Asset Allocation and Section 529 Plans

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ABSTRACT

Previous research has concluded that prespecified asset allocations used by many Section 529 college savings plans are not only suboptimal, but that they are also so conservative that many investors would do better by avoiding such plans entirely. Recent changes in the tax code and in the rules of many states' Section 529 plans alter these conclusions in important ways. In addition, by focusing on the investment options available within the plan, previous research tends to deflect attention from other useful investment options and strategies. In particular, it tends to shift focus away from the rest of the investor's portfolio. This shift in focus tends to obscure strategies that investors can use to avoid some of the remaining investment restrictions imposed by various plans, and can also cloud implications for regulators and designers of these plans.

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I.   INTRODUCTION

Recent changes in the United States' tax code have raised Section 529 plans to the forefront of investment vehicles for college savings. Legislation has increased both the investment limits and tax benefits of these plans. Not surprisingly, the number of investors using Section 529 plans and the amounts invested in them have grown rapidly. Block and Waggoner (2002) report that about $25 billion flowed to such plans in 2002, and the figure is expected to balloon to $200 billion by 2007.

Academic researchers have begun to explore the topic. For example, Spitzer and Singh (2001) compare Section 529 plans having predetermined asset allocations with investments held outside a tax-preferred vehicle. They provide a concise review of the theory of asset allocation and a brief introduction to the essentials of Section 529 plans. Their concern is that the tax advantages of a 529 plan might be negated by the reduced return resulting from predetermined (more accurately, conservative) asset allocations. They study historical returns and conclude that this may well be the case, especially for investors in low marginal tax brackets and for those who delay investing until the child is nearly ready for college.

My paper extends this previous research in three ways. First, it updates the analysis to allow for recent changes in tax law and the expanded menu of investment options for Section 529 plans that is available today. Second, it shows that the new tax law makes it important to separate the consideration of prespecified asset allocations from the tax advantages of Section 529 plans. (The essential points of this article also apply to most other tax-advantaged investment vehicles, as well). Put somewhat differently, the decision to allocate funds *to* a 529 plan is now essentially independent of the allocation *within* the plan. Third, and closely related to this second point, I expand the analysis to include portfolio considerations rather than viewing Section 529 plans in isolation. Taken together, these three extensions offer new insights into the value of Section 529 plans. Most investors are likely to find that previous investment advice should be reexamined in the light of this evidence.

For example, Spitzer and Singh (2001) correctly question the wisdom of prespecifying asset allocations, then proceed by considering a small number of specific preallocations. They compare New York's 1999 College Savings Program with an unrestricted, fully taxable investment. While this approach had some merit in 1999, the conclusions drawn from that study are now potentially misleading. For example, they state all of the following:

> "... adherence to prespecified asset allocation for low tax bracket investors often results in return loss that overshadows the tax benefit." (p. 101).

> "This evidence strongly suggests that for families in the 'low' income category, which have a long term college savings goal, the [529 plan] is

likely to be an inferior alternative to a plan which aggressively contributes to a 100% equity plan." (p. 111).
"Buying into the [529 plan] when the child is near college is shown to be a poor strategy." (p. 114).

"Investors in lower income groups who are considering these plans would be well advised to consider ... exercising investment options that are equity aggressive, ..." (p. 115).

Though all of these representative statements may once have been true for a number of Section 529 participants, in today's investment environment, they risk misleading investors. First, allocating funds *to* a 529 plan is a prior decision that is now essentially unrelated to the portfolio choice *within* the plan. Second, investors can invest in 529 plans outside of their states of residence, providing a much wider range of investment options. Finally, investors base their investment decisions considering risk as well as expected or average return.

Section 2 explains the problems with a prespecified, age-based portfolio allocation, and shows how the analysis changes if investors are allowed to choose from a range of investment options. Section 3 provides a brief policy implication for regulators and the designers of Section 529 plans. Section 4 describes the impact of Section 529 plans in a portfolio context. Section 5 discusses the implications of risk on the investment decision, and Section 6 contains the summary.

II.   ASSET ALLOCATION

Other researchers are surely correct in noting that some Section 529 plans have design flaws. Many plans offer and many analysts recommend a fixed asset allocation (among stocks and bonds) depending on the age of the child. The younger the child, the higher the proportion of stocks in the 529 plan's portfolio. The idea behind such a strategy is that if the child is young, then the portfolio should contain predominantly stocks because stocks tend to return more. But as the child ages, the story goes, he should shift to bonds to reduce the risk of losing his nest egg. Proponents apparently believe that a market crash near the beginning of the holding period is less harmful, perhaps thinking that the market is likely to recover by the withdrawal date. But even if all investors of the same age have the same risk preferences, an age-dependent allocation has little or no economic support. It relies on mean reversion in stock prices and ignores path dependence: even if an investor in a plan with a prespecified portfolio mix loses a good portion of his investment early and is far short of the needed amount with just a few years remaining, he must still switch to bonds, again presumably because the market may not have time to recover. In fact, though, if the investor is well short of his target with little time remaining, he might very well want to gamble. A prespecified asset allocation precludes this.

Prespecifying asset allocations also precludes adjusting to changes in the tax code, expected tuition, scholarships, external support such as gifts from relatives, etc. It is also a poor choice for those who delay college -- at a minimum, the time until the funds are needed is a better measure than age. Indeed, Gunthorpe and Levy (1994) find that the optimal portfolio composition changes drastically and systematically with changes in the holding period. Given the increasing numbers of nontraditional students, this design oversight becomes even more critical. Investors themselves are in a much better position to decide what proportion of their funds should be allocated to equities than are regulators or the designers of Section 529 plans.

In fact, if an investor has the freedom to choose the allocation within a Section 529 plan, nothing prevents him from matching the allocation of the predetermined plan initially, while retaining the option to deviate from that allocation if he later desires. It is well known that an option is worth more alive than dead. Absent a compelling reason to do so, (perhaps large transactions costs), why would an investor destroy the option to reallocate his portfolio? The short answer is, he would not.

Thus, specifying the allocation based on age is an obvious flaw in plan design. Perhaps inspired by this, Spitzer and Singh (2001) try to gauge the likelihood that the asset allocation restriction can offset the tax advantage of the plan. One way to do this would be to derive or assume a distribution of returns and calculate the result analytically. Another approach, adopted by Spitzer and Singh, is to conduct a Monte Carlo study. Using historical returns and return variances for stocks and bonds, they run simulations for various holding periods, then compute the average returns for various portfolio allocations. Given the historical returns used, a portfolio allocated totally to stocks has the highest average return. This is no surprise because, on average, the historical return on stocks really *was* higher during the sample period. Thus, for a wide range of tax rates, a fully taxable all-equity portfolio may well return more than a tax-advantaged 529 plan with substantially less than 100% equities, *on average*, even though the 529 plan has a tax advantage. Spitzer and Singh conclude that most investors are likely to be better off by foregoing the Section 529 plan's tax advantage in order to avoid the restrictions on asset allocation. They advocate portfolios with large portions of equity – typically, they recommend 100%.

In today's investment environment, though, these results are no longer relevant. In the past, electing to invest in some state's Section 529 plan was a joint decision to elect a specific, prespecified asset allocation. Today, however, an investor can prespecify 100% equities in the 529 plan and always beat the same portfolio held outside the plan, so long as total realized returns are positive. This is a mathematical certainty for positive tax rates and positive nominal returns.

Thus, Section 529 plans are far more valuable today than they have been in the past. Not only are the tax advantages more valuable, but also the preselected, age-based asset allocations of some plans have been relaxed. Investors usually no longer need to invest outside of their own state's Section 529 plans to find an expanded menu of investment options.

Because the restrictions on investments have been significantly relaxed, it pays to approach the decision to invest in a Section 529 plan differently. Equation (1) gives the terminal value (per dollar) of a fully taxable portfolio that returns $R_{t=i}^{\tau}$ before taxes at time t=i, taxed at an annual rate τ, over a period of T years. The tax rate on the portfolio in Equation (1) is constant, but the intuition and results are not affected by this simplification. Equation (2) gives the terminal value (also per dollar) of a portfolio held within a 529 plan (or other vehicle that is exempt from taxes) that returns an average of $R_{t=i}^{529}$ over that same period.

$$TV^{\tau} = \{1 + [R_{t=1}^{\tau} \times (1-\tau)]\} \times \{1 + [R_{t=2}^{\tau} \times (1-\tau)]\} \times ... \{1 + [R_{t=T}^{\tau} \times (1-\tau)]\} \qquad (1)$$

$$TV^{529} = (1 + R_{t=1}^{529}) \times (1 + R_{t=2}^{529}) \times ...(1 + R_{t=T}^{529}) \qquad (2)$$

These equations are quite general. In particular, they place no restrictions on the portfolios' composition. The portfolios in Equation (1) may or may not be identical to the portfolios in Equation (2). The portfolios may be constant, or they may change. In fact, if an investor elects an age-based portfolio allocation, then they would be mandated to change in a predetermined way.

Were the analysis to proceed as in Spitzer and Singh (2001), the question would be whether $R_{t=1}^{\tau}$ could be high enough to outweigh the tax penalty of τ, so that $TV^{\tau} > TV^{529}$. The answer would, of course, be yes. They conclude that for reasonable tax rates τ and holding periods T, this would be likely if the taxable portfolio is invested fully in stocks while the 529 portfolio is invested according to a more conservative, age-based portfolio allocation strategy *and* if the return distributions are constant.

Clearly, though, today's investors can learn a more important lesson. For *any* positive portfolio return and for *any* positive tax rate, $TV^{529} > TV^{\tau}$ for *any* positive holding period, if the portfolio returns are equal; that is, if $TV^{529} = TV^{\tau}$. The only question is whether obtaining comparable portfolio returns is reasonable. And not only is it reasonable, but it is also available for the asking. Many states, including Michigan, Minnesota and Missouri, offer 100% equity funds as an investment option for their Section 529 plans. Although choosing a plan outside of one's state of residence foregoes any state-tax advantage, it dominates a similar portfolio held outside of the plan for any positive federal tax rate, so long as the nominal *ex post* return is positive.

III.   IMPLICATIONS FOR REGULATORS AND PLAN DESIGNERS

Of course, most Section 529 plans still have some investment restrictions and other states have income limits for the state tax deduction. How might a regulator or plan designer gauge how important these remaining restrictions are? One way would be to

examine the number of investors who choose plans from a state other than their state of residence (or alternatively, regulators and plan designers could use the total dollar value invested in those accounts). If a resident invests in another state's plan, then it would be reasonable to conclude that a restriction on the home state's plan is the cause – the home state's plan must not meet the resident's needs as well as some other state's plan. Because most Section 529 plans provide some sort of deduction against the state income tax, if a resident of a state with a state income tax invests outside of his home state (and thus forfeits the state tax deduction) the restriction must be particularly onerous.

In practice, the number or dollar value of accounts invested out of state probably understates the importance of investment restrictions and income limits. To see this, consider grandparents who live in a state with onerous restrictions, and whose children and grandchildren live in a state offering opportunities which the grandparents believe are more favorable. Of course, nothing prevents the grandparents from opening an account in the parents' state of residence themselves, naming the grandchild as beneficiary. Instead, though, they might simply give the funds to the parents, along with instructions to open a Section 529 account in the parents' home state (or to invest them in an existing account), again naming the grandchild as beneficiary. From an economic perspective, this is an out-of-state investment, but it will not be measured as such. Thus, the number or dollar amount of out-of-state accounts is probably a lower bound for gauging the importance of any remaining investment restrictions.

IV.   PORTFOLIO CONSIDERATIONS

My analysis matches most previous research on Section 529 plans in that it ignores the rest of a participant's portfolio. Portfolio considerations, though, probably weigh against the argument for allocating the investment in a Section 529 plan to 100% equities. Several authors, notably Miller (1977), argue that a tax premium is probably embedded in the prices of assets; assets that are subject to higher taxes probably have higher before-tax returns. Tepper (1981) gives the implications of this for tax-sheltered investments: all else equal, investors should hold high-yield stocks or bonds in tax-preferred vehicles such as 529 plans, and hold low-yield stocks in other accounts. Intuitively, this strategy eliminates the largest tax liability.

This fits well with Reichenstein (1998). He illustrates the importance of considering the investor's entire balance sheet, including not only financial assets but also, for example, pension assets, life insurance and mortgage liabilities. Reichenstein's analysis would conclude that allocating 100% of a Section 529 plan's assets to stocks would require offsetting investments in other assets held outside of the 529 plan. Even an extremely risk-tolerant investor, who prefers 100% equity investments, would do better to follow Domian and Racine (2002). Their analysis would recommend that an investor hold bonds in the 529 plan and gain the additional equity exposure by leveraging investments held *outside* the tax shelter. This strategy preserves the desired risk exposure without foregoing the tax advantages of the Section 529 plan.

Equation (1) and Equation (2) identify another advantage to the strategy of holding bonds inside of a tax-advantaged plan and, if necessary, obtaining the desired equity exposure through leveraging outside of the plan. Specifically, bonds are far more likely to have positive returns than stocks. Thus, the tax advantage is far more likely to be useful. In addition, equity investors have an easier time avoiding taxes on equity income without resorting to a tax-sheltered investment. For example, most investors are familiar with the strategy of selling losers while letting winners ride. This strategy is less useful for bonds, which tend to be less volatile.

V.   A CAUTIONARY NOTE

Spitzer and Singh (2001) use data historical returns from 1980 - 1999 in their study. They replicate their study using historical returns from 1970-1999 and report that the results are "substantially similar". Although they conclude that their results are independent of the sample period, investors would still do well to consider the risk of a 100% equity portfolio. Both sample periods end before the sharp decline in equity values that began in 2000, and Shiller (2000) reports that it took years for stocks to recover from the Great Depression. He writes that, "The real S&P Composite Index did not return to its September 1929 value until December 1958" (page 9). This does neglect dividends, but Shiller adds that, "The average real return in the stock market including dividends) was -13.1% a year for the five years following September 1929, -1.4% a year for the next ten years, -0.5% a year for the next fifteen years, and 0.4% a year for the next twenty years" (page 9). Investors in the Japanese stock markets are currently experiencing a similarly trying period. As of this writing, Nikkei averages hover at about the levels of 20 years ago, though dividends would at least make the 20-year nominal return positive. Investment advice based on historical returns over a finite period tends to obscure these unpleasant possibilities.

Drawing investment advice based on even the entire historical return distribution is still potentially misleading. First, readers are surely familiar with the dictum that past stock performance is no guarantee of future stock performance (for an example, see the disclaimer at http://money.cnn.com/services/disclaimer.html). Second, with risky assets, investors are unable to guaranteed the average return for any given holding period. That is because they only obtain a *single* realization from the return distribution. To see this, consider the choice between a sure 1% profit on a $10,000 investment and the opportunity to bet $10,000 on a single coin toss that pays $21,000 if the coin lands heads and nothing if it lands tails. A large-sample study using the bet's entire return distribution would recommend the coin toss because with *multiple* tosses, the bet returns an average of 5% per toss. Many investors, though, would rationally decline the single toss and choose the safer investment.

VI.   SUMMARY AND CONCLUSIONS

Section 529 plans are not for everyone. Some investors may have no discretionary funds to save at all, or they may have no college-bound children. Other children may have their educations already funded, perhaps via a relative's estate. The effects of 529 plans on financial aid might deter some investors, and some others might prefer that their children learn the lessons of working their own way through college.

Recent changes in the investment landscape, though, have magnified the importance of Section 529 plans. The appeal of these plans is now much greater. For most investors, these plans are now fully tax-exempt at the federal level, and investment limits are typically an order of magnitude larger. In addition, investment options available to Section 529 investors have been expanded. The optimal use of Section 529 plans is sure to remain the focus of extensive research.

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REFERENCES

Block, Sandra and John Waggoner (2002). 529 college plan choices are all over the map, http://www.usatoday.com/money/covers/2002-07-08-529-college-plans.htm.

Domian, Dale L. and Marie D. Racine. Wealth and risk from leveraged stock portfolios, *Financial Services Review 11*, (1), 2002, 33-46.

Gunthorpe, Deborah, and Haim Levy, (1994). "Portfolio Composition and the Investment Horizon," *Financial Analysts Journal*, January/February, 51-56.

Miller, Merton H. (1977). Debt and Taxes, *Journal of Finance 32*, 261-275.

Reichenstein, William. (1998). Calculating a family's asset mix, *Financial Services Review 7*, 195-206.

Shiller, Robert J. (2000). *Irrational Exuberance*. Princeton University Press, Princeton, New Jersey.

Spitzer, John J. and Sandeep Singh. (2001). The fallacy of cookie cutter asset allocation: some evidence from New York's college savings program, *Financial Services Review 10*, 101-116.

Tepper, Irwin. (1981). Taxation and corporate pension policy, *Journal of Finance 36*, 1-13.