Tax Policy and Education Policy: Collision or Coordination?
A Case Study of the 529 and Coverdell Saving Incentives

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This Version: August 22, 2003

Abstract

529 saving plans and Coverdell Educational Savings Accounts are marketed as attractive vehicles for college savings. The main finding of this paper is that college savings plans can actually *harm* some families. The joint treatment by the income tax code and financial aid system of college savings creates tax rates that exceed 100 percent for those families on the margin of receiving additional financial aid. Since even families with incomes above $100,000 receive need-based aid, the impact of these very high taxes is quite broad. I find that an aid-marginal family with funds in a Coverdell is worse off than if it did not save at all. Simulations show that $1,000 of pretax income placed in a Coverdell for a newborn and left to accumulate until college will face income and aid taxes that consume all of the principal, all of the earnings and an additional several hundred dollars. This perverse outcome is the product of poor coordination between the tax code and the financial aid system.

* I gratefully acknowledge support from NBER-National Institute on Aging Grant P30-AG12810. Naomi Calvo, Joe Ciesla and Betsy Kent provided excellent research assistance. I thank Martin Feldstein, Andrew Samwick and participants in the NBER Taxation and Saving conference for their helpful comments. An earlier version of this paper was presented at the IRS Research Conference in June 2003.

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.

Politicians and financial advisors aggressively market 529 saving plans and the ESA as attractive vehicles for college savings. For many families, the favorable tax treatment of these savings vehicles does make them more attractive than other methods of saving for college. However, as I show in this paper, some families are *worse off* in a 529 or ESA than they would be in an alternative savings vehicle, such as an IRA or even a non-advantaged account. For families on the margin of getting more financial aid, the treatment of these savings vehicles by the financial aid system partially (or, in the case of the ESA, completely) undoes the tax incentives for saving. In some cases, the net tax rate on asset returns exceeds 100 percent, once we account for taxes imposed by both the aid system and the income tax system.

One might dismiss the results of the paper as irrelevant by observing that the poor get aid but do not save, and the rich save but do not get aid. This common wisdom is wrong. As I show in the next section, a substantial proportion of families with incomes above $70,000, and even $100,000, receive need-based aid, in the form of both grants and loans. Upper-income students at expensive, four-year private colleges often qualify for need-based grant aid from their schools, while even those at less-

[1] Each parent can make a deposit of $11,000 per child in given year without triggering a gift tax. A two-parent family with three children could therefore move $66,000 per year into a tax-advantaged 529 account. Grandparents can also make deposits up to these limits, further expanding the amount of assets that can be shielded from taxation. A five-year averaging option allows a participant to contribute $55,000 in a single year without triggering a gift tax.

expensive four-year public colleges often qualify for subsidized, need-based federal loans. These families are therefore subject to the aid policies I describe in the paper. Of course, such families also save, and so have assets that are affected by the intersection of tax policy and aid policy described in this paper.

That there is a tension between policies intended to increase saving and distribute aid according to need is unsurprising. The intent of the 529 and ESA is to increase saving by increasing after-tax returns. The intent of the need-based aid system is to give less aid to those with higher assets. These two sets of policies will inevitably work at cross-purposes, as the aid system "taxes" away part of the increase in assets and asset returns that the savings incentives create.[2] This tension between targeting funds to those who are most needy and discouraging desirable behaviors is an inherent characteristic of all means-tested programs. For example, the old welfare system had an earned income test: welfare benefits were reduced proportionally for each dollar earned. This acted as a tax on labor supply and theoretically discouraged work effort by welfare recipients. Similarly, the need-based aid system taxes increases in income and assets, and thereby potentially discourages saving.

Unless assets and asset income are completely disregarded in the distribution of need-based aid, the aid determination process will inevitably reduce asset returns and perhaps saving rates. The conclusion of this paper is that the tension between targeting aid and discouraging saving can be managed well or poorly. For example, I find that that the aid system taxes returns on different assets at very different rates, ranging from 50 percent to nearly 200 percent. This variation in taxes has a cost, in that it distorts decisions about the composition of savings. There is no concomitant benefit, however, in that these wildly varying taxes do not improve the targeting of aid toward needy students. If anything, such arbitrary tax variation undermines the goals of need-based aid, in that families with identical financial positions receive very different levels of aid, depending on whether they are savvy enough to steer their savings toward the right vehicles.

[2] The aid tax was first discussed by Edlin (1993) and Feldstein (1995).

The paper is organized as follows. In Section 2, I show that families quite high in the income distribution are affected by the aid tax. In Section 3, I provide background on the tax-advantaged college savings plans. In Section 4, I calculate returns on various savings vehicles net of income taxes. In Section 5, I explain the aid determination process and its treatment of savings and calculate returns net of both income and aid taxes. Section 6 discusses the results and Section 7 concludes.

2. Who Is Affected by Aid Policy?

What kind of family is affected by the aid tax? Given the historically-high level of tuition prices, relatively well-off families qualify for need-based aid, and so face this tax. This is particularly true if the student attends a private college, or if a family has multiple students in college at the same time.[3] As this section will show, families all along the income distribution fall into this category.

For two kinds of families, however, the aid tax is zero. The first type of family is extremely needy (as defined by the need-based aid system) and receiving the maximum aid allowed. [4] As a result, a marginal decrease in this family's assets will not increase their aid, nor will a marginal increase in their assets decrease their aid. Since there is no link between assets and aid for this family, their aid t ax is zero. The second type of family is at the other end of the spectrum: this family is very well off (again, as defined by the need-based aid system) and receiving no aid. Again, marginal changes in assets will not affect this family's aid eligibility. Any family that is not at one of these two extremes of need is subject to the aid tax.

Table 1 shows the probability that a student with a given family income will receive need-based aid, and the average amount of aid received among aid recipients. These data are for full-time, dependent undergraduates attending college in academic year 1999-2000, and are taken from the 2000 National

[3] A family that has multiple children in college at a given point in time will be eligible for more need-based aid than if those children attended college in sequence.

[4] 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.

Postsecondary Aid Survey (NPSAS). I show results separately for three categories of need-based aid: 1) all types, including grants, loans and work-study 2) grants only and 3) subsidized Stafford loans only.

Low-income families are most likely to receive aid, and get the largest aid packages.[5] Among students with family incomes below $40,000, 79 percent receive need-based aid, averaging $6,904. However, it is also clear that middle- and even upper-income families are quite likely to receive substantial amounts of aid. Of students from families with incomes of $40,000 to $70,000, 53 percent receive need-based aid in the form of grants, loans or work-study, with the aid of recipients averaging $5,988. Moving up the income distribution, we see that 32 percent of students from families with incomes of $70,000 to $100,000 receive need-based aid averaging $5,288. Even in the highest income group, 18 percent is receiving some form of need-based aid, averaging $4,844.

The composition of this need-based aid varies considerably across the income groups. As was just discussed, Pell Grant distribution is highly progressive. While 63 percent of students from families with income below $40,000 receive a Pell Grant averaging $2,290, only eight percent of students from families with incomes of $40,000 to $70,000 receive a Pell, and no students in higher income categories.

While the Pell is heavily concentrated among low-income students, the story is quite different for other forms of need-based aid. Colleges and universities, especially the more-expensive private schools, distribute their own need-based scholarships. The more expensive the school, the more likely that a student of a given income level will qualify for need-based aid from their school. Among students with family income below $40,000, 25 percent receive need-based grants from their schools, with the grant of recipients averaging $4,034. Moving up one income category, the share receiving a need-based grant does not drop much, to 21 percent, while the average grant received rises, to $5,047. Even among families

[5] Note that the average amount of need-based aid does not drop very rapidly with income. This is because higher-income students are more likely to be attending expensive private institutions, and need is a function of both ability to pay and actual schooling costs.

with incomes above $100,000, 11 percent receive need-based grants from their schools averaging $4,591.[6]

Many middle-and upper-income students also qualify for the need-based Stafford Loan. While loans are obviously less valuable than grants, the need-based Stafford (also known as the subsidized Stafford) has very attractive terms. The subsidy value of a Stafford loan is currently about thirty cents on the dollar.[7] In the $40,000 to $70,000 income range, 23 percent of students receive a subsidized Stafford loan averaging $3,127. In the highest income category the figures are 9 percent and $3,227, respectively.

Many of the families who receive need-based aid will be on the margin of getting more aid – that is, an increase (decrease) in their financial resources will decrease (increase) the amount of aid for which they are eligible. As noted earlier, this includes any family that is not getting the maximum aid allowable given their schooling costs. Such families are subject to the aid policies I describe in the paper.

3. Income Tax Incentives for College Saving

3.1 Legislative History

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).

[6] Most schools follow the federal formulas described in this paper in distributing their own need-based grant. Eighty-seven percent of four-year public schools and 57 percent of four-year private schools use the federal formula in distributing their own need-based grants (National Association of Student Financial Aid Administrators and the College Board (2002).

[7] See Dynarski (2002). The bulk of the subsidy arises from the government paying the interest on the loan while the student is in school. The subsidy value on the Stafford is at a historical low, since market interest rates are quite low. As market interest rates rise, so too does the subsidy value. The subsidy value rises especially rapidly when market rates exceed the statutory rate cap of 8.25 percent, as above this rate the government assumes all interest rate risk.

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.[8] Michigan exempted investment returns in its prepaid plan from state taxes, and argued to the Internal 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 state: the tax-advantaged college savings plan. Like the Education IRA, 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.[9] Every state except Washington now has 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.[10] In this paper, I focus on the 529 savings plans.

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[8] 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.

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

[10] The bull market of the 1990s made the tuition plans appear stodgy to investors used to double-digit returns. Further, the plans substantially constrained the college choices of beneficiaries, who could use the funds at out-of-state schools only at unattractive terms.

3.2 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.[11] 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 below $220,000, and single-filer households with incomes below $110,000 can contribute to an ESA, though eligibility begins to phase out at $190,000 and $95,000, respectively. There is no income limit on contributions to a 529 savings plan.[12]

A second distinguishing characteristic of the 529 is that its contribution limits are much higher than the limit on the ESA. Each account owner (a parent or grandparent, for example) can put $11,000 in after-tax income per beneficiary per year into a 529.[13] A two-parent family with three children can put $66,000 a year into 529 savings plans for their children, but just $6,000 into ESAs. Each state has a lifetime limit on contributions that can be made in the name of a beneficiary. This limit averages $241,000 and ranges from $182,000 in Louisiana to $305,000 in South Dakota.[14]

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.

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[11] As discussed below, some states exempt contributions to the 529 from state taxable income, thereby increasing the tax advantages.

[12] In some states the exclusion of contributions from state taxable income phases out as income rises. The exclusion of earnings from taxable income is not linked to income in any state.

[13] $55,000 per account owner per year can be deposited in a single year for a beneficiary if no deposits are made for the next four years.

[14] Cerulli Associates (2003).

Finally, the 529s are creatures of state government, with each state sponsoring its own plan. There is therefore heterogeneity across the states in 529 characteristics, including portfolio choice, tax treatment, and net returns. 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.

There is considerable cross-state variation in fees charged on the 529 accounts. 529 fees also appear to be somewhat higher, on average, than fees on ESAs or retail mutual funds. For the purposes of this paper, I ignore this source of variation in net returns across states and savings vehicles. By assuming that pretax returns on the various savings vehicles are identical, we can focus on variation in returns driven by the income tax code and the aid system. In ongoing work, I explicitly focus on sources of cross-state heterogeneity in 529 returns and its impact on savings decisions.

4. 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 taxable income 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.

4.1 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.[15] 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 2. The state tax rates used in the calculations, shown in Table 2, are the average of the states' marginal tax rates for each income group, as calculated by the National Bureau of Economic Research's TAXSIM program.[16]

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 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 and aid systems. To simplify the analysis, I assume that all stock returns are in the form of long-term capital gains.[17] The gains are realized when the

[15] 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.

[16] 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.

[17] 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.

funds are withdrawn from the account in order to pay for college; these withdrawals begin at the end of the eighteenth year.[18]

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.

4.2 Calculation of Returns Net of Income Taxes - Example

I first calculate the nominal returns for a family with household income of $100,000, 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 $673 to deposit. The family uses the portfolio 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 $1,135, with 55 percent of the account's value consisting of unrealized capital gains. At the end of year eighteen, one-quarter of the account balance is withdrawn to pay for college. Capital gains taxes are paid on the portion 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

[18] 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.

investment path just described nets $1,113 on its $1,000 in pretax saving, as shown in the first bar in Figure 1 and in Table 4.

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. The second column of Table 4 shows the returns on assets held in these vehicles relative to returns for a non-advantaged account in the name of the parent. 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.[19] The initial pretax savings are taxed at the parent's rate, and so $673 is deposited into the UTMA, as was true for the parental account discussed above. For a family with taxable income of $75,000, these tax advantages translate into a substantially higher return on the UTMA than a parental account. This family yields $1,453 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 $673 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 parental account or UTMA ($2,314 as compared to $2,135 and $2,277, 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 $1,634 return on its $1,000 in pretax savings, 47 percent more than in a parental account and 12 percent more than a UTMA.

[19] 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.

The ESA confers the same tax advantages as the 529 without an upfront deduction and, therefore, yields the same return.[20] 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 47 percent greater than a non-advantaged parental account.[21]

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 $718, rather than the $673. 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 $1,811, or 63 percent more than a non-advantaged account in the parent's name.

As these calculations make clear, the education savings accounts 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 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.

4.3 Calculation of Returns Net of Income Taxes - All Income Groups

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 (household income of $35,000) to the

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

[21] 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.

highest (household income of over $335,000). 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 4, 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 $773 in principal, compared to $572 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. The highest-income household earns an after-tax return of $728 on its pretax savings of $1,000, while the lowest-income household earns 2.4 times as much, or $1,735.

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 top two income groups do not qualify for the ESA but do 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 70 percent higher than funds held in a non-advantaged account. For those in the lowest bracket, the proportional increases are much lower: the return on a 529 with an upfront deduction is 26 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 26 percent higher than that on a non-advantaged account. For an initial pretax investment of $1,000, this translates into an additional return of $291 to $453. At the top of the income distribution, the new accounts offer after-tax returns 70 to 91 percent higher than that on a non-advantaged account. For an initial pretax investment of $1,000, this translates into an additional return of $511 to $663.

5. The Treatment of Assets by the Aid System

This section turns to the financial aid system I first discuss in general terms the aspects of aid determination that affect net returns to savings. Next, I calculate aid taxes on various savings vehicles. Finally, I examine the types of families that are affected by the aid taxes I have calculated. [22]

5.1 Overview of The Aid Determination Process

The federal government distributes need-based aid according to a formula called the Federal Methodology, which I describe in this section. Most schools use the same formula when distributing their own need-based aid. Eighty-seven percent of four-year public school schools, and 57 percent of four-year

[22] An earlier version of this paper was presented at the IRS Research Conference in June 2003. Calculations in this section diverge slightly from that draft, for three reasons. First, this paper allows assets to continue to gain value while the student is in college. This increases the value of the tax-advantaged vehicles, since such accruals are shielded from taxation by both the aid system and income tax system. Second, withdrawals from retirement vehicles are taxed by the aid system in the present calculations; this tax was incorrectly omitted in the earlier draft. Third, marginal aid tax rates on income are used in the calculations, rather than average taxes, thereby making the calculation of the aid tax on income consistent with that of the aid tax on assets.

private schools, use the Federal Methodology to distribute need-based institutional grants.[23] The aid determination process I describe here is that used for dependent students in academic year 2002-2003.[24]

Families applying for aid fill out the Free Application for Federal Student Aid (FAFSA), which collects detailed information on family income, assets and expenses.. Financial data from the FAFSA is put through an algorithm that calculates the expected contribution of the family (EFC) and of the student toward schooling costs. If the sum of the expected contributions from the family and student is less than anticipated schooling costs, the student is aid-eligible. It is in the calculation of the expected contribution that savings are taxed, in that both assets and asset income are considered resources for paying for college.

The resources of the family and the student are considered separately, with different tax rates applied to each. I start with the family's expected contribution. In the calculation of the family's contribution, the algorithm sums parental income from all sources. Asset income, in the form of dividends, interest, and capital gains, is included. In particular, the earnings portion of any withdrawal from an asset account will be counted as income by the aid formula. After summing income, the aid algorithm subtracts off allowable expenses, including taxes, an allowance based on family size, tuition paid for primary and secondary school, and unusually high medical costs.

To this net income figure is added twelve percent of certain family assets. From the perspective of the aid system, assets fall into three categories. A first class of assets, notably home equity, pensions, and other retirement vehicles, is completely sheltered from consideration by the aid formula. These assets are not considered available for college expenses and their aid tax rate is therefore zero. A second class of assets, including 529 savings accounts and ESAs, is considered fully available for college expenses. The first dollar of these assets is taxed. A final class consists of any assets that do not fall into these first two

[23] National Association of Student Financial Aid Administrators and the College Board (2002).

[24] In the past, students gamed their dependency status, since for an independent student family income is not counted in the need determination process, Today, almost all college-age students are considered dependents, as rule changes have made it much more difficult for a young person to declare themselves independent.

categories. These assets are partially sheltered from consideration by an asset protection allowance. Each family is allowed a certain level of savings, based on the age of the oldest parent; the assumption is that older parents need a higher level of saving for their approaching retirement. Below this allowance, assets in this class are assumed to be unavailable for schooling costs. The highest allowance is $70,000; for a family in which the oldest parent is 50, the allowance is $44,000. Above the allowance, twelve percent of assets is added to the net income figure.

The resulting weighted sum of income, expenses and assets is the family's "adjusted available income" (AAI). A progressive tax schedule, with rates ranging from 22 percent to 47 percent, is applied to AAI to determine the expected family contribution (EFC). The tax schedule is quite steep: an AAI of $11,000 is marginally taxed at 22 percent, while the schedule tops out at an AAI of $24,000, which is marginally taxed at 47 percent. In the calculation of aid taxes, I assume that families are at the top of this schedule.

The expected contribution of the student is calculated analogously to the process just described, with fewer protections for income and assets. All student income above $1,750 is assumed available for college and is taxed at a rate of 50 percent. There is no asset protection allowance for students. For each year of college, students are expected to contribute 35 percent of their assets.

5.2 The Taxation of Assets and Asset Income in the Aid Determination Process

Assets are taxed twice in the process just described, since both asset balances and asset income are considered available for college expenses. I will first describe the tax on an asset balance. Consider an entering freshman whose parents have $45,000 in financial assets that are not held in retirement accounts or college savings plans. These assets fall into the third category described above, and so are partially sheltered by the asset protection allowance. Assuming the older parent is 50, $44,000 is protected from consideration by the aid formula and $1,000 is subject to taxation. Twelve percent of the $1,000 is added to adjusted available income, which is then taxed at 47 percent, and so 5.74 (=0.12 x 0.47) percent of the $1,000 is considered available for the first year of college.

If the child goes to college for just one year, this 5.74 percent is the (marginal) aid tax on asset balances (τ_a) for this family.[25] However, if the child goes on for another year of college, the asset balance is again taxed at the 5.74 percent rate. The total aid tax on an asset balance is therefore a function of the annual tax rate on the asset balance (t_a) and the number of years spent in college. If a family draws down an equal share of the initial asset balance for each year of college, and we assume no asset earnings once the child enters college, we can summarize the aid tax on the asset balance as:

$$\tau_a = \sum_{t=1}^{T} \frac{t}{T} t_a$$

Say the freshmen we are considering ends up spending four years in college, drawing down equal increments of the asset per year for expenses. For this family, the aid tax rate on the asset balance is:

$$\tau_a = \sum_{t=1}^{4} \frac{t}{4} t_a = \frac{5}{2} 0.0564 = 0.141$$

or 14.1 percent.[26]

The asset balance tax just described is that on a parental asset. Some savings are considered assets of the child in the calculation of aid eligibility, which changes the tax rate. The second column of Table 6 shows the annual aid tax on asset balances for the savings vehicles we have been considering throughout the paper. A 529 savings plan is treated as an asset of the parent in the determination of the aid tax on asset balances, and is taxed at the 5.64 percent rate. Balances in retirement vehicles are completely protected from the aid tax on asset balances.

An ESA is considered by the aid system to be owned by the potential student, as is a UTMA or any other asset in the child's name. For such assets, the relevant annual tax rate on asset balances is 35 percent, rather than 5.64 percent. Further, the first dollar of such assets is taxed, as there is no asset

[25] Since $44,000 is sheltered from taxation, the marginal tax is obviously higher than the average tax. All of the calculations of the paper will be of marginal taxes.

[26] This is an underestimate of this tax, as we have not allowed the asset to grow while the child is in college. In the main calculations of the paper, I will allow the asset to grow in value during college.

protection allowance for the student. For such an asset, both the average and marginal tax over four years of college is 87.5 percent:

$$\tau_a = \sum_{t=1}^{4} \frac{t}{4} t_a = \frac{5}{2} 0.35 = 0.875$$

As the table and these calculations make clear, the aid tax on asset balances varies widely across savings vehicles.

I next describe the aid tax on asset earnings. Asset income is taxed only if it is realized during a year whose income is considered in the determination of aid. Asset income is assessed with a one-year lag, since it is based on income reported on the previous year's 1040. Freshman-year aid, for example, is based on the FAFSA filed when the student was a high school senior. This FAFSA will contain tax return data on asset income for the calendar year that spans the spring of the junior year and fall of the senior year of high school. Any earnings received during that period will count as income in the determination of aid for freshman year. These earnings might take the form of interest, dividends or capital gains realizations stemming from the sale of stock or liquidation of a mutual fund.

Note that in any account that has been building value for 18 years a substantial portion of the balance will consist of unrealized gains. As the account is drawn down for college, these earnings will be realized and taxed by the aid formula. In a non-advantaged account, given the investment scenario we have been assuming throughout the paper, unrealized gains will represent about 55 percent of account value. When withdrawals are made to pay for college, then, 55 percent of each withdrawal will be treated as income.

Any income taxes paid in a given year offset the income taxed by the aid formula. For example, interest earned in a non-advantaged account will be taxed by the state and federal governments. Interest adds to adjusted available income, and taxes paid on the interest subtract from it. The aid tax is therefore on earnings net of any income taxes paid on those earnings.

The last two columns of Table 6 show the tax on asset earnings for the different savings vehicles. I separately show the tax rate on earnings accruals and on withdrawals.

For the 529 and ESA, earnings are not taxed by the income tax system as they accrue, nor are they taxed by the aid system. The earnings portion of withdrawals from the 529 and ESA are taxed at 50 percent, the student's aid tax rate on income. For the Roth and Traditional IRA, earnings are not taxed by the income system as they accrue, nor are they taxed by the aid system. For both IRAs, the entirety of any withdrawal is treated as income and is taxed at the parents' rate of 47 percent. However, any income taxes paid on these withdrawals reduce the amount of income that goes into the aid formula.[27] Since the net-of-income-tax withdrawals are the same for the two IRAs, the aid tax on the two is also identical.[28]

5.3 Returns Net of Income Taxes and Aid Taxes

Table 7 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.[29] 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 7 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 not shown for the top three tax brackets, in which I assume household income is sufficiently high (above $150,000) that the child is beyond the margin of eligibility of financial aid at even the most expensive institutions.

[27] Personal communication with Anthony Jones, US Department of Education. Also see Chapter 6 of the 2003-2004 Federal Student Aid Handbook, which contains the worksheets that detail the treatment various assets and income.

[28] As discussed earlier, I assume that marginal tax rates do not change between the time that funds are deposited in an IRA and when they are withdrawn. Under these assumptions, the after-income-tax returns on the Roth and Traditional IRAs are identical.

[29] 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.

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 savings vehicles. When we consider only income taxes, an aid-marginal family with taxable income of $50,000 that puts $1,000 pretax dollars in an ESA nets a return of $1,808. This return is 22 percent higher than if the funds were invested in a non-advantaged account (see Table 4). 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 -$1,194. This family loses all principal and all earnings, plus an additional $194, 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 160 percent for the family with $35,000 of income to 172 percent for the family with $100,000 of income. A similar story holds for the UTMA, with the aid tax on returns ranging from 178 to 194 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 63 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.

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 55 percent. A family with $50,000 in household income that is on the margin of aid receipt will, after income and aid taxes, net $844 on its $1,000 pretax savings in an IRA. The

comparable figure for the 529 with a deduction is $816 and for a 529 without a deduction is $714. A non-advantaged account will yield $490, an ESA -$1,194 and a UTMA -$1,391.

6. Discussion

The intent of the savings incentives is to increase saving by increasing net returns. The intent of the aid system is to give less aid to those with higher income and assets. These two sets of policies will inevitably work at cross-purposes, as the aid system attempts to tax away any increase in assets and income that the savings incentives create. Unless assets and asset income are completely disregarded, asset returns for aid-marginal families will be reduced by the aid determination process. Given this constraint, we can aim to make the aid tax as non-arbitrary as possible. Here, I discuss the results of the paper's analysis in the context of this goal.

6.1 Asset Taxes Greater Than 100 percent

It is difficult to infer any reasonable policy goal that is consistent with the aid system's treatment of the Coverdell and of assets held in the name of the student. Funds in these vehicles face income and aid taxes that sum to well over 100 percent. The paper's simulations show that a middle-income family that puts $1,000 into a Coverdell loses all of the principal and earnings, *plus an additional $194*, to income and aid taxes. A family that puts funds into the name of the student is even worse off, losing principal and earnings, plus an additional $391.

Fully taxing away principal and earnings—a tax of 100 percent – is consistent with a very strict, narrow formulation of need: at the time of college attendance, it puts a saving family in the same position vis-à-vis the aid system as a non-saving family.[30] However, taxing away *more than* principal and earnings is certainly not consistent with this strict formulation of need, as it places the saving family in a worse-off

[30] The saving family has forgone consumption in order to save, and so is worse off in a lifetime sense than if it had not saved at all when principal and earnings are fully taxed away. Edlin (1997) discusses this and other aspects of the equity of the aid tax.

position than the non-saving family, by thousands of dollars if they save at the rate recommended by financial counselors.

6.2 Sharply Differing Tax Rates on Parents' and Student's Assets

The differing treatment of assets held by the parent and the student has a very large impact on aid received and net returns, as is shown in Figure 5. This operates counter to the aid system's goal of treating equally families with equal resources, as two families with the same asset levels will face vastly divergent tax rates depending on whose name is on the account. A middle-income family (income of $50,000) that puts funds in the child's name in a UTMA yields a small income tax advantage – a nine percent increase in the lifetime return (*not* annualized return), as shown in Table 4. For a family that deposits $1,000of pretax income in an account and leaves it to accrue for 18 years, this translates into a savings of $133. However, the aid tax more than erases this small gain from gaming the income tax system. Once we consider both the income tax *and* the aid tax, this family *loses* $1,881 by having the funds in a UTMA rather than in the parent's name (netting a return of -$1,391 vs. $490, see Column 2 of Table 7). Further, they end up with far less than they would have had they not saved at all, having lost their principal, their earnings and an additional $391.

A workable alternative that treats equally families with equal resources is to pool all financial assets of the parents and student – regular accounts, Coverdell, 529s, UGMAs, retirement assets, home equity – and tax them uniformly in the aid determination process. Under such a system, the aid tax rate on assets would be the same for parent and child, and the same across savings vehicles. A uniform aid tax would also involve a single asset protection allowance that covers all of these resources. Currently, UTMAs, 529 and Coverdells are subject to no asset protection. Unifying assets in this way would eliminate the enormous differences in the aid on the different savings vehicles, and thereby reduce the deadweight loss caused by families shifting assets in order to avoid the aid tax.

7. Conclusion

This paper has examined the income tax code's most recent experimentation with education policy, in the form of the Coverdell Education Savings Account and the 529 savings plans. Tax incentives for college saving were designed to increase savings by increasing after-tax returns. From the narrow perspective of the income tax code, they have succeeded in increasing after-tax returns. But if we broaden our perspective to include the interaction of the new tax incentives with existing educational policy – in the form of the financial aid system – these policies are a failure. Families that save for college are potentially subject to taxation not only by federal and state taxing authorities, but also by the federal, state and college financial aid systems. As I have shown, the aid tax on savings can extend well up the income distribution, as fairly well-off families can qualify for aid at expensive private institutions.

For families caught at in the crossfire between aid policy and tax policy, the impact on the bottom line is not pretty. A family that heeds advice to save for college in one of the new college savings vehicles can find itself far worse off than if it had simply placed funds in a non-advantaged account in the parents' name. Further, those who put funds in a Coverdell can find themselves worse off than if they had not saved at all. These perverse outcomes indicate that greater attention to the interaction of aid and taxes is required if the tax code is to succeed as an instrument for education policy.

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Table 1
Need-Based Aid Receipt, by Income
Dependent Full-Time Undergraduates, Academic Year 1999-2000

		Household Income			
		<$40,000	$40,000-70,000	$70,000-100,000	$100,000+
Any Need-Based Aid	*Received*	79%	53%	32%	18%
	Mean if > 0	$6,904	$5,998	$5,288	$4,884
Pell Grant	*Received*	63%	8%	0%	0%
	Mean if > 0	$2,290	$1,115	-	-
School Need-Based Grant	*Received*	25%	21%	16%	11%
	Mean if > 0	$4,034	$5,047	$4,695	$4,591
Subsidized Stafford Loan	*Received*	46%	41%	23%	9%
	Mean if > 0	$3,466	$3,218	$3,127	$3,227

Note: Data are from NPSAS 2000.

Table 2
Marginal Tax Rates Used in Calculations

Household Income	Earned Income			Capital Gains		Interest Income	
	Federal	*State*	*FICA*	*Federal*	*State*	*Federal*	*State*
$35,000	10%	5.65%	7.65%	5%	4.83%	10%	5.65%
$50,000	15%	6.29%	7.65%	5%	5.22%	15%	6.29%
$100,000	25%	6.43%	1.45%	15%	5.61%	25%	6.43%
$150,000	28%	6.38%	1.45%	15%	5.48%	28%	6.38%
$200,000	33%	6.40%	1.45%	15%	5.56%	33%	6.40%
$335,000+	35%	5.08%	1.45%	15%	4.41%	35%	5.08%

Notes: Federal rates are 2003 bracket rates. State rates are average of effective 2002 marginal rates calculated from NBER TAXSIM. State averages taken across states that have an income tax.

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		
$35K	$1,735	1.00
$50K	$1,485	1.00
$100K	$1,113	1.00
$150K	$987	1.00
$200K	$803	1.00
$335K+	$728	1.00
UTMA		
$35K	$1,824	1.05
$50K	$1,618	1.09
$100K	$1,453	1.31
$150K	$1,338	1.36
$200K	$1,157	1.44
$335K+	$1,084	1.49
529 Plan (Deduction)		
$35K	$2,188	1.26
$50K	$1,976	1.33
$100K	$1,811	1.63
$150K	$1,683	1.71
$200K	$1,475	1.84
$335K+	$1,391	1.91
529 Plan (No Deduction)		
$35K	$2,026	1.17
$50K	$1,808	1.22
$100K	$1,634	1.47
$150K	$1,511	1.53
$200K	$1,317	1.64
$335K+	$1,238	1.70
ESA		
$35K	$2,026	1.17
$50K	$1,808	1.22
$100K	$1,634	1.47
$150K	$1,511	1.53
$200K	$1,317	1.64
$335K+	$1,238	1.70
Roth IRA		
$35K	$2,026	1.17
$50K	$1,808	1.22
$100K	$1,634	1.47
$150K	$1,511	1.53
$200K	$1,317	1.64
$335K+	$1,238	1.70
Traditional IRA		
$35K	$2,026	1.17
$50K	$1,808	1.22
$100K	$1,634	1.47
$150K	$1,511	1.53
$200K	$1,317	1.64
$335K+	$1,238	1.70

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.

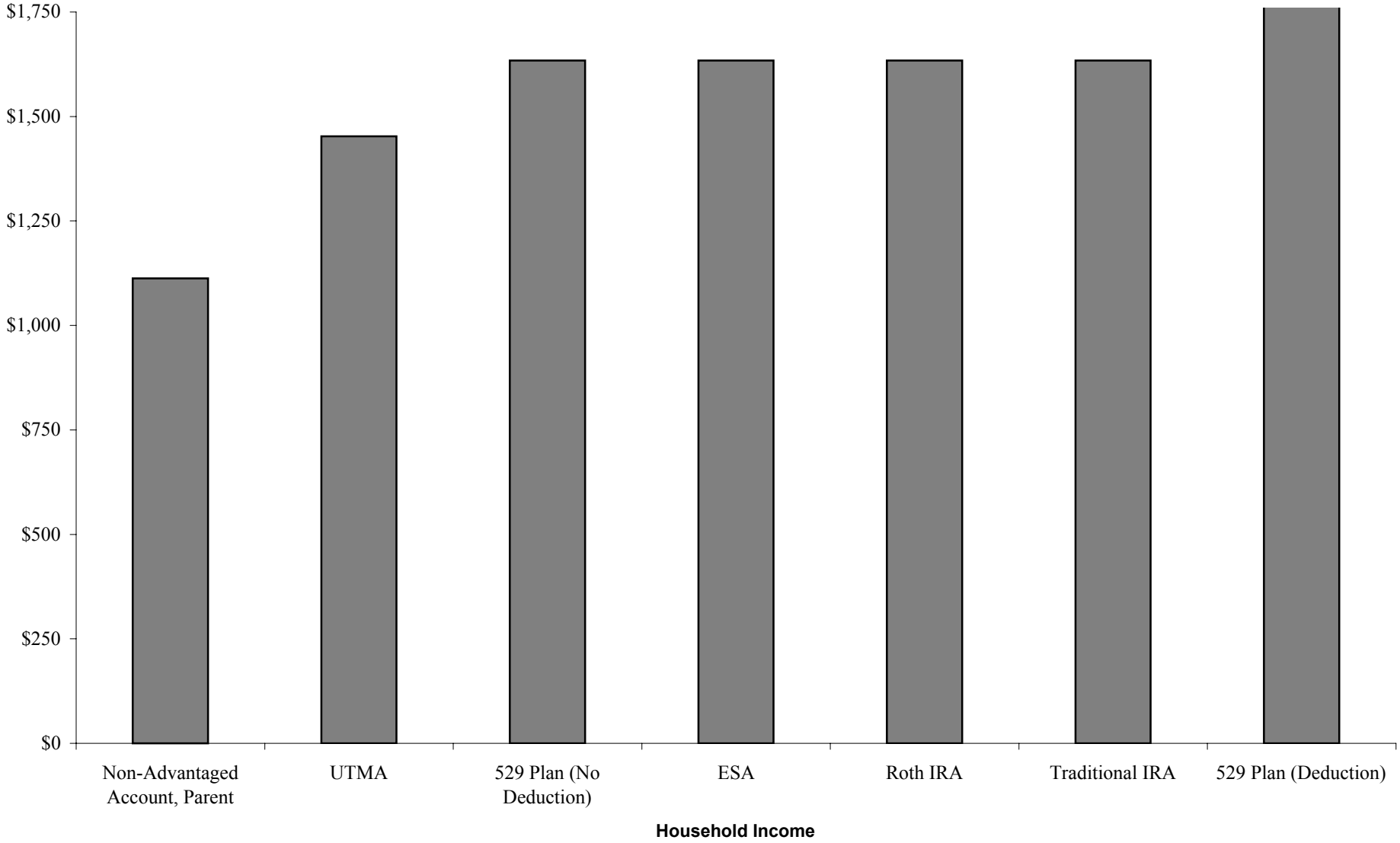
Table 6
Aid Tax on College Saving Alternatives

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 7
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				
$35K	$1,735	$635	43%	63%
$50K	$1,485	$490	43%	67%
$100K	$1,113	$267	40%	76%
$150K	$987			
$200K	$803	-	-	-
$335K+	$728	-	-	-
UTMA				
$35K	$1,824	-$1,422	124%	178%
$50K	$1,618	-$1,391	124%	186%
$100K	$1,453	-$1,366	124%	194%
$150K	$1,338			
$200K	$1,157	-	-	-
$335K+	$1,084	-	-	-
529 Plan (Deduction)				
$35K	$2,188	$946	44%	57%
$50K	$1,976	$816	44%	59%
$100K	$1,811	$716	44%	60%
$150K	$1,683			
$200K	$1,475	-	-	-
$335K+	$1,391	-	-	-
529 Plan (No Deduction)				
$35K	$2,026	$847	44%	58%
$50K	$1,808	$714	44%	61%
$100K	$1,634	$608	44%	63%
$150K	$1,511			
$200K	$1,317	-	-	-
$335K+	$1,238	-	-	-
ESA				
$35K	$2,026	-$1,209	122%	160%
$50K	$1,808	-$1,194	122%	166%
$100K	$1,634	-$1,182	122%	172%
$150K	$1,511			
$200K	$1,317	-	-	-
$335K+	$1,238	-	-	-
Roth IRA				
$35K	$2,026	$987	39%	51%
$50K	$1,808	$844	39%	53%
$100K	$1,634	$730	39%	55%
$150K	$1,511			
$200K	$1,317	-	-	-
$335K+	$1,238	-	-	-
Traditional IRA				
$35K	$2,026	$987	33%	51%
$50K	$1,808	$844	31%	53%
$100K	$1,634	$730	27%	55%
$150K	$1,511			
$200K	$1,317	-	-	-
$335K+	$1,238	-	-	-

Figure 1:
After-Tax Return to College Savings Options
nominal return to $1,000 of pretax savings, household taxable income of $100,000



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

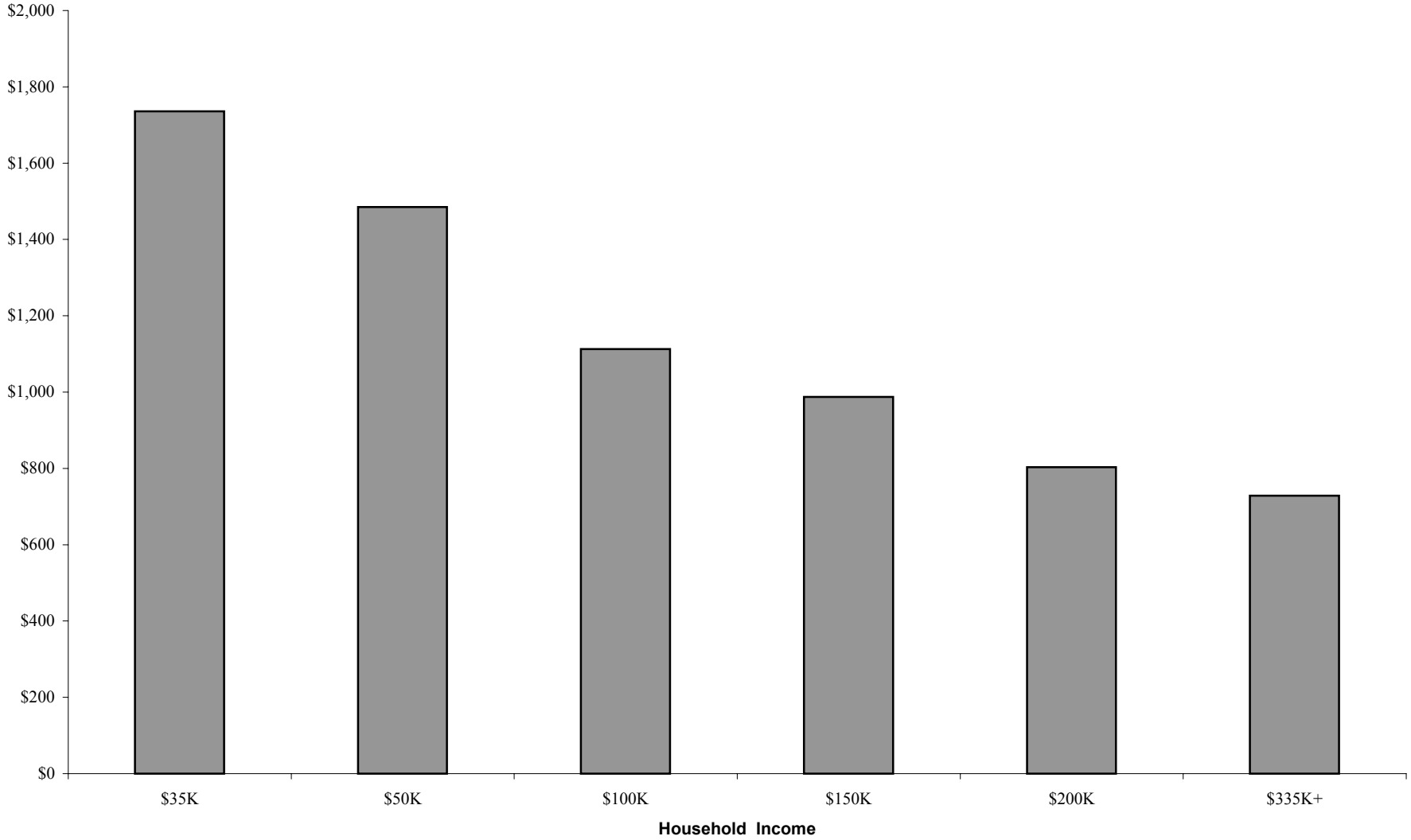
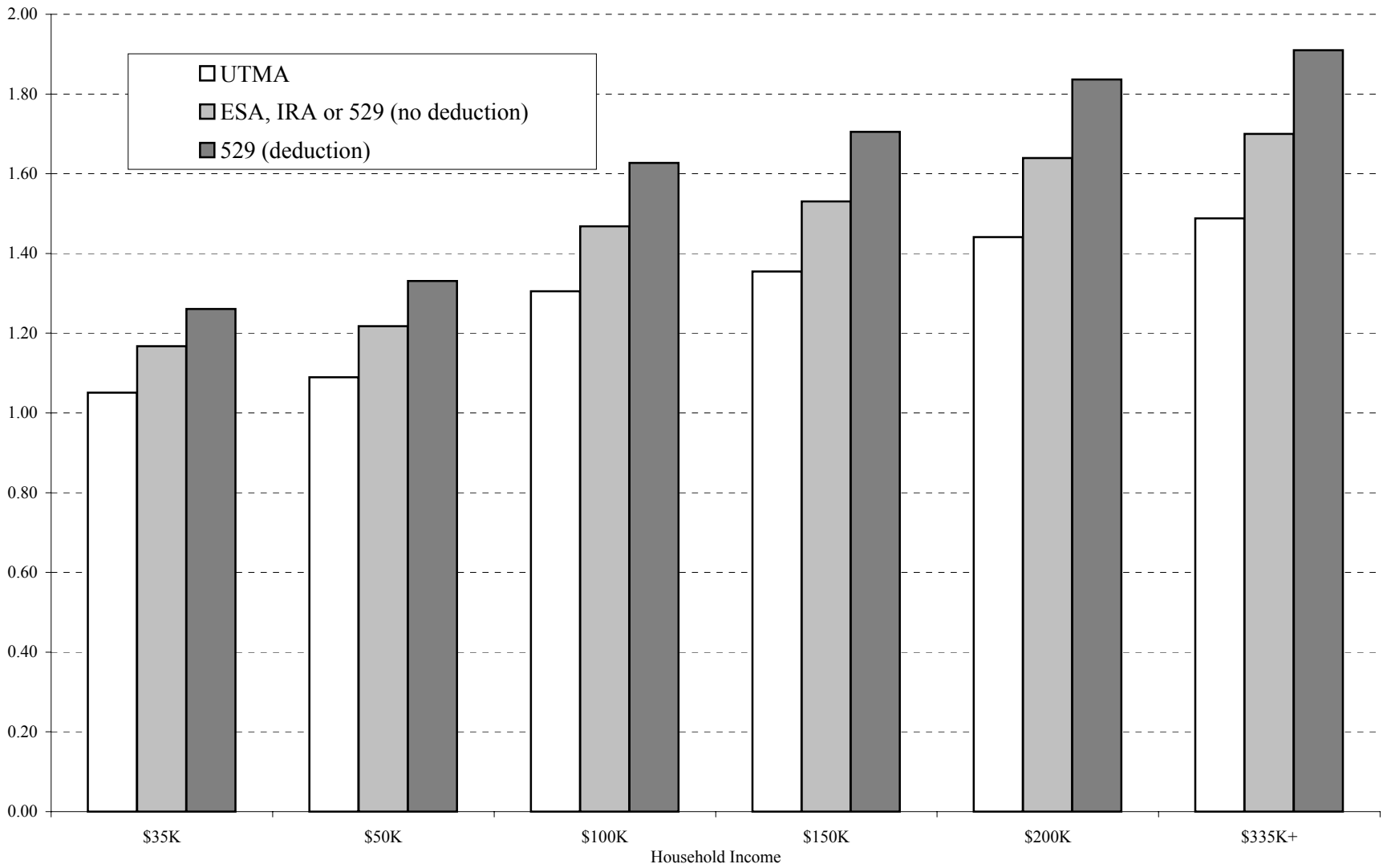
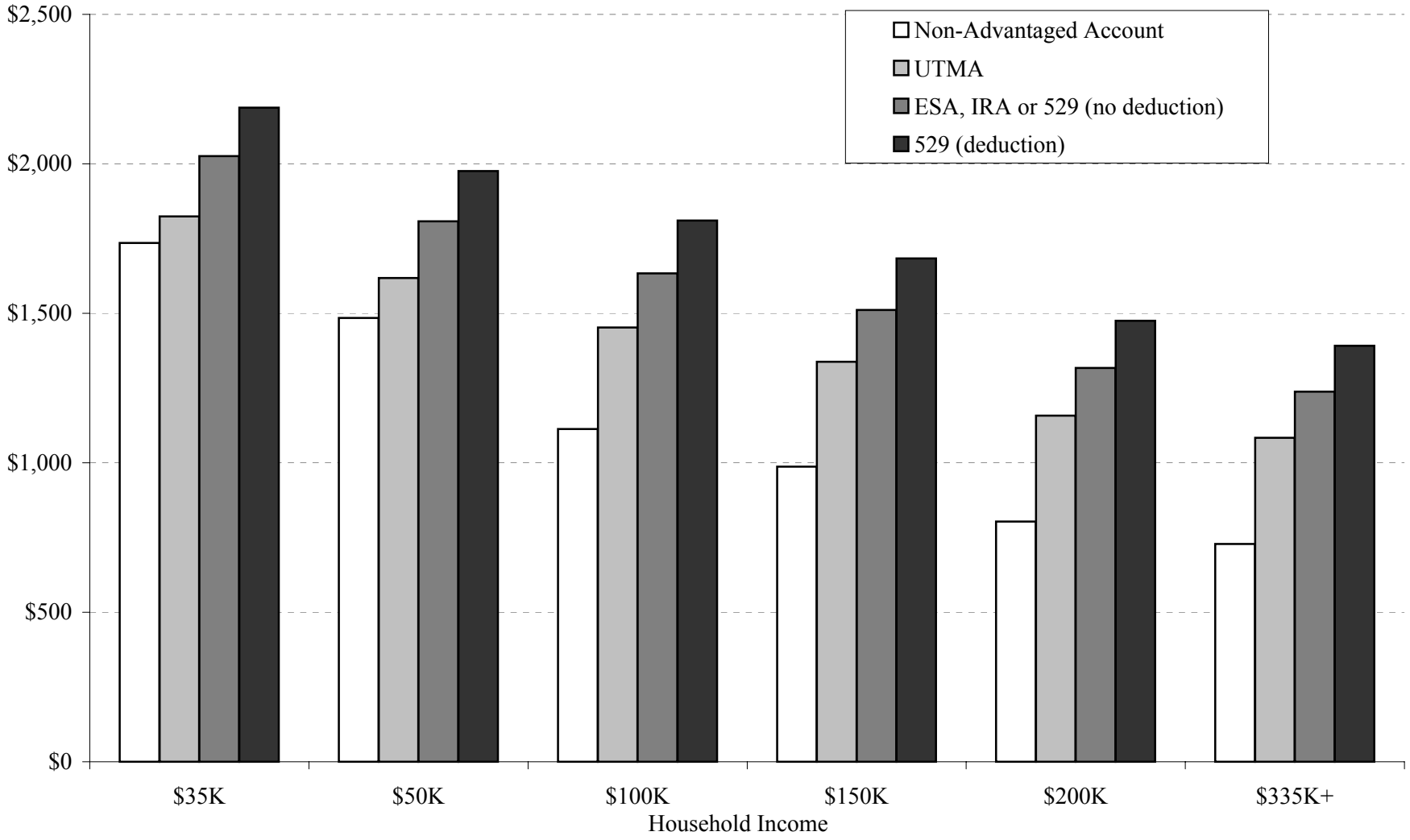


Figure 3:
After-Tax Return to College Saving Options
Relative to Non-Advantaged Account Held in Name of Parent



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