

Tax Deferral: When Does It Make Sense and When Does It Cost Cents (or Dollars)?

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In 1974, Congress enacted the Employee Retirement Income Security Act (ERISA). Among the myriad provisions of ERISA was the creation of a new type of tax-deferred investment account: the individual retirement account (IRA). From a market point of view, the IRA has been a tremendous success. As of 2011, according to the Investment Company Institute, IRA assets totaled nearly \$5 trillion.¹

The vast majority of those IRA assets represent income on which taxes have not yet been paid. In other words, they represent nearly \$5 trillion of untaxed income.² Most of us have absorbed, perhaps without even being explicitly aware that we were absorbing it, the lesson that we should defer taxes whenever possible. We have probably made the argument to our clients, and prospective clients, more times than we can remember. We have probably made our own decisions on the basis of the belief that deferral is always better than paying current taxes.

A review of the academic literature suggests that most academicians writing on the subject have also absorbed the idea that deferral is always a good thing. For example, here are a couple of abstracts of papers that look at how an investor should approach the taxable/tax-deferred decision:

Executive Summary

- Most of us have absorbed the belief that tax deferral is always better than paying current taxes
- That can be true if certain assumptions are met: tax rates are uniform across income types (no difference between capital gain and other income) and constant over time (future tax rates will not be higher than current tax rates), and the client's personal discount rate is lower than the expected rate of return on the assets
- Given current tax rates, the compounding benefit of deferral is largely, but not totally, offset by the shifting of long-term gain to ordinary income
- This paper explores various client tax situations involving different asset classes and vehicles (IRAs, deferred variable annuities, taxable bonds, tax-exempt bonds, charitable remainder trusts), and provides guidelines based on analyses of multiple scenarios to determine when tax deferral makes financial sense and when it doesn't

We show a strong preference for holding taxable bonds in the tax-deferred account and equity in the taxable account, reflecting the higher tax burden on taxable bonds relative to equity. For most investors, the optimal asset location policy is robust to the introduction of tax-exempt bonds and liquidity shocks. Numerical results illustrate optimal portfolio decisions as a function of age and tax-deferred wealth. Interestingly, the proportion of total wealth allocated to equity is inversely related to the fraction of total wealth in tax-deferred accounts.³

Or this from the Gregory Singer article "Best Use of Tax-Deferred Accounts" in the September 2009 *CPA Journal*:

Tax-deferred accounts often play a central role in accumulating wealth for retirement. For investors who own both personal and tax-deferred assets, implementing a retirement strategy requires the prudent use of both types of accounts.

The prevailing assumption, that tax deferral is good, seems to go largely unexamined.⁴

When Does Tax Deferral Make Sense?

Let us begin by looking at the case of an IRA, and asking the question: when does it make sense to use an IRA to defer taxes?

As previously mentioned, most practitioners have learned that deferral

always makes sense. That can be true if certain assumptions are met. Among these are the assumption that tax rates are uniform across income types (no difference between capital gain and other income) and constant over time (future tax rates will not be higher than current tax rates), and the assumption that the client's personal discount rate is lower than the expected rate of return on the assets.

Today's IRAs violate at least one of these major assumptions. Under current law, any increase in the value of an IRA, regardless of source, will be taxed at ordinary income rates when the money is withdrawn from the IRA. Today, with the top ordinary rate at 35 percent (federal) and the top capital gains and dividend tax rate at 15 percent, it is far from obvious that deferral makes sense, if deferral converts long-term capital gain or dividend income into ordinary income.

Given current tax rates, the compounding benefit of deferral is largely, but not totally, offset by the shifting of long-term gain to ordinary income.

For example, consider a lump sum of \$100,000, on which a taxpayer has two alternatives. First, call it Scenario A, he can pay tax today, at 35 percent, and invest the net proceeds in a portfolio of growth stocks that will grow at 5 percent a year compounded, and eventually produce long-term capital gain when sold. Second, call it Scenario B, he can put the entire pretax sum in a tax-deferred retirement plan, such as an IRA.⁵ Let's also assume an average return of 5 percent a year. If tax rates don't change, after 30 years, when he sells his stocks under Scenario A, he will net, after paying long-term capital gain tax at 15 percent, \$237,000. Under Scenario B, when he withdraws the entire balance from his IRA and pays ordinary tax at 35 percent, he will net \$267,000.

Under this scenario, as we all expect, deferral is better. With the IRA, he ends up with 12 percent more.

The IRA is indeed better, but not by very much. Probably not by nearly so

much as we might have expected.

Effect of Costs. In the real world, IRAs tend to be quite inexpensive to administer. A typical annual administration fee with a brokerage or mutual fund company might be only \$25 or so. A small fee like that can be ignored.

But other types of plans, particularly some Keogh plans and small corporate plans, which allow higher contribution limits, may have significant administrative costs. Even a relatively small plan can easily incur annual expenses of a few thousand dollars. That doesn't sound like much, but it can add up and make a real difference over time.

For example, if we take the same facts as our first example, except that we say that the pension plan incurs just a \$500 administrative expense each year, that completely wipes out the advantage of the tax deferral.⁶

The same would be the case for a \$500,000 plan (today's value) that incurs an average annual administrative expense of \$2,500.⁷

Potential for Changed Tax Rates in the Future. Deferral when rates are very high makes sense, almost no matter what, provided that rates don't go any higher.

If you think tax rates are likely to be higher in the future, new deferrals into retirement or similar plans are probably hard to justify purely on the basis of maximizing ultimate net after-tax dollars. For example, consider a current income of \$100,000 that offers the choice of tax now at ordinary rates, or tax-deferred growth with ordinary tax in the future. This is, in fact, the decision that faces anyone with \$100,000 in an existing IRA, if they are able to withdraw it penalty-free.

There are two scenarios. Scenario C is take the \$100,000 now, pay tax at the current 35 percent ordinary tax rate, and invest the remaining \$65,000 into a portfolio of non-dividend-paying growth stocks. Upon sale, the capital gain will be taxed at the assumed then-current rate of 23.8 percent.⁸ Scenario D is to leave

the \$100,000 in a tax-deferred account to grow at the same rate. When the funds are withdrawn from the tax-deferred account, they will be taxed at the assumed then-current ordinary income tax rate of 43.8 percent.⁹ Under these particular assumptions of increasing tax rates in the future (which are based on existing law), deferral is worse than paying taxes now for 18 years. Deferral finally noses ahead in the 19th year.

Non-Tax Considerations. Taxes are not the only consideration facing a client or an adviser pondering deferral. There are also non-tax considerations that may be quite important. These non-tax factors tend to be hard or impossible to model. However, understanding the tax consequences may be useful for a client struggling with a decision involving non-tax factors.

For example, retirement plans may have important non-tax benefits such as forced saving, creditor protection, feeling virtuous, or peace of mind.

There may also be non-tax costs. Among these might be limited access to funds, limited or no ability to borrow against the funds or use them in a business, and in some types of plans potential ERISA liability.

Guidelines

The above analysis allows us to develop some guidelines or rules.

RULE 1. If the client has the opportunity to defer ordinary income, deferral probably makes sense if the client is comfortable that tax rates will not rise significantly in the future, or if the client expects to be in a tax bracket in the future not significantly higher than the current bracket.¹⁰

RULE 2. If a taxpayer is in a high-income-tax state, such as New York or California, deferral probably makes sense if there is any reasonable possibility that the eventual withdrawals will be made when he is no longer a resident of the high-tax state. State income taxes are a major factor in the ongoing exodus of high earners from high-tax states like New

York and California to lower-tax states like Florida and Nevada.

RULE 3. If the taxpayer expects ordinary income tax rates to rise as much as or more than they would under current law, deferral might be a poor strategy, unless his expected holding period is very long.

RULE 4. If a taxpayer expects ordinary income tax rates to rise as much as or more than they would under current law, it might make sense to withdraw from a regular IRA, pay the tax, and roll the proceeds into a Roth IRA.¹¹

These rules apply generally to ERISA plans, such as IRAs, 401(k)s, and most corporate pension plans. These plans provide deferral and turn all income ultimately into ordinary income. We will now look at some non-ERISA deferral vehicles, and see whether the same analysis applies.

Non-ERISA Deferrals

Among non-ERISA deferrals, probably the two largest categories are deferred variable annuities (DVA) and unrealized capital gains. Variable annuity assets reached \$1.5 trillion in 2010¹², and unrealized gains, although hard to measure, are probably significantly larger.¹³

Tax treatment of variable annuities is on the surface quite similar to that of qualified plans. However, a major difference is the requirement (applicable in most instances) that variable annuities be funded with after-tax dollars.¹⁴

Most lump-sum distributions from deferred variable annuities will be taxable at ordinary rates on the growth. So, like qualified plans, variable annuities convert any kind of income into ordinary income. Like qualified plans, there may be penalties on withdrawals prior to age 59½. Unlike qualified plans, variable annuities permit deferral well past age 70½.

The difference with the biggest tax implications in most cases is the requirement to fund with after-tax dollars. This requirement means that it is harder for variable annuities to overcome the conversion of capital gain to ordinary income.

For an ordinary, taxable account, the most efficient strategy is to invest in non-income producing growth stocks, and hold them “forever.” In our examples above, we assumed the most favorable possible deferral—complete deferral until sale after 30 years. Against a tax-deferred qualified plan, even this most favorable assumption toward taxable accounts does not make the taxable account superior.¹⁵

RULE 5. Given constant tax rates and ordinary rates higher than capital gain rates, a variable annuity, because it is funded with after-tax dollars, cannot make up the difference when compared against fully deferred capital gains.¹⁶

But what about when the taxable account has turnover during the deferral period? If the turnover is taxable at ordinary rates, then, in the absence of fees, the DVA will be superior. The proof is very similar to the previous proof, and we leave it to the reader.

However, there are two more interesting questions: (1) what if there is turnover in the taxable account at long-term capital gain rates, and (2) how high can DVA fees be and not wipe out the benefit of deferral against annually realized short-term gains?

Taxable Turnover at Long-Term Gain

Rates. We again compare two scenarios. The first scenario, call it E, consists of a fully taxable account invested in growth stocks, but which realizes 100 percent of its return each year in long-term capital gains. The second scenario, call it F, consists of a DVA earning the same rate of return, except that it charges annual fees at the rate of X basis points per year. The holding period is 30 years. The return is 5 percent.

With DVA fees at zero, there is almost no difference between these two strategies. If fees are 50 basis points per year, there is about a 12 percent (total, not annual) benefit from the taxable, long-term-gain strategy.

RULE 6. A deferred variable annuity will not beat a taxable all-long-term-gain portfolio, even if the taxable portfolio realizes all its gains every year.

Taxable Turnover at Ordinary Income

Rates. Turnover in a taxable account defeats the goal of tax deferral. Note, however, that the average mutual fund turnover rate is somewhere in the vicinity of 100 percent a year.¹⁷ If this turnover were all short-term gain, then the taxable strategy is also the tax-maximizing strategy. Let’s call this Scenario G. Now we compare it with the DVA with deferral and ultimate tax at ordinary rates (Scenario F). Over 30 years, the deferral of the DVA really shines. At zero DVA fees¹⁸ (not realistic), the DVA outperforms by 51 percent over the 30-year period.¹⁹

At 100 basis points in fees, the DVA still results in about 19 percent more net wealth available at the end of the period.²⁰

RULE 7. A variable annuity over time will significantly outperform a high-turnover taxable portfolio generating income.²¹

Non-Tax DVA Considerations.

Deferred variable annuities are complex contracts and may have many features in addition to the tax benefits of deferral. Among these features may be guaranteed minimum rates of return, guaranteed minimum death benefits, and “high-water marks”²² to name a few.

Some of these features may have considerable value. Depending on the contract, features may be included, or may be available as riders. The valuation of these features, ex-ante, can be challenging. Discussion of the approaches to valuation are beyond the scope of this article.

Highly Appreciated Long-Term Bonds—Special Case

Highly appreciated long-term bonds present a special case of deferral and transformation of the tax character of income. We consider taxable bonds and tax-exempt bonds separately, for reasons that will become apparent.

Taxable Bonds. Bond interest is usually considered ordinary income, except in the case of tax-exempt bonds. When interest rates fall after a bond has been issued, the price of the outstanding bond will rise,

unless there is a deterioration of credit quality. Such an appreciated bond is said to trade at a premium.

Sometimes these premiums can be big. For example, recently, the 6.25 percent U.S. Treasury bonds maturing 5/15/2030, 19 years from now, were trading at a price of \$126.35, for a yield-to-maturity of 4.22 percent.²³

Assume an owner purchased the bonds at par. If she holds the bonds to maturity, she will earn the yield-to-maturity. Alternatively, she can sell the bonds today, pay long-term capital gain tax on the gain, and reinvest the proceeds at par at 4.22 percent (assuming such a bond is available).

Which is better? You will recognize this is a similar problem as before. Is deferral of gain but ultimate payment of ordinary income tax rate better, or is a sooner payment but at a lower rate optimal?

In this case, you would be better off selling the bonds, paying the long-term capital gain, and reinvesting the after-tax proceeds. The difference over the remaining 19-year life of the bond is about 2.3 percent, total, or about 12 basis points a year, non-compounded. That doesn't sound like a very big number, but it is significant in the world of Treasury bonds, and especially in a world like today's, in which it is a large fraction of the yield on short-term fixed income instruments.

RULE 8. Take a good, hard look at harvesting long-term capital gains on taxable bonds and reinvesting the after-tax proceeds.

Tax-Exempt Bonds. Here, for once, the analysis is simple. If you have a gain in tax-exempt bonds and sell the bonds, you pay capital gains tax on the gain when you sell. If you hold the bonds to maturity, you can collect the coupons tax-free. Hold the bonds. The converse is true for tax-exempt bonds on which you have a capital loss. Sell the bonds, recognize the loss, reinvest in similar bonds or wait the 31 days and buy back the bonds.

RULE 9. Hold appreciated tax-exempt bonds. Sell depreciated tax-exempt bonds.

Charitable Remainder Trusts

Charitable remainder trusts (CRTs) function in many ways like qualified retirement plans. CRTs are usually funded with pre-tax dollars and are tax-deferral vehicles. Unlike qualified plans, CRTs do not change the nature of the income earned within them.

Instead, CRTs distribute income under the rules in section 664, the so-called "worst in, first out" rules. These rules require that distributions are deemed to come only from the type of income subject to the highest rate of tax, until that type is exhausted; then distributions are deemed to come only from the remaining type of income subject to the highest rate of tax, and so on.

A consequence of these rules is that many CRTs must deem all of their distributions as income in the form of highly taxed ordinary income or short-term capital gains. From the point of view of the client who owns a CRT, the CRT may thus be viewed as a stream of taxable cash flows. The client, like the client with appreciated bonds, faces the opportunity of selling, effectively causing all his future payments to be taxed currently. Also like the bond holder, the gain the CRT client receives is taxed as long-term capital gain.

In the past decade, a niche market for CRT income interests has developed. To understand the market, it is useful to review the history of the CRT and the uses of CRTs over the years since they were created by an act of Congress.

In 1969, Congress decided to overhaul certain sections of the tax code related to charitable contributions. One such area was charitable deductions generated by gifts of remainder interests to charity. It was argued that the value of the remainder interests was often inflated to save the taxpayer money by overstating the income tax deduction. Congress reacted to the perceived abuse by eliminating all deductions for partial interests in trusts, unless such trusts qualified under the newly enacted section 664. It is such trusts that

we now recognize as CRTs.

There are several categories of CRTs that qualify under section 664 and which are in common use by practitioners today. CRTs can be categorized according to the method by which their lead distributions are calculated and made. All CRTs are either CRATs (charitable remainder annuity trusts) or CRUTs (charitable remainder unitrusts).

A CRAT is a CRT in which the annual payment amount to the lead interest holder is defined as a fixed number of dollars per year, although the payment may be more frequent, depending on the specific terms of the trust.²⁴

A CRUT is a CRT in which the annual payment amount to the lead interest holder is defined as a fixed annual percentage of the trust's value on January 1 of that year. Again, the payment may be quarterly or monthly, provided that appropriate adjustments are made.

CRUTs may be further divided into two main types: standard CRUTs, or SCRUTs, and net income CRUTs. A SCRUT is the simplest type, with a fixed annual percentage being paid out each year, whether the trust earns it or not.

Net income CRUTs come in three main varieties: Net income without makeup (NICRUT), net income with makeup (NIMCRUT), and flip CRUTs. A NICRUT pays out its stated rate of income only if the trust earns the stated amount as income in the given year. If the trust earns less than the stated amount, there is no making it up in future years.

The NIMCRUT overcomes this limitation of the NICRUT by adding a makeup provision. For example, if a NIMCRUT calls for a 6 percent annual distribution, and the trust earns only 5 percent in that year, 5 percent will be paid out and the 1 percent not paid will be carried forward to the next year. In the next year, if the trust earns 7 percent, the trust can distribute the entire 7 percent (the current year's 6 percent plus the 1 percent in the makeup account).

A flip CRUT is a combination of a NIMCRUT and a SCRUT, in which the

trust starts out as a NIMCRUT and “flips” to a SCRUT at a pre-specified date or upon the occurrence of some specified event. The event could be the sale of a business interest held by the trust, or the death of a beneficiary, or a divorce, etc. The IRS issued final regulations on December 9, 1998, which define in detail the permitted triggers.

Value of a Trust Interest

IRS Valuation Method. As part of Congress’s drive to eliminate the perceived abuse of deductions of charitable remainders, the 1969 law that created CRTs also described a methodology for determining the value of the charitable interest for purposes of computing the tax deduction to which the grantor is entitled. The procedure is described in the Treasury regulations, Subchapter A, Sec. 1.664-4.²⁵ One variable that goes into the calculations is the applicable federal rate, or AFR, which is also known as a “7520” rate because it is calculated according to the rules in Sec. 7520 of the Internal Revenue Code.

The procedure, if followed correctly, will yield a correct valuation for purposes of the income tax deduction. But these values will only correspond roughly with actual fair market values.

Actual Market Value. The actual fair market value of a CRT income interest may vary considerably from the calculated 7520 value, because many other factors enter the equation. These factors may include, but are not limited to, specific terms of the trust, individual actuarial information on a life beneficiary, variability of market returns, and, of course, supply and demand.

Trust Terms. The trust terms that most affect the market value of an interest are the specifics of the payout rate and the method for determining the trust’s term. These are also the main determinants of the 7520 value. Obviously, the higher the payout rate, the more valuable the lead interest, and the longer the expected term, the more valuable the lead interest.

Beyond payout and term, provisions concerning the identity and nature of the trustee, the presence or absence of a spendthrift clause, and clarity with which a trust is written can all affect the market value of a trust interest. Generally, the rule is that more flexibility is better. For example, an interest in a trust the terms of which appoint a specific corporate trustee and do not permit that trustee to be changed will be less marketable (and hence probably less valuable) than if it permitted changing the trustee. A trust that allows individual trustees will behave similarly.²⁶ A spendthrift clause in a trust is usually a negative. Spendthrift clauses come in many varieties and may or may not affect the marketability and hence the value of a trust interest. Spendthrift clauses must be looked at on an individual basis. All CRTs must have basic language and terms defined by the IRS. However, some CRTs may be written with important issues—for example, how to change a trustee—unclear, ambiguous, or contradictory. Such problems with the trust can affect marketability of interests in the trust.

Actuarial Information on Life

Beneficiaries. The 7520 valuation is based in part on a life expectancy drawn from a table.²⁷ The table is developed from information gathered by the decennial census. The census is designed (and required by the U.S. Constitution, Article 1) to count the entire population of the United States. As such, life expectancy tables generated from this data might not yield the best possible predictor for the life expectancy of an individual about whom additional information, beyond age, can be known.

Additional actuarial information about a specific individual, such as health status, health history, and residence ZIP code, may provide further valuable information not captured in the general census data. Such information, if it tends to suggest a longer life expectancy than the census data, would tend toward a market value higher than the 7520 valuation for a lead interest, and if it suggests a shorter life

expectancy, then the market value would tend to be lower.

Variability of Market Returns. Actual realized market returns will tend to have different types of effects on CRATs than on CRUTs, and accordingly, we will examine them separately.

The key distinction, again, is that annual payments from CRATs are fixed, while annual payments from CRUTs are variable.²⁸ Because the lead payment from a CRAT is fixed, the returns realized do not affect the value of the CRAT lead payment stream, unless the returns are low and threaten to extinguish the CRAT.²⁹

The value of the remainder interest in a CRAT is therefore often very sensitive to the actual realized returns on the trust assets. For example, we recently examined a CRAT originated as a \$5 million, 5 percent CRAT, paying out \$250,000 annually. Having experienced good market performance for many years, its worth had risen to over \$15 million when we examined it, which will in all likelihood create a large and unanticipated (at the time of creation) windfall for the charitable beneficiary. It is this same remainder sensitivity that makes charitable lead annuity trusts (CLATs) and grantor retained annuity trusts (GRATs) potentially powerful estate tax planning tools.

In contrast to CRATs, the effect of actual market returns, and even the timing of those periodic returns, on CRUTs falls much more heavily on the lead interest holder.

Variable Returns, Risk Aversion, CAPM, and CRUTs

Expected variability of future returns, and the specific pattern of returns, can affect the number of dollars paid to the lead beneficiary, and hence affect the value of that stream of payments. Even the same average return over a given period of years can result in significantly different dollar payouts depending on the timing of the gains and losses. An example illustrates this point.

Consider a \$1 million SCRUT with a payout rate of 5 percent. Suppose that over

two years the average annual return is 5 percent per year, with one year returning 15 percent and the other year returning negative 5 percent.

If the trust earns 15 percent in year one, the trust value, pre-payout, at the end of year one will be \$1.15 million. After the 5 percent payout (based on the year's beginning value of \$1 million) of \$50,000 is paid to the lead holder, the trust has \$1.1 million. The second year's payout is based on this amount, and is therefore \$55,000. If the trust then loses 5 percent of the \$1.1 million with which it began the year, it will finish the year with a pre-payout balance of \$1.045 million. It then pays the lead interest holder \$55,000, and ends year two with \$990,000. The lead holder has received a total of \$105,000 in lead payments over the two years.

Now consider the losing year occurring first. The trust begins with \$1 million, loses 5 percent (\$50,000), and ends the year, pre-payout, with \$950,000. The trust then distributes the \$50,000 first-year payment to the lead holder, so the trust assets at the end of year one are \$900,000. This \$900,000 value is used to calculate the second year's lead payment, which will be \$45,000 payable at the end of the year. During year two, the trust gains 15 percent, enabling the trust assets to grow to \$1.035 million by the end of year two, prior to the payment to the lead interest holder. The trust pays the \$45,000 to the lead holder, and ends the year with \$990,000. The lead interest holder has received a total of \$95,000 over the two years.

As this example demonstrates, there is an important risk arising from the timing of returns, even given the same average return over time. We call this the "return-timing" risk. This risk falls on the lead interest holder.

Risk Aversion. Risk aversion, first described in the technical literature way back in 1738 by the mathematician Daniel Bernoulli,³⁰ occurs when an individual's utility function is concave; that is, when the individual's expected utility from a

lottery³¹ is less than the expected value of the lottery. Consider, for example, a fair coin toss with payoffs of \$100,000 for heads and \$0 for tails. Because the probability of heads equals the probability of tails (one-half), the expected value of this lottery is \$50,000. A risk-averse person would be unwilling to pay \$50,000 to play this lottery. A risk-neutral person would be indifferent between an offer of \$50,000 or playing this lottery, and a risk-loving person would prefer the lottery to receiving a payment of \$50,000.

For decades, much of the theory of finance has rested on the assumption that, on average, investors are risk averse.³² This widely held belief is supported by empirical evidence, and indeed more recent evidence has supported the view that risk aversion declines with wealth.³³ And it is commonly believed, and supported by evidence, that risk aversion tends to increase with age.³⁴

For the present purposes, we are concerned with predictable changes in risk aversion in a given individual over time, and in differences in risk aversion among different wealth categories of individuals.

Return-Timing Risk and the Value of a CRUT Lead Interest. Return-timing risk represents a lottery in the classic sense of the risk-aversion literature. As such, given that the average investor is risk averse, return-timing risk will tend to affect the value of a CRUT lead interest (but not that of a CRAT).

The individual who creates a CRUT, funds it, and holds it will tend, merely by the fact of aging, to experience increasing risk aversion. This increased risk aversion will tend to reduce the value of the CRUT lead interest to the holder, but not necessarily to a buyer. This is purely a function of the lead interest holder's utility function becoming more concave as the interest holder ages. The expected value of the lead interest does not change, but its perceived value to the holder does. Such differences are not, and cannot be, captured in the 7520 valuation approach.

Different Risk-Aversion Profiles. As seen above, the return-timing risk inherent in a CRUT lead interest means that a given stream of lead payments might have different value to different market participants, even if they share the same expectations regarding future returns and the variability of those returns.

Changing risk aversion over time can lead a previously happy CRT lead interest holder to be no longer happy with the same asset with the same risk profile.

Transaction volume has increased steadily, and in recent years most CRT interests that have sought a buyer have been able to find buyers at prices that make sense for both buyer and seller.

The nature of the CRT lead interest makes it, for tax purposes, like bonds, in which the holder has a huge unrealized gain.³⁵ Like the long-term bond, a sale generates a long-term capital gain, taxable at favored long-term capital gains tax rates. Holding on to a CRT, like holding on to a taxable bond, will result in some or all of this capital gain being taxed at higher ordinary rates.

Because of the zero basis, in the majority of cases, a CRT income interest holder of a seasoned CRT will be better off, net of all taxes and fees, selling and reinvesting the proceeds than he would be holding until maturity.

RULE 10. Take a good, hard look at selling seasoned CRTs, effectively paying tax at capital gains rates on all future income, and reinvesting the after-tax proceeds.

Conclusion

Adviser attitudes toward deferral of income taxes formed in the period of very high taxes that prevailed a generation ago have served very well. However, where there is a spread between capital gains and ordinary rates, and where conversion of capital gains to ordinary income is the price of deferral, the wisdom of that deferral must be tested against a specific set of facts.

Second, where there is an opportunity

to avoid higher taxes that are expected in the future, deferral may be the opposite of the best strategy.

Lastly, where there are assets, such as appreciated taxable bonds or CRT income interests, that can be sold and the gain taxed at long-term gain rates, deferral is again likely to be the worst strategy and immediate payment of tax the best strategy.



Endnotes

1. Investment Company Institute. 2011. *The U.S. Retirement Market Second Quarter 2011* (September).
2. It is sobering and shocking to realize that even if 100 percent of IRA assets were taxed immediately at the maximum federal rate of 35 percent, the resulting tax revenue would fund the federal deficit for barely a year.
3. Dammon, Robert M., Chester S. Spatt, and Harold H. Zhang. 2004. "Optimal Asset Location and Allocation with Taxable and Tax-Deferred Investing." *Journal of Finance* (June).
4. There are some papers that do examine the question, such as Lawrence Kotlikoff's 2009 NBER Working Paper 13763 "To Roth or Not to Roth." Kotlikoff's analysis leads him to the conclusion that the choice of whether to pay tax now or in the future depends to an important extent on expected future tax rates and the shape of the future tax regime.
5. Under current law it is generally not possible to put a lump sum of \$100,000, pre-tax, into an IRA. However, over several years it is possible for high earners to contribute hundreds of thousands of pre-tax dollars to similar tax-deferred retirement accounts. For example, the limit for defined contribution plans under Section 415(c)(1)(A) is \$50,000. We use the example here of a single year to simplify the analysis, while not sacrificing generality.
6. Adjusted for assumed inflation of 3 percent a year.
7. Actual plan administration expenses may vary depending on the specifics of a plan. The point here is not to state that certain kinds of plans are not useful because of their expenses, but only to point out that certain plans, because of their complexity, may have higher expenses than other plans, and that those higher expenses should be considered in an analysis.
8. This rate was chosen because it would be the effective ordinary income tax rate on January 1, 2013, unless Congress acts to change the law.
9. Ibid.
10. This follows from the standard result of deferral of tax under conditions of positive interest rates and tax rates. See the Mathematical Appendix.
11. Some advisers have cautioned that this strategy depends on the belief that Congress will not decide in the future to tax Roth IRAs, despite the many fairness and other arguments against such taxation. If you think Roth IRAs may be taxed in the future, you naturally would not want to pay tax now, only to be taxed again on the same money.
12. FA magazine staff. 2011. "Variable Annuity Assets Reach Record Levels in 2010." *Financial Advisor*, as reposted on NASDAQ.com (March 7).
13. The total value of the U.S. stock markets as of April 1, 2011, was approximately \$14 trillion. Unrealized gains likely constitute more than 10 percent of that number, although a significant percentage would be owned by pension funds, making it difficult to estimate the amount of unrealized gain held by taxable accounts.
14. A variable annuity owned by a non-natural person may not enjoy the tax-deferred inside buildup characteristic of variable annuities under consideration here. Thus, although there may be situations (such as within an IRA or a CRT) in which a variable annuity is funded with pre-tax dollars, it is likely not the variable annuity that is providing tax deferral in those situations.
15. One obvious and non-trivial issue with this strategy is the difficulty of predicting which stocks will in fact prove to be both non-dividend paying and growth stocks for the next three decades.
16. Unlike many of our other rules of thumb, this one is easily provable with equations. Let B = net after-tax lump sum invested in either a taxable account or a VA; let R = growth rate for either account; let n = number of years of growth/compounding/deferral; let T_L = long-term capital gains tax rate and T_O = ordinary income tax rate. The ending balance after-tax for the taxable account is then $B(1 + R)^n (1 - T_L)$, and the after-tax ending balance for the VA account, $B(1 + R)^n (1 - T_O)$. Under what conditions is the taxable account superior? It is superior for all $T_L < T_O$. This is exactly the condition that the long-term capital gains tax rate is lower than the ordinary income tax rate.
17. Reed, Brian. 2004. Investment Company Institute *Research Commentary* (November 17).
18. An astute reader of a draft of this article raised the question of whether it is reasonable to compare a professionally managed DVA investment, which must pay fees, to a comparably managed taxable account, and as we do in our analysis, not charge any fees against the taxable account. Of course a managed taxable account will incur fees, and we can assume that competitive markets will result in the portfolio management portion of the costs to be approximately equal for both the DVA and the taxable account. However, the DVA also incurs additional costs above and beyond the portfolio management fees. These additional fees are often referred to as M&E expense. In our comparisons, we assume that the only difference in fees between a DVA and an equivalent taxable portfolio are these DVA-specific fees.
19. We illustrate this unrealistic scenario for two reasons. First, to enable the reader to see the potential for a no- or low-fee deferral vehicle, and second, to enable the reader to observe how the presence of fees can offset the advantages of deferral. This result will vary with the specific rates of return and tax rates used. For this example, we used a 35 percent total tax rate and an expected return of 7.5 percent. Plugging these rates into equations (1) and (2) yield the result here. See the Mathematical Appendix.
20. Annual fees in the deferral vehicle equate to lower pre-tax returns in the deferral vehicle. If we let the annual fee in percent be f , then in the model (see the Mathematical Appendix) they can be represented by using r_f instead of r , where $r_f = r - f$.
21. This and all these comparisons assume identical pre-tax, pre-fee rates of return in each of the scenarios being compared.
22. A high-water mark is the highest total value (adjusted for contributions and withdrawals) reached by an account at some specified measuring time, such as month end, quarter end, or year end. For example, if a portfolio starts at \$1 million, rises 25 percent to \$1.25 million, then declines to \$1.02 million, the high-water mark up to that time would be \$1.25 million. The value versus the cost of each of these "riders" needs to be evaluated on an individual basis, and is beyond the scope of this article.
23. Note that there is an arcane science known as

Mathematical Appendix

The net after-tax future value of an investment with deferral and payment of tax at the end of the holding period, where t = tax rate, r = rate of return, n = number of periods, P = the beginning principle balance, is given by:

$$(1) (1 - t)[Pe^{rn} - P] + P$$

The formula for the future value of an investment at the end of the holding period, with tax paid annually, is given by:

$$(2) Pe^{r(1-t)n}$$

The standard result, that deferral maximizes net after-tax future value, can be derived by showing that (1) is greater than (2). The proof follows.

We expand expression (1) to obtain:

$$(3) Pe^{rn} - P - tPe^{rn} + tP + P$$

Gathering terms gives:

$$(4) Pe^{rn} - tPe^{rn} + tP + P$$

Factoring yields:

$$(5) P[e^{rn}(1 - t) + t]$$

Which equals:

$$(6) [P[rn(\ln(e))(1 - t)] + t]$$

Simplifying:

$$(7) P[rn(1 - t) + t]$$

Expanding the term in the exponent in (2):

$$(8) Pe^{rn - rtn}$$

Equals:

$$(9) P(rn - rtn)[\ln(e)]$$

Which simplifies to:

$$(10) P(rn - rtn)$$

Our task is to show that (7) > (10)

$$Prn(1 - t) + t > Prn - Prtn$$

$$rn - rnt + t > rn - rtn$$

$$t > 0$$

We thus have shown the condition under which after-tax future value is maximized, namely when the tax rate is greater than zero, which is what we set out to demonstrate.

We then build upon expressions (1) and (2) to develop further analytic models. For example, suppose that tax rates are expected to change in the future. For simplicity, we consider the tax rate now, t_1 , and the tax rate in the future, t_2 . For a given r , t_1 , and t_2 , we can calculate the elapsed time n at which both expressions will be equal. This will give us the "breakeven" time

for a given return and tax rate differential.

Expression (1) becomes:

$$(11) (1 - t_2)[Pe^{rn} - P] + P$$

and expression (2) becomes:

$$(12) Pe^{r(1-t_2)n}$$

The indifference condition is found when (11) equals (12), which occurs when the following equation holds:

$$(13) t_2(nr - 1) = nr t_1$$

The reader will note that these are not the only possible patterns in which tax rates could change. Estimating the full range of possible future tax rates and the time sequence of the effectiveness of such combinations of possible future tax rates becomes an exercise in combinatoric analysis. For example, if we limit our analysis to a single effective tax rate per calendar year, and assume that the tax rates themselves must take integer values between 0 and 99, over a planning horizon of just 10 years there exist theoretically one-hundred quintillion (10^{20}) possible rate paths. Restricting the possible effective tax rates further, by constraining the possible values of the tax rate to integer multiples of five between 0 and 95 inclusive, results in over 10 trillion possible paths. Unfortunately, we have no compelling theoretical basis to predict a path, nor do we have a basis upon which to forecast a stochastic model of future effective rates.

Note on Continuous Versus Discrete Analysis

The mathematically attentive reader will note that in our analysis we have used the continuous form of the expressions for computing the future value of an investment. The reader may also note that in actual practice, fees and taxes are not collected continuously but rather at discrete intervals. In the case of fees, such as mutual fund fees or variable annuity fees, this interval is likely to be daily, and in the case of taxes, it is likely to be quarterly. At reasonable rates of return, the difference in results between quarterly compounding and continuous compounding (which is the difference between using a discrete model that has taxes paid quarterly and a continuous model that has them paid continuously) is insignificant and would be extremely unlikely to change any results. For example, at 6 percent returns and 35 percent tax rates, the cumulative difference over 10 years between quarterly compounding and continuous compounding is less than two-tenths of 1 percent.

"bond math." A yield-to-maturity is a conventional number, understood and agreed on by the players.

It is not actually a guarantee of the return that will be earned by holding the bond to maturity.

It is usually a pretty good estimate, but be aware that if you are doing fine-pencil comparisons, the yield-to-maturity is only an approximation. A standard reference is Frank Fabozzi's *Fixed Income Mathematics*, 4th ed. (McGraw-Hill 2005).

24. The reader will see that given a fixed dollar annual

payment, a long enough term, and low enough returns, it is possible for a CRAT to completely exhaust its principal before the end of the lead period, resulting in charity receiving nothing. To minimize the likelihood of this happening, all CRTs created after 1997 must be structured so that they have an expectation that at least 10 percent will go to charity (IRC Sec. 664 d(1)D and d(2)D).

25. Note that as of this writing some free online sources for the regulation, such as taxalmanac.org, show

tables based on the mortality table 90CM. Since 2010, the correct mortality table has been table 2000CM. Most practitioners rely on commercial software packages, such as Leimberg's Number-cruncher, PGCcalc, or Thompson-Onesource's zcalc. For one-off calculations, there are some free online tools that may be found by an Internet search. We suggest caution with this latter approach, as such free sources may not be accurate or up to date.

(Continued on page 48)

Morningstar EnCorr. www.econ.yale.edu.
<http://mba.tuck.dartmouth.edu>.

4. U.S. Large-Cap Dividend Growth Method: current dividend yield = S&P 500 current yield (1.7 percent). Repurchase yield = five-year average of stock buyback levels for S&P 500 calculated as the total stock buybacks divided by the total market value (3.3 percent). Dividend growth estimate calculates the long-term average growth rate (since 1977) in the annual dividend yield; dividends paid divided by S&P 500 Index price (1.4 percent). www.standardandpoors.com.
5. Long-Term Inflation Estimate. Expected inflation is based on an “unbiased” forecast calculated as the current spread between 20-year nominal Treasuries (4.1 percent) and 20-year TIPS (1.6 percent). Subjective adjustment was made using data from the 30-year “unbiased” spread and the “Survey of Professional Forecasters” published by the Federal Reserve Bank of Philadelphia for the 2.4 percent estimate. www.federalreserve.gov.
6. Long-Term Trend Method: historical real value = annualized return of the S&P 500 using historical real returns (6.6 percent). Trend line value = annualized regression of monthly real total returns (0.005480) (6.8 percent). Return required = ending index values calculated for the historical and trend line using monthly returns to determine the differential of being under or over the trend line (-25.8 percent). Next calculation is to determine the required annualized real return to bring the actual real value back to the trend line value over a 20-year period by projecting out the regression index (8.4 percent). Morningstar EnCorr. www.econ.yale.edu.
7. U.S. Intermediate-Term Fixed-Income Method: intermediate risk-free rate = U.S. 7-year Treasury yield (2.7 percent). Credit risk premium = difference between the Barclays U.S. Intermediate-Term Government/Credit Index return (7.8 percent) and the Barclays U.S. Intermediate-Term Government Index return (7.6 percent), equals 0.2 percent. Inflation premium = difference between the long-term average inflation rate (4.4 percent) and the long-term average return of the Barclays U.S. Intermediate-Term Government Index (7.7 percent), equals 3.3 percent. Morningstar

EnCorr. www.federalreserve.gov.

8. The historical return for commodities is an equal-weighted blend of the following index returns: S&P GSCI Commodity Index and GRCI Commodity Index (1973–1990), DJ UBS Commodity Index (added in 1991), and Reuters/Jeffries CRB Index (added in 1994). Morningstar EnCorr.
9. FTSE NAREIT Equity REIT Index. Morningstar EnCorr (1973–2010).
10. Portfolios for Savant are composed of the following indices to represent each asset class: Stocks: S&P 500 Index, Fama-French Large Value Index, CRSP Deciles 6-10 Index, Fama-French Small Value Index, MSCI EAFE Index, MSCI EAFE Value Index, Dimensional Int'l Small Cap Index, Dimensional Int'l Small Value Index, MSCI Emerging Markets Index. Bonds: BarCap U.S. Government/Credit Intermediate Index, BofAML U.S. Treasuries Inflation Linked Index, BarCap Global Aggregate Ex U.S. Index. REITs: FTSE NAREIT Equity REIT Index. Commodities: see endnote 8. Real expected returns and volatility (standard deviation) for Savant's portfolios in 2000 and 2009 were calculated using our forward-looking return methodology for each asset class shown in this endnote.

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26. The reason is both fees and flexibility. Usually, trust companies charge higher trustee fees than individual trustees (who often don't charge at all). Furthermore, some trust companies are perceived as poorer than average investment managers, or as favoring investments that charge higher-than-average fees, resulting over the long run in lower performance.
 27. Technically, table 2000CM, the table indicated by IRS reg. 1.664-4, is the mortality table. Life expectancies can be computed from a mortality table.
 28. The analysis is quite similar to the analysis of a grantor retained annuity trust (GRAT) compared to a grantor retained unitrust (GRUT).
 29. In this respect the analysis of the value of a CRAT lead payment stream is similar to a bond credit analysis. If the CRAT has obviously sufficient resources to pay the lead interest, the lead interest will be valued similar to any other low- or no-risk annuity. If the CRAT resources are not obviously ample, the value of the lead payment stream may have to be discounted by some risk factor designed to quantify the risk that not all the payments will be received in full on a timely basis.
 30. Bernoulli, Daniel. Reprinted 1954. “Exposition of a New Theory on the Measurement of Risk.” *Econometrica* (January).
 31. “Lottery” here has a technical meaning of a specified set of outcomes with specified probabilities. For example, a bet on the flip of a coin with payoffs of \$10,000 for heads and \$0 for tails would be a lottery.
 32. Sharpe, William. 1965. “Risk Aversion in the Stock Market: Some Empirical Evidence.” *Journal of Finance* (September).
 33. Hartog, Joop, et al. 2000. “On a Simple Survey Measure of Individual Risk Aversion.” Working paper, University of Amsterdam.
 34. Halek, Martin, and Joseph Eisenhauer. 2001. “Demography of Risk Aversion.” *Journal of Risk and Insurance* 68, 1.
 35. The IRS has taken the position that a CRT lead beneficiary has no basis in the income interest. See Notice 2008-99 and comments thereto.