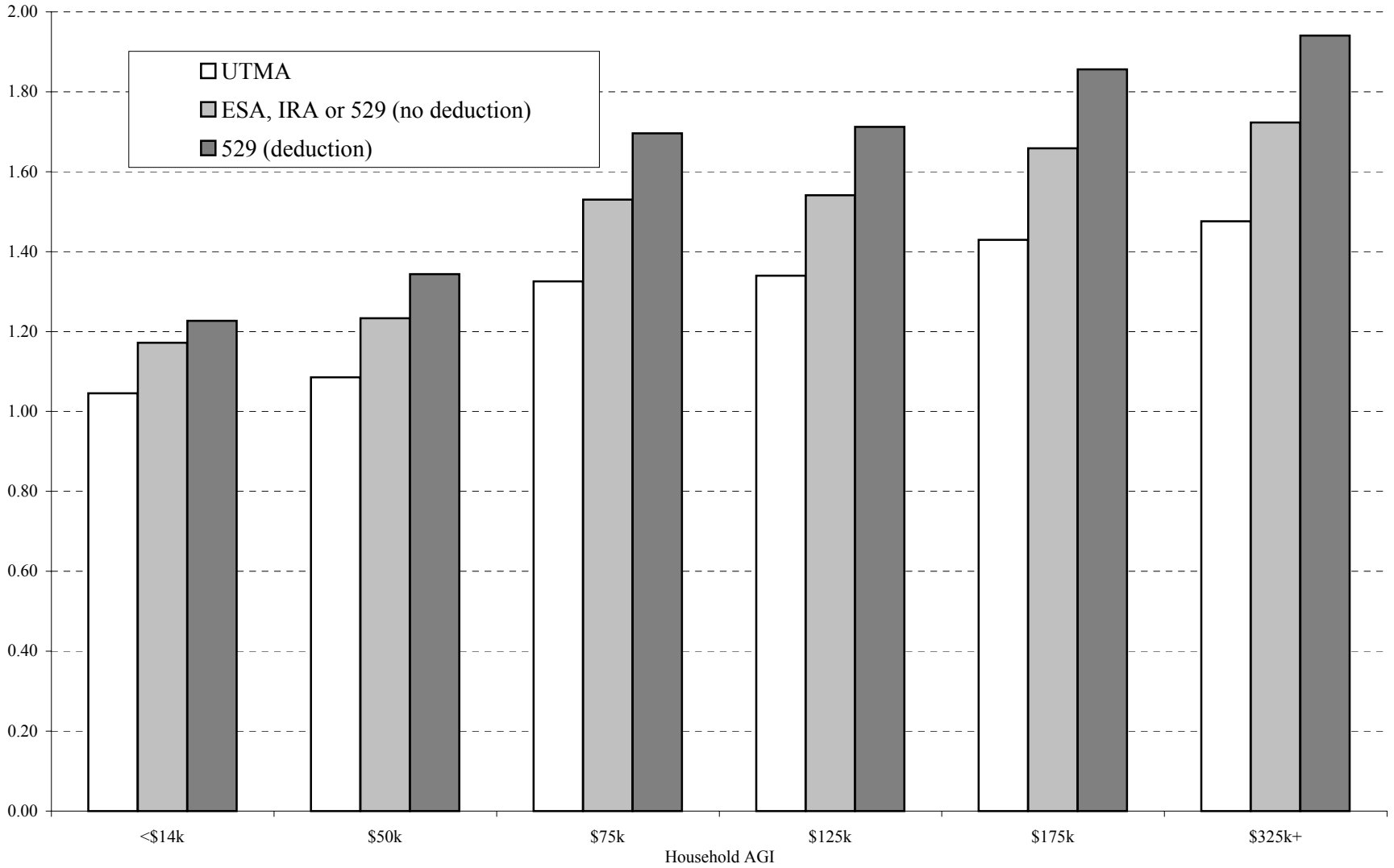
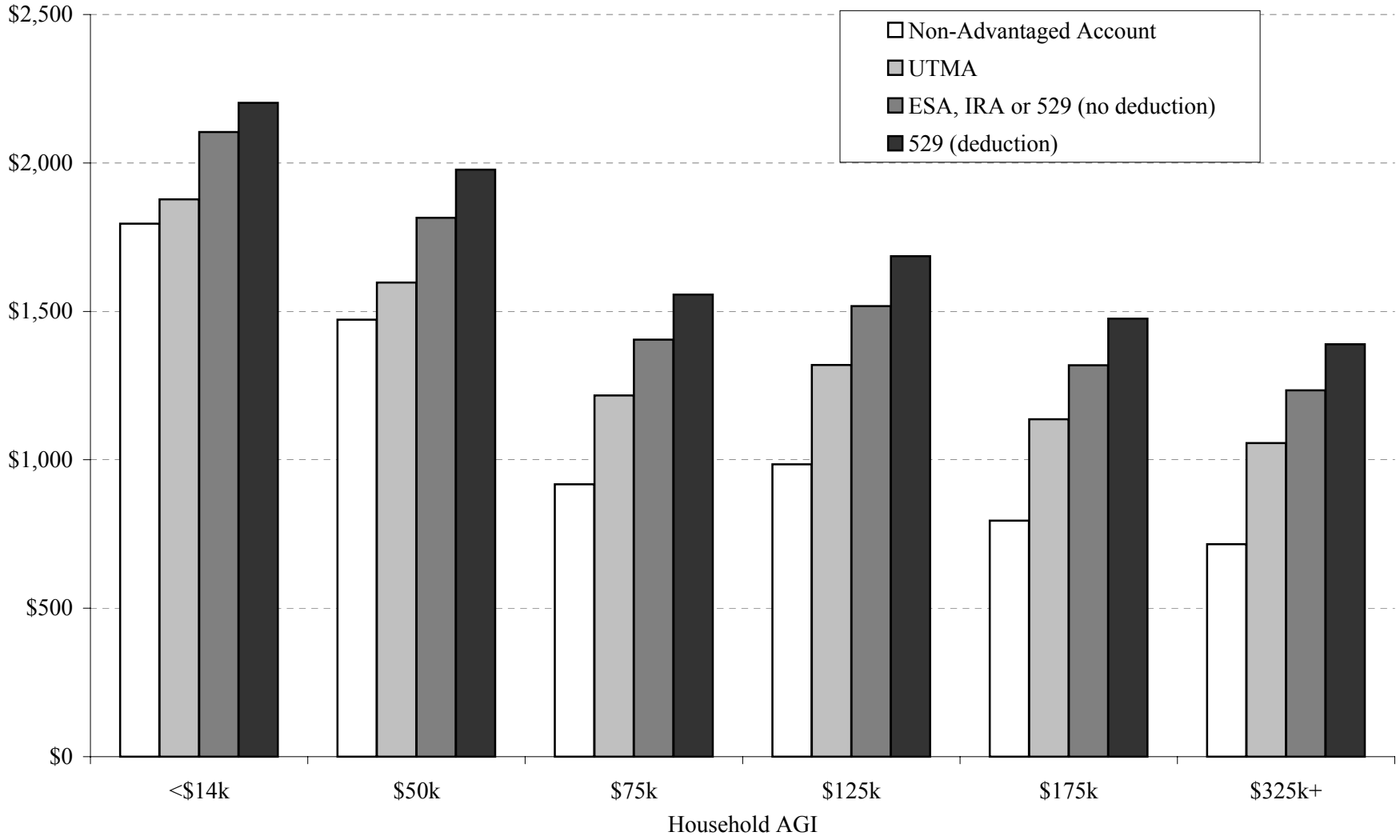


Figure 3:
After-Tax Return to College Saving Options
Relative to Non-Advantaged Account Held in Name of Parent



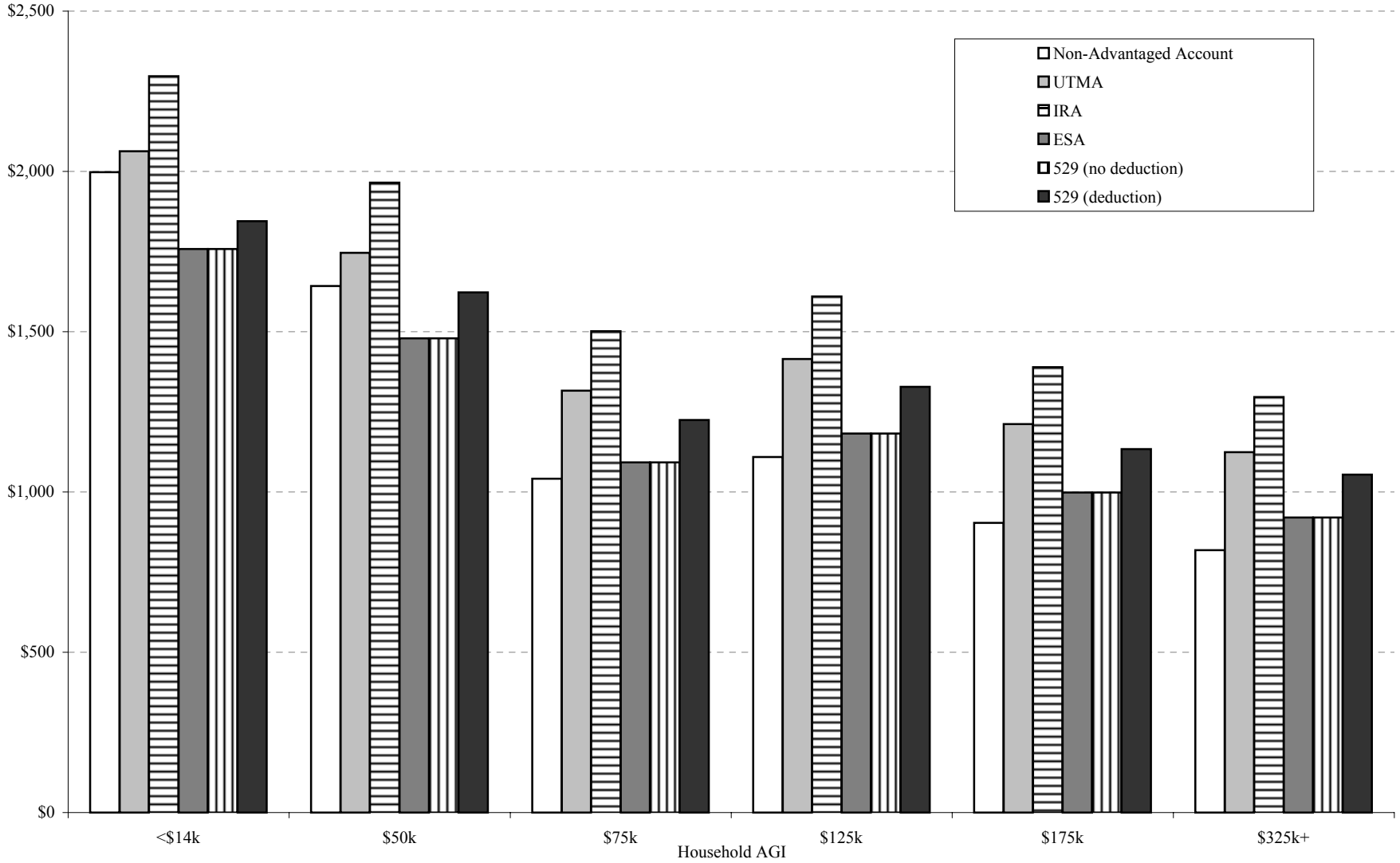
Notes: Assumes portfolio mix of Table 3, with stock returns of 9% and bond returns of 4%. One-time investment of $1,000 of pretax income with all earnings reinvested. Funds drawn down over the final four years of investment horizon.

Figure 4
After-Tax Return to College Saving Options



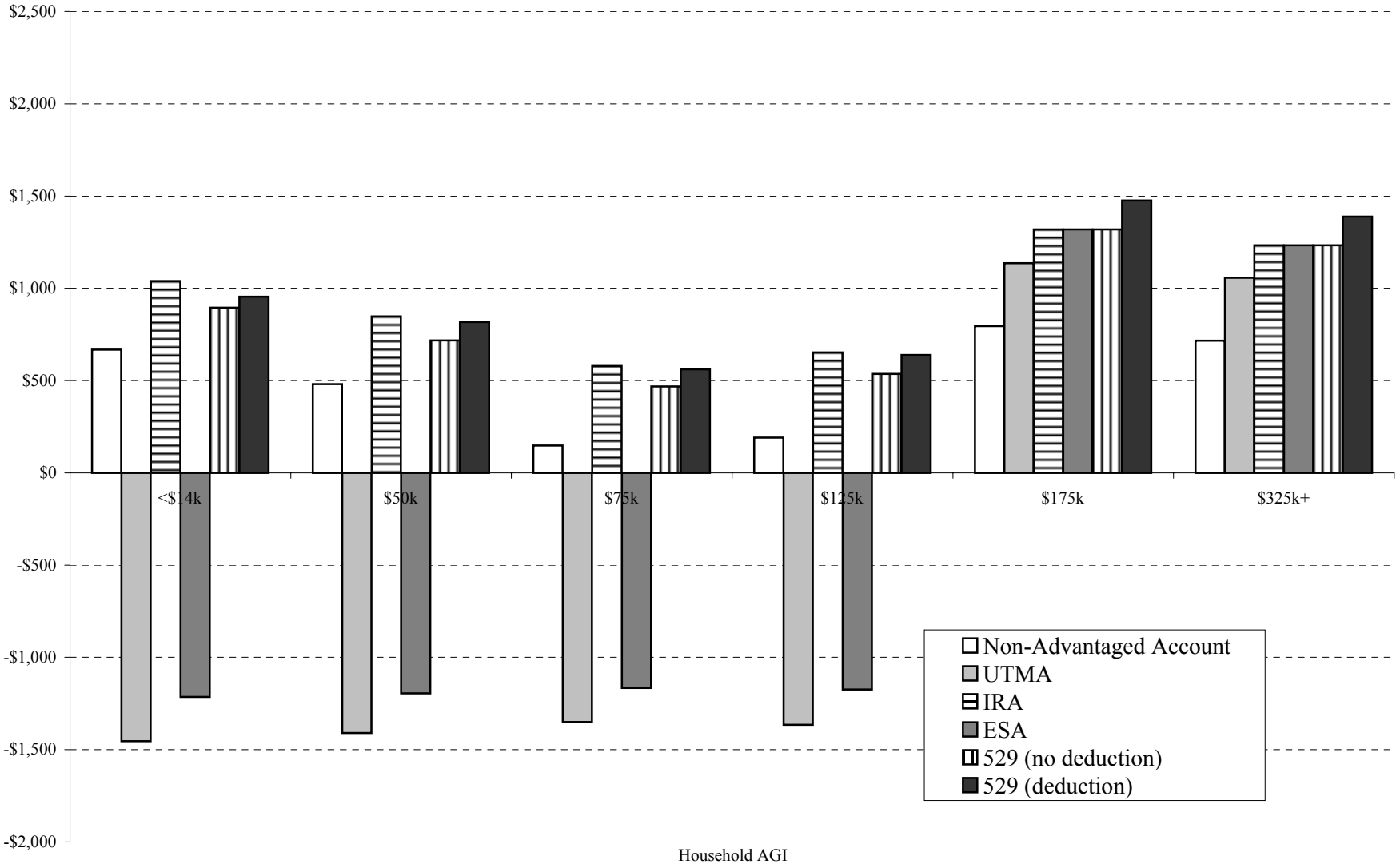
Notes: Assumes portfolio mix of Table 3, with stock returns of 9% and bond returns of 4%. One-time investment of $1,000 of pretax income with all earnings reinvested. Funds drawn down over the final four years of investment horizon.

Figure 5
After-Tax Return to College Saving Options, Non-College Use



Notes: Assumes portfolio mix of Table 3, with stock returns of 9% and bond returns of 4%. One-time investment of $1,000 of pretax income with all earnings reinvested. Funds drawn down in last year of investment horizon.

Figure 6
Return to College Saving Options, Net of Aid Tax and Income Tax
Assumes those in bottom four brackets are on aid margin; in top two brackets, assumed aid tax is zero



Notes: See Section 4.3 for statistics on share of each income group receiving need-based aid.