findings

Optimal Consumption

Traditionally, the advice given to investors with regard to asset allocation depended largely on their ages. Younger investors were advised to have a sizable allocation to equities since their investment time horizons were long and they could ride out periods of volatility. Older investors were advised to reduce their equity exposure due to their shorter investment horizons and their likely need to withdraw funds during retirement.

While that standard advice may be appropriate for some investors, it certainly doesn't apply to all, and especially not to certain older investors with significant capital gains and bequest motives. That's one of the findings of a recent academic study, "Optimal Consumption and Investment with Capital Gains Taxes," by Chester S. Spatt, Mellon Bank professor of finance, Carnegie Mellon University, and director of the Center for Financial Markets; Robert M. Dammon, professor of financial economics, Carnegie Mellon University; and Harold H. Zhang, associate professor of finance at the Kenan-Flagler Business School, University of North Carolina at Chapel Hill. The paper, funded partly by a grant from the TIAA-CREF Institute, is published in issue 14 of *The Review of Financial Studies*.

According to the authors, the value of the step-up in basis of financial securities at one's death greatly influences the investor's consumption decisions and optimal portfolio composition over his lifetime. The older the investor, the more advantageous it is to hang on to highly appreciated securities. Under current tax law, the tax basis of securities is reset to the current market value at one's death, thus eliminating any tax liability on capital gains accrued since acquisition. Using a simple example, assume an investor purchased a security at $20 per share and still owned it at $80 per share when he died years later. If his heirs sell the stock at $80, they do not have to pay any capital gains taxes since the basis was reset to $80 at the owner's death. On the other hand, if the owner had sold the stock before he died, he would have been liable for taxes due on the $60 gain per share. Assuming his capital gains tax rate was 20%, he would have owed $12 in taxes per share. If he owned 1,000 shares, his tax bill would have been $12,000 ($60,000 gain x 20% tax rate).

The value of the basis reset provision becomes greater as the investor ages, due to the higher mortality risk. The numerical solutions in the authors' study indicate that the optimal portfolio for the individual with sizable embedded gains becomes heavily weighted in those appreciated securities as he or she reaches old age. In fact, it may be optimal for the investor even to borrow funds to meet cash needs, rather than to sell the highly appreciated securities and pay capital gains taxes. The study did not address the borrowing issue in detail, however, since it assumed the investor had sufficient income to avoid selling securities. Other simplifying assumptions, such as a constant risk tolerance throughout the investor's life and sufficient equity diversification, were made in order to focus on the effect of capital gains taxes and the reset provision on portfolio optimization.

The study employed only two possible assets: a risk-free, fixed-income security and an equity security representing the overall market. In a tax-free economy, and still assuming a constant risk tolerance and no withdrawal needs, an investor's optimal allocation between the two assets would not change as he ages. However, as the authors state, "The introduction of taxes causes investors to shift their portfolios toward equity because of the favorable tax treatment afforded capital gains relative to interest income. . .The optimal equity proportion increases dramatically at late ages."

Another important assumption in the study is the investor's bequest motivation, indicating that his or her desire to provide for heirs' future wealth is as great as his or her own desire for wealth. That aspect of the model ensures a longer investment horizon for the portfolio, unlike many common theories that look no further than the investor's retirement years, thereby assuming a shorter investment horizon at advanced ages.

A second study by the same authors examines the situation where the investor has a large concentration in one risky security, such as his employer's stock, and the same two investment options as in the first

and Investment

>>> with Capital Gains Taxes

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study: a security such as an index mutual fund or exchange-traded fund representing the overall equity market, and a risk-free, fixed-income security such as a Treasury bond. In this situation, the investor is much more willing to pay capital gains taxes in order to reduce the position concentrated in the risky security and increase diversification through the market portfolio. Although the single stock has the same return expectations in the study as the market portfolio, its greater volatility, and thus greater risk, overpowers the cost of capital gains taxes and causes the investor to sell the single stock, despite incurring sizable capital gains.

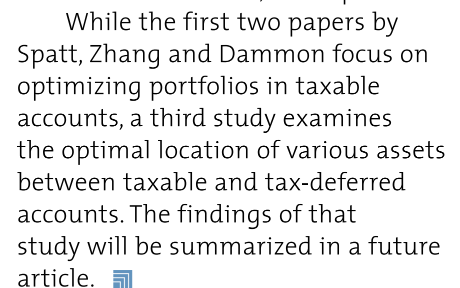
In a recent interview with *Quarterly*, Spatt said he found the study's conclusion favoring diversification to be quite stark, and that it applies even to elderly people. "Even a 90-year-old investor should not hold a big concentration in a risky stock, despite having to pay sizable capital gains taxes," he said. For young people, the decision to sell at least portions of concentrated holdings is quite clear, since the value of the forgone step-up in basis to heirs is less, due to their lower mortality risk.

Both studies assume higher rates of return for equities than for fixed-income securities and thus support sizable equity allocations, especially since they incorporate long investment horizons and no withdrawal needs. Investors with employment income can support higher equity allocations than non-working investors. The reason the second study calls for realizing sizable capital gains is because the equities are not sufficiently diversified, due to the concentrated holding, whereas sufficient equity diversification already exists in the first study.

Spatt said another finding of the second study is the importance of what he terms the "cross-basis effect," i.e., an investor's decision to change one holding in his or her portfolio is affected by features of the portfolio's other holdings: their relative embedded gains, as well as their relative volatility and the degree to which their expected performance is correlated. "You have to think about what you're doing on an overall basis," said Spatt.

What if limitations are placed on the allowable level of step-up in basis? Under the new Economic Growth and Tax Relief Reconciliation Act of 2001, the ability to step up an investor's basis at death will be limited to $1.3 million in the year 2010. The law also stipulates that if the assets are inherited by the surviving spouse, an additional $3 million step-up will be allowed. Spatt said that if limits are to be placed on the amount of allowable basis step-up, investors would be less inclined to keep appreciated securities beyond that limit.

Regarding the possible elimination of estate taxes, Spatt said it could result in a reduced propensity to gift during one's lifetime. Under the current law, with estate taxes as high as 55%, it can be advantageous for an individual to reduce his estate by gifting up to the maximum annual exclusion level of $10,000 per recipient (or $20,000 if the gift is made jointly by spouses), even if it means selling appreciated securities and paying the capital gains taxes. However, if there are no estate taxes but individuals still have the ability for unlimited step-up in basis, the propensity to hold the securities until death increases. Thus, gifting decisions are significantly related to tax policy. "With tax policy commonly in a state of evolution, investors need to assess and compare the possible outcomes of their gifting and portfolio decisions under different tax scenarios," said Spatt.



While the first two papers by Spatt, Zhang and Dammon focus on optimizing portfolios in taxable accounts, a third study examines the optimal location of various assets between taxable and tax-deferred accounts. The findings of that study will be summarized in a future article.