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Saving for College: A Comparison of Section 529 Plans with Other Options

Saving for college is a very important and challenging task for many American families. In this *Research Dialogue*, Jennifer Ma and Douglas Fore of the TIAA-CREF Institute describe and discuss the features of tax-favored Section 529 plans and compare saving through these plans with other options, including UGMA accounts, Series EE and I savings bonds, tax-favored retirement accounts, Education IRAs, and after-tax mutual funds. The authors also provide several numeric simulations of asset accumulations for Section 529 plans, mutual funds, and Series I savings bonds. Given some reasonable assumptions about rates of return, taxes and expenses, accumulations in Section 529 plans exceed those in comparable after-tax mutual funds. Final asset accumulations in Section 529 plans also exceed those in Series I bonds in many situations.

in this issue

INTRODUCTION

College prices have been rising at a pace faster than that of the consumer price index and median family income. According to the College Board, college tuition inflation in the past decade averaged approximately 6 percent per year, while general price inflation averaged only 3 percent. For the 2000–2001 academic year, the average tuition charged by public and private four-year colleges and universities was $3,510 (in-state) and $16,332, respectively. For the same year, the average room and board cost for the two types of institutions was $4,960 and $6,209, respectively.[1] Assuming a 5 percent college price inflation rate into the future, the average price (tuition and room and board) of a four-year education at a four-year private higher education institution for a student enrolling ten years from now could be over $150,000, and the average price of a four-year education at a public institution could be nearly $60,000.

In support of saving for college, the federal government has expanded tax incentives intended to encourage families to save for college expenses. These incentives include the introduction of tax-favored qualified state-sponsored tuition plans (also called Section 529 plans) and the Education IRA, and the elimination of a penalty on early IRA withdrawals for higher education expenses. In addition to these incentives, families can also save with Uniform Gift to Minors Act (UGMA) accounts, traditional mutual funds, and tax-favored Series EE and I bonds.

While a majority of families recognize the importance of a college education for their children, many are not financially prepared for it. According to the 1998 *Survey of Consumer Finances*, the median value of total financial assets for families with children was only $12,900, and only 36 percent of families with children under 18 saved in 1998 (Stiglitz, Tyson, Orszag, and Orszag, 2000). Note that these assets include any retirement assets that the family may have. A recent national parents poll indicated that while 87 percent of parents reported having saved for college expenses, only eight percent reported having saved at least half of anticipated college expenses. Nearly half of the respondents reported having saved one tenth or less of anticipated expenses.[2] Although parents and students may expect to pay part of college expenses from their current income (especially when students attend relatively low-cost state colleges), this level of college savings seems insufficient to finance even the most modest college expenses.

Saving for college has a specific target, which is to meet the cost of future college expenses. In terms of achieving this goal, different savings strategies have their own strengths and weaknesses. In this paper, we discuss the features of Section 529 plans and compare these plans with some other strategies to save for college. More specifically, we describe several of the ways in which families can save for college, and present a set of simulations comparing potential accumulations over various time horizons using Section 529 plans, mutual funds, and Series I savings bonds.

WAYS TO SAVE FOR COLLEGE

There are several savings vehicles families may use to achieve their educational savings goals. These vehicles differ in several dimensions, including investment strategies, risk involved, contribution limits, tax treatment, and financial aid implications. Families may find some vehicles more suited to their savings needs than others, based on their own risk tolerance and financial situation. Families may also find it desirable to use a combination of these vehicles.

A discussion of the features of each of these savings vehicles follows. Table 1 provides a comparison chart that summarizes the main features.

Section 529 Plans

There are in general two types of 529 plans: tuition savings plans and prepaid tuition plans. A tuition savings plan is an investment program that offers certain tax advantages. Most existing tuition savings plans invest in a combination of stocks, bonds, and money market securities. Prepaid tuition plans also offer tax advantages and usually allow the plan purchaser to buy future tuition credits at today's price, sometimes at a discount.

Although the first prepaid tuition plan (Michigan Education Trust) was introduced in 1988, it was not until 1996 that Section 529 was added to the Internal Revenue Code (IRC) to clarify the federal tax treatment of qualified state-sponsored tuition plans. In 1997, substantial changes were made to Section 529 as part of the Taxpayer Relief Act of 1997. Since then, Section 529 plans have flourished. As of August 2000, there were approximately 1.4 million accounts with a total asset value of $7.6 billion across all plans. As of January

Table 1: A Comparison of Several Ways to Save for College

	① Section 529 Plans	② Series EE and I Savings Bonds	③ Education IRA	④ Classic and Roth IRAs	⑤ Borrowing from 401(k)	⑥ UGMA	⑦ Mutual Funds
Tax Benefits	Earnings federal and state income tax deferred and taxed at the beneficiary's rate upon withdrawal, if used for qualified higher education expenses.	Earnings state and local income tax exempt, federal income tax deferred. For qualified taxpayers, earnings fully or partially excludable from federal income tax, if used for qualified higher education expenses.	Earnings exempt from federal income tax, if used for qualified higher education expenses.	Classic IRA may be tax-deductible and entire proceeds taxed at the owner's rate. Earnings on Roth IRA tax-exempt if taken out after the owner turns 59 1/2.	No special tax benefits.	When child is under 14, first $750 of unearned income is tax exempt, next $750 taxed at the child's rate, the rest at parents' rate. After child turns 14, all earnings taxed at the child's rate.	No special tax benefits.
How Much Can Be Invested?	Varies by state. Currently, the highest lifetime account balance limit is $246,000.	Up to $30,000/ $15,000 per year for I /EE bonds.	Up to $500 per year.	Up to $2,000 per year.	The lesser of $50,000 or half of vested amount can be borrowed.	No limit.	No limit.
Qualified Expenses	Tuition, fees, books, supplies, room and board, and equipment.	Tuition and fees only.	Same as ①.	Same as ①.	Any expense.	Any expense.	Any expense.
Financial Aid Treatment	Savings plans: parents' assets, prepaid plans may reduce aid dollar-for-dollar.	Parents' assets if education expenses are for a child. Student's assets if education expenses are for oneself.	Student's assets.	Not considered in the EFC calculation.	Same as ④.	Student's assets.	Parents' assets.
Who Makes Investment Decision?	State sponsor with input from program manager.	Guaranteed returns.	Owner.	Owner.	Owner.	Custodian before the child turns 18 or 21; after that, the child.	Owner.
Income Restriction?	No.	No.	Yes.	Yes.	No.	No.	No.
Impact on Education Tax Credits?	No.	Yes.	Yes.	No.	No.	No.	No.
Flexibility	Earnings on non-qualified withdrawals taxed at owner's rate plus a minimum of 10% penalty.	Can be redeemed after 6 months. A 3-month earnings penalty applies to redemption within 5 years of issuance.	Earnings on non-qualified withdrawals taxed at owner's rate. 10% penalty on earnings.	No penalty on early withdrawals if used for higher education expenses. For Roth IRAs, earnings of early withdrawals taxed at the owner's rate.	Money can be borrowed almost anytime for any purpose.	Money can be withdrawn anytime for the benefit of the child.	Money can be withdrawn anytime for any purpose.

2001, forty-three states have a savings plan either in operation or to be launched in the near future. Twenty-two states have a prepaid plan either in operation or to be launched.[3]

Section 529 plans offer federal and state tax deferral on earnings, professional management of investments, and generous savings limits. Most existing tuition savings plans allow a lifetime contribution or account balance limit of over $100,000. In some plans, the allowable account balance limits exceed $200,000.[4] Summary tables describing existing savings and prepaid plans can be found at www.tiaa-crefinstitute.org.

Tax Treatment and Issues

Section 529 plans offer many tax advantages. Earnings grow tax-free until money is withdrawn. When withdrawals are made for qualified higher education expenses, the earnings portion is considered the beneficiary's income, and therefore taxed at the beneficiary's rate, which is likely to be lower than the rate faced by the owner of the account.[5] Some states provide additional tax benefits. Nearly half of the existing plans allow earnings of qualified withdrawals to be exempt from state income tax, and a few states offer state income tax deductions for contributions.

Section 529 plans may also be a useful estate planning tool. Anyone can contribute up to $10,000 per year without triggering gift tax, assuming they do not give any other gifts to the beneficiary in the same year. A special provision allows the account owner to contribute up to $50,000 in one year and treat the amount as being given pro rata over five years. Unlike an irrevocable gift, the account owner maintains the ownership of the account under Section 529 plans.[6]

In addition, Section 529 plans are very flexible. There is no income restriction. Anyone in any income bracket can contribute. Funds may be used for qualified higher education expenses at any eligible higher education institution in the nation and at some schools abroad. Qualified expenses include tuition, fees, books, supplies, certain room and board expenses,[7] and equipment required for enrollment or attendance at an eligible undergraduate, graduate, or professional institution of higher education, or any approved vocational/technical school. Eligible post-secondary institutions include those that are accredited and are eligible to participate in student aid programs administered by the Department of Education. Lastly, funds in these plans will not affect a family's eligibility for federal education tax credits such as the Hope Scholarship Credit and the Lifetime Learning Credit.

Investment Strategy

Tuition savings plans and prepaid tuition plans have different investment strategies that appeal to different types of investors. In general, savings plans are a collection of investments, and the performance of a plan depends on the investment returns. These plans may appeal to those investors who are willing to take some investment risk for potentially higher returns. Some tuition savings plans also offer conservative options that invest mostly in money market securities and provide a guaranteed rate of return.

Section 529 of the IRC provides that investors may not direct the investment of contributions to, or earnings under, the plan. However, where the plan allows, investors may choose from several investment options when establishing an account. Further, investors may change the percentage of new contributions going into each investment option. Among existing Section 529 savings plans, the most common investment option is an age-based allocation strategy, which has a relatively high exposure to stocks when the beneficiary is young and reduces the exposure to stocks as the beneficiary gets closer to the college enrollment date. Some states have introduced other investment options, such as all-equity and all-fixed-income options from which investors may choose when opening an account.

The age-based allocation strategy generally employed by Section 529 savings plans is intended to achieve investment returns at a rate higher than the rate of increases in the costs of college over a certain investment period.[8] A major element of the strategy is that it is designed to minimize the probability of large negative shocks to assets in the plan as the designated beneficiary of the account moves closer to enrollment. Consequently, at longer time horizons the portfolio contains a higher equity weighting to take advantage of the historically higher returns derived from holding stocks. As the time horizon shortens, the equity weighting falls and the weighting of fixed-income securities rises. In the last year or two before the funds are to be accessed for college, a high percentage of the portfolio is invested in money market securities. The age-based allocation is a conservative strategy designed, in part, to prevent negative shocks in the years just before college.

The age-based allocation strategy is designed to reap investment returns large enough to offset expected tuition inflation while minimizing the probability of large negative shocks. The strategy is based in part on an analysis of historical data on tuition inflation and returns on stocks, bonds, and money market securities. It should be noted, of course, that future returns for these asset classes are not guaranteed. Like any other strategy that invests in market-based assets, it is possible that this strategy may not outpace tuition inflation.

By locking in today's tuition price, prepaid tuition plans generally aim to keep up with the tuition inflation in the state, although several states offer prepaid contracts that reflect a discount from current tuition costs. The discount implicitly gives a modest, but guaranteed, rate of return to the contract holder. The guaranteed return may be particularly appealing to risk averse investors who are not willing to take investment risk, and want to match tuition inflation increases.

Financial Aid Treatment and Other Issues

Besides investment features, prepaid and savings plans also differ in several other aspects. Prepaid tuition plans usually impose a residency requirement, while most savings plans allow anyone from any state to open an account. Most prepaid tuition plans also impose an age restriction on the beneficiary, while most savings plans do not. Most savings plans allow the beneficiary to be anyone, even oneself. Most prepaid tuition plans are targeted at undergraduate tuition costs, while most savings plans can be used for any qualified higher education cost at any accredited higher education institution.

Funds in both types of plans can be used to attend any accredited postsecondary institution. However, most prepaid tuition plans are tailored to in-state public colleges and universities. The refund procedures and provisions for those who attend an in-state private or an out-of-state school (i.e., a school that is not covered by the contract) can be complicated. In some prepaid plans, if the beneficiary decides to attend a school not covered by the contract, the transferable value of the prepaid contract is usually limited to the lesser of:
(1) an average of the in-state tuition and fees at participating public colleges and universities, or
(2) the actual tuition and fees charged by the school attended. Therefore, the value of the contract may be much higher if used within the system than if used outside the system. This makes prepaid plans most valuable to families that are more or less certain that the beneficiary will attend an in-state public institution. For other families, savings plans offer more flexibility.

Funds in Section 529 plans could affect a student's financial aid eligibility, especially federal need-based financial aid. According to the Department of Education, a student's eligibility for federal financial aid depends on two important factors: the cost of attendance (COA) and the student's expected family contribution (EFC). All else being equal, the higher the student's EFC, the less amount of financial aid for which they are eligible. In calculating a student's EFC, 5.6 percent of parents' assets, 35 percent of the student's assets, and 50 percent of the student's income are considered available to pay for college expenses.

In practice, funds in a prepaid tuition plan could reduce a student's financial need on a dollar-for-dollar basis. In the case of tuition savings plans, it is commonly believed that funds in these plans will be considered parents' assets (if the owner of the account is the beneficiary's parent) for financial aid purposes and thus assessed at a rate of 5.6 percent. If the owner is not the parent of the beneficiary, then the asset will not be considered in the EFC calculation.

Series EE and Series I Savings Bonds

Series EE and I savings bonds are issued by the U.S. Treasury and backed by the U.S. government. The effective term of these bonds is 30 years. There are several advantages of saving with these bonds. First, earnings can grow for up to 30 years and are tax-deferred over this period at the federal level and exempt from state and local income taxes. For qualified taxpayers, the "Education Bond Program" introduced in 1990 allows earnings on these bonds to be fully or partially excluded from federal income tax when the proceeds are used to pay for tuition and fees at an eligible postsecondary institution.[9] Second, these bonds offer generous savings limits. Investors can purchase up to $30,000 worth of I bonds and up to $15,000 worth of EE bonds per year. Third, these bonds are liquid and can be turned into cash any time after six months.[10]

The interest rate on I bonds is inflation-indexed and includes two parts: (1) a predetermined real interest rate that applies throughout the life span of the bonds, and (2) the inflation rate, which is announced semiannually to reflect the most recent Consumer Price Index. Because the tuition inflation rate is positively correlated with general price inflation, Series I bonds may provide some hedge against college price inflation. This makes Series I bonds appealing for investors who prefer a guaranteed real rate of return and the added benefit of inflation protection. In the case of Section 529 plans, most plans invest in a combination of equities and fixed-income securities. Because equities have historically had higher average returns than bonds, investment strategies with a high percentage of equities may potentially generate a higher rate of return and thus may have a higher probability of surpassing tuition inflation than bonds, albeit with more investment risk and higher volatility.

Series EE and I bonds provide excellent tax benefits for qualified taxpayers when proceeds are used for qualified higher education expenses. However, certain restrictions apply. To be specific, the bond owner must be at least 24 years of age when the bonds are purchased, and the modified gross income of the bond owner must be below a certain level when the bonds are redeemed. For 2000, the tax benefits phase out between $81,100 and $111,100 for joint taxpayers. For single taxpayers, the phase-out range is between $54,100 and $69,100. Because the income restriction applies to the income level of the bond owner at the time of the *redemption* (which may be many years into the future), some bond owners may not be able to take advantage of the favorable federal tax treatment if their income at the time of the redemption turns out to be higher than the limit. Further, "qualified expenses" include only tuition and fees and are reduced by the amount of tax-exempt scholarships, certain educational assistance, distributions from a 529 plan, and tax-free Education IRA distributions. The qualified expenses may be further reduced by the amount of expenses used to claim Hope and Lifetime Learning Tax Credits.[11] Finally, the educational expenses must be incurred in the same calendar year the bonds are redeemed, and the educational expenses must be for the owner, the spouse, or a dependent. Therefore, grandparents and other relatives may not take advantage of this tax benefit.

When proceeds are used to pay for the higher education expenses of a child, bonds are considered as parents' assets for financial aid purposes and assessed at a rate of 5.6 percent. When proceeds are used to pay for the higher education expenses of the owner or spouse, bonds are considered the student's assets and assessed at a rate of 35 percent.

Education IRA

The Education IRA was introduced as part of the Taxpayer Relief Act of 1997. An Education IRA is a trust or custodial account set up to pay the qualified higher education expenses for a designated beneficiary. Although contributions to Education IRAs are not tax-deductible, earnings are tax-exempt if withdrawals are used for qualified higher education expenses incurred in the same year. The federal tax exemption on earnings makes this strategy particularly attractive for qualified taxpayers who do not find the current $500 annual contribution limit overly restrictive. Some investors may also prefer Education IRAs because the investors can direct the investment of the account. However, the $500 annual contribution limit precludes this vehicle from playing a major role in financing college expenses.

In addition to its currently low annual contribution limit, there are several other disadvantages to saving with Education IRAs. First, it affects a family's claim for Hope and Lifetime Learning Tax Credits. Second, funds in Education IRAs are considered the student's assets for financial aid consideration and assessed at a rate of 35 percent in the EFC calculation. Third, the beneficiary must be under 18 years of age when contributions are made and benefits must be paid out before the beneficiary turns 30. Fourth, income restrictions apply. Only taxpayers with a modified gross income below a certain level are eligible for Education IRAs. For 2000, the phase-out range is between $150,000 and $160,000 for joint taxpayers. For single taxpayers, the phase-out range is between $95,000 and $110,000. Fifth, individuals may not contribute to both a Section 529 plan and an Education IRA in the same tax year on behalf of the same beneficiary. Finally, earnings of non-qualified withdrawals are subject to income tax in addition to a 10 percent penalty.[12]

Classic and Roth IRAs

Classic and Roth IRAs are trust or custodial accounts set up for retirement. Before 1997, Classic IRA distributions made before the owner turned 59½ were subject to a 10 percent penalty on earnings. The Taxpayer Relief Act of 1997 eliminated the 10 percent penalty on early IRA withdrawals, provided that the withdrawals are used for qualified higher education expenses for the owner, the spouse, a child, or a grandchild.

Classic and Roth IRAs are attractive because of their tax benefits. For qualified taxpayers, contributions to Classic IRAs are tax-deductible and the entire proceeds are subject to income tax upon withdrawal. Although contributions to Roth IRAs are not tax-deductible, the earnings are exempt from income tax if the withdrawals are taken after the owner turns 59½. If withdrawals are taken before the owner turns 59½, or before the account has been open for five years, the earnings portion will be taxed at the owner's income tax rate in addition to a 10 percent penalty on earnings.[13] As in the Education IRA case, owners of Classic and Roth IRAs have full control over investment decisions.

Several drawbacks exist. First, there is a $2,000 annual contribution limit for both types. Second, income restrictions apply. For individuals who are covered by a retirement plan at work, the year 2000 phase-out range for Classic IRAs is between $52,000 and $62,000 for joint taxpayers. For single taxpayers, the phase-out range is between $32,000 and $42,000. The phase-out range for Roth IRAs is between $150,000 and $160,000 for joint taxpayers and between $95,000 and $110,000 for single taxpayers. Third, using Classic and Roth IRAs to pay for college means, of course, that less money will be available for retirement.[14]

The financial aid treatment of Classic & Roth IRAs is straightforward: Assets in Classic and Roth IRAs are not considered in the EFC calculation for student financial aid.

Loans from Retirement Plans Such As Tax-Deferred Annuities and 401(k) Plans

Section 401(k) plans offer tax-exclusion on contributions, investment flexibility, and much higher contribution limits than Classic and Roth IRAs (the year 2001 annual contribution limit for 401(k) plans is $10,500). Because there is no penalty on withdrawals taken after the account owner turns 59½, older parents who expect to reach retirement age when their children attend college may find 401(k) plans an attractive way to save for college. For younger parents, they may find it desirable to make additional contributions to 401(k) plans (that is, if they are not already saving the maximum limit) and borrow against these plans years later to pay for their children's college expenses. If qualified, younger parents may also make a hardship withdrawal for higher education expenses. Hardship withdrawals may not exceed total contributions, and there is a 10 percent early withdrawal penalty on earnings.

Most retirement plans including 401(k)s and tax-deferred annuities allow account owners to borrow against these accounts. The loan amount is usually limited to the lesser of $50,000 or half of the vested value of the account. The interest rate on these loans is usually slightly higher than the prime rate. For unpaid loans, a 10 percent early withdrawal penalty on earnings in addition to income tax applies.

One of the advantages of borrowing against a 401(k) is its easy approval process. Further, the terms of the loan are usually very flexible. The loan may be used for any purpose and the loan period can be up to five years (or ten years if used towards the purchase of a first home). Parents may also take advantage of the tax exclusion and investment flexibility of 401(k) plans. However, there are some drawbacks. One drawback is that in some 401(k) plans (but not all), the amount borrowed does not accrue any earnings during the loan period. Another drawback is that if the borrowers leave their current employer, they typically have to pay off the loan immediately.

Uniform Gift or Transfer to Minors Act

Any adult can transfer funds to a child through a custodial account under the Uniform Gift or Transfer to Minors Act (UGMA or UTMA). UGMA allows transfers of cash, stocks, bonds, notes, etc. UTMA allows transfers of properties of any kind.

UGMA or UTMA accounts can be a useful estate planning tool for families who wish to reduce their tax payments. There is no limit on the amount that can be transferred. Each transfer is an irrevocable gift, to which the federal gift tax exclusion, currently $10,000 per year, can be applied. When the child is under 14, the first $750 of unearned income is exempt from federal income tax, the next $750 is taxed at the child's rate, the remaining portion is taxed at the parents' rate. After the child turns 14, all earnings are taxed at the child's rate.

One major drawback of these accounts is that the assets in these accounts technically belong to the child, and the transfer is irrevocable. Before the child reaches the age of majority, the custodian of the account (who may be the donor or an independent trustee) only has control of the account to the extent of exercising investment discretion. Once the child reaches the age of majority, he or she assumes full control of the account and may use it for any purpose. Another drawback is that funds in the account are considered the child's assets for financial aid purposes and are assessed at a rate of 35 percent in the EFC calculation.

Table 2: New York State College Savings Program Managed Asset Allocation: 2001

Beneficiary's Year of Birth	Projected Years to Enrollment	Equities	Bonds	Money Market
2000-2001	18 Years	75%	25%	0%
1998-1999	16-17 years	65%	35%	0%
1996-1997	14-15 years	60%	40%	0%
1994-1995	12-13 years	55%	45%	0%
1992-1993	10-11 years	50%	50%	0%
1990-1991	8-9 years	45%	55%	0%
1988-1989	6-7 years	40%	60%	0%
1986-1987	4-5 years	30%	70%	0%
1984-1985	2-3 years	20%	70%	10%
Pre-1984	1 year	15%	40%	45%

Source: TIAA-CREF Tuition Financing, Inc.

Mutual Funds

Although there are no special tax benefits for saving for education with mutual funds, they may appeal to some investors in their own right. First, there is no income restriction and no savings limit. Second, investors have complete control of the account and over investment decisions. Third, funds may be withdrawn at any time for any purpose.

Realized gains on mutual fund accounts are subject to federal and state income taxes each year. The dividend and interest portion of the earnings is taxed at the account owner's income tax rate. The realized capital gains from stock appreciation is subject to a 20 percent (or 10 percent for taxpayers in the 15 percent federal income tax bracket) long-term capital gains tax if the assets in the mutual funds have been held for more than a year. If the assets have been held for less than a year, capital gains are taxed as regular income.

Mutual fund accounts are considered parents' assets for financial aid purposes and are assessed at a rate of 5.6 percent in the EFC calculation.

SIMULATED ACCUMULATIONS USING DIFFERENT PRODUCTS

Section 529 Plans and Mutual Funds

In order to compare saving with Section 529 plans and mutual funds, we calculated a set of simulations designed to illustrate potential accumulations in each savings vehicle. The simulations were designed to facilitate comparison of Section 529 plans and mutual funds on an "apples to apples" basis. Three time horizons were used: six, twelve, and eighteen years. These time horizons can be seen as representing the time periods available for saving for college for parents (and grandparents) of children beginning middle school, elementary school, or infants, respectively. For each time horizon, annual contributions were assumed deposited at the start of the year. Asset allocation strategies were those of New York's College Savings Program Managed Allocation Option for the year 2001. The asset allocation strategy of this plan is meant to be representative of the age-based allocation strategies used in Section 529 plans across the nation. This is illustrated in Table 2. For example, in the case of a newborn baby with 18 years until college expenses commence, the plan calls for a portfolio of 75 percent equities and 25 percent bonds. At 12 years, the portfolio consists of 55 percent equities and 45 percent bonds. At 6 years, the proportion of equities drops to 40 percent and that of bonds rises to 60 percent. Rebalancing typically occurs every two years. In our simulations, mutual fund investors were assumed to mimic this strategy exactly. Furthermore, rebalancing by mutual fund investors was assumed costless. That is, the tax consequences of rebalancing for mutual funds were not considered. This works in favor of the mutual funds.

The assumptions used in the simulations are described in the box to the right. To sum up, at each time horizon there are three possible income tax brackets and four possible combinations of fees and taxes on investment returns. The simulations were calculated to illustrate each of these four combinations in turn. With a higher 137 basis-point fee imposed on mutual fund returns and taxation of all investment returns, Scenario A in Table 3 is relatively the most disadvantageous towards mutual funds. (Note that a basis point is one hundreth of a percentage point — so 100 basis points = 1%.) The second scenario (B) equalizes the fees between the two products but maintains the taxation of all investment returns. The third scenario (C) restores the fee differential but allows for deferral of 50 percent of capital gains in equity returns. Scenario D is relatively the most advantageous for mutual funds: fees are equalized, and 50 percent of capital gains in equity returns are unrealized.

Given the structure of the simulations, the comparisons are invariant with respect to the amount contributed. Whether savers make annual contributions of $1,000, $2,500, or $5,000 has no bearing on the relative amounts accumulated using each savings strategy. Table 3 presents the results of the simulations. The table shows that accumulations in the Section 529 plan are consistently greater than in comparable mutual funds employing the same asset allocation strategy. Furthermore, the simulations clearly show that the advantages of saving for college using the Section 529 plan grow over time. At a six-year time horizon, the advantage of saving with the 529 plan varies between 2.2 and 7.6 percent, depending on the tax bracket. At a twelve-year time horizon, the advantage ranges from 4.4 to 16.0 percent. At an eighteen-year time horizon, the advantage extends from a low of 7.3 percent to a high of 26.8 percent.

DETAILED ASSUMPTIONS FOR SIMULATIONS

Taxes

Three different tax brackets were used. The lowest tax bracket was a federal tax bracket of 28 percent and no state income tax. The mid tax bracket was the same federal tax bracket of 28 percent and a state income tax rate of 6.85 percent. The high tax bracket was a federal income tax rate of 39.6 percent and a state income tax rate of 6.85 percent. The state income tax rates correspond to those of New York.

Different scenarios were used for the taxation of investment returns for the mutual funds. In one scenario, equity returns were assumed to consist of 25 percent dividends and 75 percent realized long-term capital gains. In the second scenario, equity returns were assumed to consist of 25 percent dividends, 25 percent realized long-term capital gains, and 50 percent unrealized capital gains. Returns on fixed-income securities, whether in a bond or money market account, were assumed to consist entirely of dividends, and as such were taxed at the relevant income tax rate.

Investment Returns

Investment returns were assumed to consist of real and nominal components. Inflation was assumed constant at 3.0 percent. Real returns on equities were assumed to be 7.0 percent, on bonds 3.5 percent, and on the money market account 2.0 percent. (Note, of course, that these returns are hypothetical and actual returns could be higher or lower.)

Fees

Two different scenarios were used for fees as well. The 529 plan was assumed to have annual expense charges of 65 basis points, corresponding to New York's College Saving Program. In one scenario annual mutual fund expense charges were assumed to total 137 basis points, corresponding to the annual average expense charge of all mutual funds, as of December 31, 2000 (Source: Morningstar, Inc.).

In a second scenario, mutual fund expense charges of 65 basis points were assumed. No front or back loads or 12b-1 fees were assumed. In the 529 plan, interest income and capital gains were taxed at a rate of 15 percent at the end of each relevant time horizon. This produces the accumulation that would have been available for college expenses, assuming the beneficiary was subject to a federal tax rate of 15 percent and no state tax.

The simulations reveal two additional broad themes in terms of the comparisons. The first is that the relative advantage of saving using a Section 529 plan increases as a household's tax bracket increases. The second is that the fees charged as investment expenses matter more than the taxation of investment returns. This is perhaps surprising, but makes sense upon further scrutiny. In the two scenarios where there is a difference in the fees charged, this difference is not trivial, amounting to two-thirds of a percentage point per year. This has a large impact on the total accumulation. The reason why the different tax treatment of capital gains matters relatively little in the simulations is linked to the reason why Section 529 plans increase in attractiveness as a household's tax bracket increases. Rebalancing plays a major role. As the time horizon shortens, more and more of the total portfolio is invested in fixed-income securities. Hence capital gains on equity returns become relatively less important, and the taxation of interest income becomes relatively more important. Furthermore,

TABLE 3 Percent by Which Accumulation in College Savings Plan Exceeds Rebalanced Mutual Funds: Four Hypothetical Scenarios

Scenario assumptions	Income tax bracket	18-year horizon	12-year horizon	6-year horizon
A *Savings plan expense ratio: 65 basis points (bp) Mutual funds expense ratio: 137 bp Mutual funds earnings distributed as 25% dividends and 75% long-term capital gains*	28% federal, 0.00% state	17.7%	10.2%	4.6%
	28% federal, 6.85% state	21.0	12.3	5.7
	39.6% federal, 6.85% state	26.8	16.0	7.6
B *Savings plan expense ratio: 65 bp Mutual funds expense ratio: 65 bp Mutual funds earnings distributed as 25% dividends and 75% long-term capital gains*	28% federal, 0.00% state	11.4	6.4	2.9
	28% federal, 6.85% state	15.0	8.8	4.1
	39.6% federal, 6.85% state	21.3	12.9	6.2
C *Savings plan expense ratio: 65 bp Mutual funds expense ratio: 137 bp Mutual funds earnings distributed as 25% dividends and 25% long-term capital gains 50% of mutual funds earnings is unrealized*	28% federal, 0.00% state	13.3	8.3	3.8
	28% federal, 6.85% state	16.5	10.4	4.9
	39.6% federal, 6.85% state	22.2	14.0	6.8
D *Savings plan expense ratio: 65 bp Mutual funds expense ratio: 65 bp Mutual funds earnings distributed as 25% dividends and 25% long-term capital gains 50% of mutual funds earnings is unrealized*	28% federal, 0.00% state	7.3	4.4	2.2
	28% federal, 6.85% state	10.8	6.7	3.4
	39.6% federal, 6.85% state	16.9	10.7	5.5

Note: See the box on page 9 for a detailed description of the rate of return assumptions used in this table. The percentages shown are hypothetical numbers based on certain assumptions which may not reflect actual performance.

deferral of unrealized capital gains is relatively unimportant given the time horizons under consideration.

Another consideration in any comparison of Section 529 plans and mutual funds is the value of the state tax deduction, if any. New York's College Saving Program enables New York taxpayers to deduct up to $5,000 of contributions per taxpayer from their state income taxes. The discounted future value of this tax deduction enhances the relative appeal of the Section 529 plan (for New York taxpayers). The value of this tax deduction is quite significant. Assuming annual contributions (deductions) of $1,000, a state income tax rate of 6.85 percent, and the discount rate used is the interest rate used for bond returns of 6.5 percent, the discounted value of the tax deduction grows to $515 at a time horizon of 6 years, to $1,267 at 12 years, and to $2,364 at 18 years.

Adding these sums into the accumulation totals calculated in the simulations for New York's College Saving

TABLE 4 Percent by Which Accumulation in College Savings Plan Exceeds Rebalanced Mutual Funds: Four Hypothetical Scenarios, Reflecting State Tax Deduction for Savings Plan

Scenario assumptions	Income tax bracket	18-year horizon	12-year horizon	6-year horizon
A *Savings plan expense ratio: 65 bp Mutual funds expense ratio: 137 bp Mutual funds earnings distributed as 25% dividends and 75% long-term capital gains*	28% federal, 6.85% state	29.4%	20.3%	13.2%
	39.6% federal, 6.85% state	35.7	24.3	15.2
B *Savings plan expense ratio: 65 bp Mutual funds expense ratio: 65 bp Mutual funds earnings distributed as 25% dividends and 75% long-term capital gains*	28% federal, 6.85% state	23.0	16.5	11.5
	39.6% federal, 6.85% state	29.7	20.8	13.7
C *Savings plan expense ratio: 65 bp Mutual funds expense ratio: 137 bp Mutual funds earnings distributed as 25% dividends and 25% long-term capital gains 50% of mutual funds earnings is unrealized*	28% federal, 6.85% state	24.6	18.2	12.3
	39.6% federal, 6.85% state	30.7	22.1	14.6
D *Savings plan expense ratio: 65 bp Mutual funds expense ratio: 65 bp Mutual funds earnings distributed as 25% dividends and 25% long-term capital gains 50% of mutual funds earnings is unrealized*	28% federal, 6.85% state	18.5	14.2	10.7
	39.6% federal, 6.85% state	25.0	18.5	13.7

Note: See the box on page 9 for a detailed description of the rate of return assumptions used in this table. The percentages shown are hypothetical numbers based on certain assumptions which may not reflect actual performance.

TABLE 5 Percent by Which Accumulation in College Savings Plan Exceeds Series I Bonds

	18-year horizon	12-year horizon	6-year horizon
Scenario 1: Interest on Series I bonds excluded from taxation	-0.3%	-2.6%	-2.8%
Scenario 2: Interest on Series I bonds subject to federal tax of 39.6%	22.6	12.9	5.5
Scenario 3: Interest on Series I bonds excluded from taxation value of state tax deduction added to 529 plan accumulation	6.6	4.3	4.0
Scenario 4: Interest on Series I bonds subject to federal tax of 39.6% value of state tax deduction added to 529 plan accumulation	31.2	20.9	13.0

Note: See the box on page 9 and the text below for a detailed description of the rate of return assumptions used in this table. The percentages shown are hypothetical numbers based on certain assumptions which may not reflect actual performance.

Program further enhances the attractiveness of the program. This is shown in Table 4. The table shows that adding in the value of the tax deduction effectively increases the relative advantage of the program by 50 percent or more. At the 18-year time horizon, the relative advantage of the Section 529 plan is as much as 36 percent. At the 12-year time horizon, the advantage ranges from roughly 14 percent to 24 percent for those able to take advantage of the deduction. At the 6-year horizon, the advantage is 11 to 15 percent.

Section 529 Plan and Series I Bonds

An additional comparison is between the 529 plan and Series I bonds. Table 5 presents a comparison between possible accumulations in a 529 plan using the managed allocation strategy of the New York plan and a strategy using annual purchases of Series I bonds. The asset return assumptions in the Section 529 plan are identical to those used in the earlier comparisons. For the Series I bonds the inflation rate is assumed to be 3.0 percent and the real rate of return is assumed to remain at the current rate of 3.4 percent. The table shows that Series I bonds can outperform the Section 529 plan under certain conditions. The relative advantage of Series I bonds in the simulations is as much as 3 percent. Thus Series I bonds may be an effective savings vehicle for households able to take advantage of the tax exclusion. Furthermore, in an environment of even moderate inflation, they may be a good hedge against tuition inflation.

There are two principal reasons for this result. The first is that there are no annual fees charged for purchasing or holding Series I (or Series EE) bonds. The second is that the current real interest rate of 3.4 percent is used throughout the time horizon to project future accumulations. This may well be an unrealistic assumption. However, if future inflation exceeds the 3.0 percent assumed in the simulations, accumulations using Series I bonds would be higher. Table 5 also shows that Series I bonds significantly underperform the Section 529 plan when households do not receive the tax exclusion. Under these circumstances, the relative advantage of the Section 529 plan is from 6 to 23 percent if the value of the state income tax deduction is not taken into consideration. If the value of the state income tax deduction is considered, the relative advantage of the 529 plan rises significantly, ranging from 13 to 31 percent. Consequently, households unable to avail themselves of the tax exclusion, or who expect to be unable to receive the tax exclusion, would find the Section 529 plan more attractive.

CONCLUDING REMARKS

The economic payoff of getting a college degree has increased as the wage differential between high school and college graduates widened. At the same time, college tuition has continued to rise at a fast pace, making paying for college a challenge for many American families. In order to help families realize their aspirations for college, the federal government has introduced several tax-favored investment programs to meet the savings needs of families. One of these programs is the Section 529 plan. In this paper, we discuss the features of Section 529 plans and compare these plans with several other strategies for paying for college. We also discuss the pros and cons of each alternative. For households saving on behalf of young children, Section 529 plans offer benefits that increase in relative terms as the number of years until college commences increases. Similarly, Section 529 plans are very attractive for households in higher tax brackets and for households able to take advantage of plans that offer state income tax deductions. Series I bonds may be another attractive option for many households. In addition to their appeal as a hedge against inflation, many households are able to take advantage of the tax exclusion on interest earnings.

Because levels of risk tolerance and preference for control of investment vary, families may prefer some strategies to others. In making their savings decisions, families should take into account their own financial situations and savings goals and evaluate the advantages and disadvantages of each strategy to find the best way to meet their own college savings needs.

This article was prepared by Jennifer Ma, research economist, and Douglas Fore, manager of pension and economic research, TIAA-CREF Institute.

ENDNOTES

[1] Source: *Trends in College Pricing 2000*, the College Board, 2000.

[2] Source: *Parents Poll on College Savings*, TIAA-CREF, New York, 2000.

[3] Source: College Savings Plan Network, Lexington, Kentucky.

[4] See Ma, Warshawsky, Ameriks, and Blohm (2001) for a study of using an economic approach to setting the contribution limits for tuition savings plans. In practice, limits are set by states according to broad considerations set forth in the Internal Revenue Code and regulations.

[5] Earnings on non-qualified withdrawals are subject to federal and state income taxes and generally taxed at the account owner's rate in addition to a penalty of at least 10 percent. However, the account owner may make a penalty-free, tax-free rollover by designating another "member of the family" as the new beneficiary. The 10-percent penalty does not apply in the event there is a withdrawal due to the beneficiary's death or disability. If the beneficiary receives a tax-free scholarship, educational assistance allowance, or other tax-free educational benefits, then the distribution from a Section 529 plan is not subject to the 10 percent penalty to the extent that the distribution is not more than the amount of the scholarship, educational allowance, or other similar benefits.

[6] Families may be able to transfer more assets to their children or grandchildren by paying the children's education expenses directly and giving the children a $10,000 unrestricted gift per year, because paying for education expenses directly is not subject to gift tax. The tradeoff is that by giving an unrestricted irrevocable gift, the donor loses control and ownership of the assets.

[7] Qualified room and board expenses cannot exceed the school's posted room and board charge (or $2,500 per year for students living off-campus and not at home) and must be for a beneficiary who is at least a half-time student.

[8] For an example, see the Program Brochure of New York College Savings Program.

[9] Series EE bonds issued after 1989 and all Series I bonds are qualified for this tax benefit.

[10] However, if these bonds are redeemed within the first five years of issuance, there is a three-month earnings penalty.

[11] If the total proceeds from the bonds exceed the qualified expenses, the excludable amount will be reduced on a pro rata basis. For example, in a given year, the qualified higher education expenses are $5,000 and the total proceeds from bonds redemption are $10,000 including $6,000 principal and $4,000 earnings. In this case, only $2,000 of the earnings [($5,000/$10,000) x $4,000] can be excluded from federal income tax. Additional information about the education bond program can be found in: IRS Publication 17, *"Your Federal Income Tax,"* and IRS Publication 550, *"Investment Income and Expenses."*

[12] Same exceptions exist as those for 529 plans.

[13] Withdrawals from a Roth IRA will be first considered distributions of principal and exempt from income tax. After principal is exhausted, withdrawals will be considered distributions of earnings and subject to income tax.

[14] More information on IRAs can be found in IRS Publication 590, *"Individual Retirement Arrangements."*

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TIAA-CREF **INSTITUTE**

TIAA CREF

730 Third Avenue
New York, NY 10017-3206
800.842.2733 x1550