# Should You Convert to a Roth IRA? A Real Options Perspective

by Glenn S. Daily

Should you convert a regular IRA to a Roth IRA? Let's find out.

# **Chapter 1: The journey begins**

### Wherein the reader unwittingly proceeds down a road that is still under construction

Owners of regular IRAs now have the option to convert to a Roth IRA. One useful tool for this decision is option pricing theory, one of the major accomplishments of modern finance. This theory spurred the development and widespread use of financial options, such as puts and calls on common stocks, as well as exotic derivatives. It can also be used to analyze the flexibility that is present in most investment projects. These "real options" include the option to wait to invest, to increase or decrease the scale of the project, and to abandon the project. The options approach to investment analysis is taught in MBA courses on corporate finance and is actually used by some corporate planners, but it has so far received little attention in personal finance.

Let's start with a simple example, using a standard way of setting up the IRA comparison. (You can find many examples and a lot of helpful information at the Roth IRA Web Site, www.rothira.com.) Here are the assumptions, chosen for convenience:

- Your regular IRA has a \$100,000 balance, and you have made no non-deductible contributions. You also have at least \$34,000 in investments outside the IRA.
- You expect to let the money grow for 20 years until you retire, and then you'll take it out in equal installments over the following 20 years, at the beginning of each year.
- You expect to get an 8% annual pre-tax return inside the IRA. You expect to get a 6% annual after-tax return on your investments outside the IRA. The effective 25% tax rate reflects a blend of ordinary and tax-exempt income and realized and unrealized capital gains.
- The marginal tax rate for income generated by a Roth IRA conversion is 34%. The conversion occurs in 1999, and the tax is paid upon conversion.
- You expect that your marginal tax rate in retirement will be 32%.

#### If you don't convert to a Roth IRA:

Invested at 8%, your \$100,000 regular IRA balance will grow to \$466,096 in 20 years, and you can then receive 20 equal payments of \$43,956 before tax, which will be \$29,890 after a 32% tax. Invested at 6% after tax, the \$34,000 invested outside the IRA will grow to \$109,043 in 20 years, and you can then receive 20 equal payments of \$8,969 after tax. If you convert to a Roth IRA:

Invested at 8%, your \$100,000 Roth IRA balance will grow to \$466,096 in 20 years, and you can then receive 20 equal payments of \$43,956. No income tax is due, because Roth IRA distributions are tax free. The \$34,000 invested outside the IRA is used to pay income tax upon conversion, so this money is not available to provide a retirement income.

Regular IRA	\$29,890	Roth IRA	\$43,956
Outside assets	8,969	Outside assets	-0-
Total	\$38,859	Total	\$43,956

The conclusion is that a Roth IRA conversion produces a 13% increase in after-tax retirement income; i.e., (43,956 - 38,859)/38,859. That looks like a good deal.

Now let's restate the comparison using present values (as of 1999) rather than future values.

#### If you don't convert to a Roth IRA:

The regular IRA provides 20 annual payments of \$29,890 after tax. Discounted at 6%, the present value of those payments is \$113,313. (This shows the value of 40 years of tax-deferred compounding; it would take \$113,313 invested outside the IRA to produce the same after-tax payments as the current \$100,000 IRA balance. It also shows the folly of raiding the IRA to get money for current expenses; you would get less than \$60,000 after paying the 10% penalty tax, and you would give up an asset that is worth over \$113,000.)

#### If you convert to a Roth IRA:

The Roth IRA provides 20 annual payments of \$43,956 after tax. Discounted at 6%, the present value of those payments is \$166,635. (This shows the value of 40 years of tax-free compounding; it would take \$166,635 invested outside the IRA to produce the same after-tax payments as the \$100,000 Roth IRA balance. It also shows the folly of raiding the IRA to get money for current expenses; you would get \$100,000 or less, and you would give up an asset that is worth over \$166,000.)

$\begin{array}{cccccccccccccccccccccccccccccccccccc$	Regular IRA	\$113,313	Roth IRA	\$166,635
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By converting to a Roth IRA, the present value of the future after-tax distributions increases by \$53,322 (from \$113,313 to \$166,635). In other words, if you didn't convert you would need an additional \$53,322 invested outside the regular IRA to match the Roth IRA distributions. Proof: the \$53,322 would grow to \$171,011 after 20 years, and it would produce 20 equal payments of \$14,066 after tax. That is just enough to match the Roth IRA payments (\$29,890 + \$14,066 = \$43,956).

The cost of the conversion is the \$34,000 income tax that you have to pay. You can think of the conversion this way: by investing \$34,000 you increase the present value of the future IRA distributions by \$53,322. Because the net present value is positive (\$53,322 - \$34,000 = \$19,322), this looks like a good deal.

The conversion increases your present wealth by \$19,322; that's the additional amount that you would need to invest outside the IRA to match the additional after-tax payments that the Roth IRA produces. Proof: the \$19,322 would grow to \$61,968 after 20 years, and it would produce 20 equal payments of \$5,097 after tax. When added to the payments produced by the regular IRA and outside investments, that is just enough to match the Roth IRA payments (\$38,859 + \$5,097 = \$43,956).

The Roth IRA conversion option is an investment opportunity: you pay income tax now with the expectation of getting higher retirement benefits later. This opportunity has three important characteristics:

- The investment is irreversible. You cannot later change your mind, convert back to a regular IRA, and get an income tax refund. Also, it's unlikely that you would want to liquidate either the regular IRA or the Roth IRA before retirement. As shown above, the IRA's liquidation value is much less than the present value of future distributions, because of the benefit of tax-advantaged compounding. This means that you shouldn't view the conversion cost as a short-term prepayment of a tax bill that would probably come due in a few years anyway.
- The benefits are uncertain. You can easily think of factors that would cause the actual benefit to be higher or lower than the expected benefit. For example, the regular IRA would be better than the Roth IRA if your marginal tax rate in retirement is less than 20.4%, or if you can earn at least 8.5% after tax outside the IRA for 20 years (and then annuitize at 6% as before). Sweeping tax reform, such as a progressive consumption tax, could increase or decrease the benefits of the Roth IRA, depending on the transition provisions.
- The investment decision can be postponed. There is currently no time limit on Roth IRA conversions, as long as you meet the income requirement for eligibility. The tax treatment was generally more favorable for conversions in 1998, however, because you could spread the recognized income and therefore the income tax over four years.

In recent years, researchers have made great advances in the analysis of investment opportunities that involve irreversibility, uncertainty, and the ability to wait. One promising approach is real option analysis. This views an investment opportunity as being similar to an American-style call option on common stock. You have the right, but not the obligation, to make the investment, and you can also decide when to take advantage of that right. Most investment opportunities do not disappear if you don't take advantage of them immediately, and that fact is ignored in widely-used methods of investment analysis, such as net present value.

The Roth IRA conversion decision involves irreversibility, uncertainty, and the ability to wait. It seems reasonable, therefore, to move beyond present value and future value analyses and to ask if a real options perspective might provide better guidance.

### Chapter 2: A detour

#### Wherein the reader picks up some information that is necessary to continue the journey

Let's pause for a moment to review how a call option works. Suppose you own a call option on 100 shares of Roth Corporation common stock with an exercise price of \$34 and an expiration date of one year. This means that you have the right, but not the obligation, to buy 100 shares of Roth stock at \$34 per share at any time within the next year.

Let's assume that the stock is currently selling at \$53 and that it will pay a dividend six months from now. The option currently has an intrinsic value of \$19 per share, because you could exercise the option, buy the stock at \$34, sell it immediately at \$53, and pocket \$19. The option is worth more than its intrinsic value, however, because you can wait to see what happens to the price of Roth stock and make a decision later. If the stock stays above \$34, you can buy it at \$34 and make money. If it goes below \$34, you can just walk away. Options are valuable because they let you enjoy good outcomes and avoid bad ones.

For non-dividend-paying stocks, there are five factors that affect the value of a call option:

- Current stock price. A higher current stock price makes a call option more valuable.
- Exercise price. A higher exercise price makes a call option less valuable.
- Expiration date. A longer time until expiration makes a call option more valuable.
- Volatility of stock price. Higher volatility makes a call option more valuable.
- Risk-free interest rate. A higher risk-free interest rate makes a call option more valuable.

If the stock in our example paid no dividend, the call option might sell for about \$20.50, which is \$1.50 more than its intrinsic value.

It never makes sense to exercise a call option on a non-dividend-paying stock before the expiration date, because you give up two benefits for nothing. First, you pay the exercise price earlier than necessary, so you miss out on interest that you could otherwise earn. Second, you give up the ability to walk away if the stock drops below the exercise price before the expiration date. These two benefits are reflected in the option price. (What if you expect that the stock price will drop? You should either sell the option or sell the stock short; you should not exercise the option and then sell the stock.)

For dividend-paying stocks, the value of a call option is affected by additional factors, including the size and timing of the dividend payments. All other things being equal, dividends reduce the value of a call option, because the stock price falls on the ex-dividend date but the exercise price remains unchanged.

Dividends may also trigger early exercise of a call option. The general rule is that it makes sense to exercise a call option if the expected value of the option just after the ex-dividend date is less than its intrinsic value just before the ex-dividend date. In other words, if you know that the option will be worth less tomorrow, you should exercise it today

A dividend is more likely to trigger early exercise if (1) it is large; (2) it occurs near the expiration date of the option; or (3) the option is deeply "in the money" (that is, the intrinsic value is large in relation to the exercise price). If the stock price in our example stays at \$53 during the next six months, a \$2 dividend would trigger early exercise, because the option would be worth less than \$19 after the ex-dividend date. However, a \$0.50 dividend might not trigger early exercise.

Now let's add this wrinkle: suppose the call option has the unusual feature that the exercise price is \$29 for the first six months and \$34 for the second six months. For simplicity, let's also eliminate the dividend. If the stock price stays at \$53, the option will be exercised at the end of six months, because the \$24 intrinsic value will be greater than the expected value of the option the next day. This is similar to the effect of a large dividend. This conclusion does depend on the stated and unstated assumptions in this example, however. With different (and less plausible) volatility and risk-free interest rate assumptions, early exercise might not make sense.

# **Chapter 3: The journey continues**

Wherein the reader, in the middle of a marvelous adventure, is suddenly abandoned by the author and left to complete the journey alone

There is a striking similarity between the Roth IRA conversion option and a call option on common stock. The table below summarizes the parallel features.

Analogy between a call option on common stock and the Roth IRA conversion option		
Call option	Roth IRA conversion option	
Financial option, associated with an underlying financial instrument	Real option, associated with an underlying investment project	
Option price (the value of an exchange- traded or over-the-counter option)	Total value of the conversion option: expanded NPV = static NPV + value of real options	
Shares of common stock	Difference between after-tax distributions of Roth IRA and regular IRA	
Stock price	Present value of difference between after-tax distributions of Roth IRA and regular IRA	
Volatility of stock price	Uncertainty about the benefits of the Roth IRA relative to the regular IRA, due to uncertainty about future tax laws, investment returns, and other factors	
Exercise price	Income tax that must be paid upon conversion. For conversions in 1998, the taxable income is spread over four years.	
Intrinsic value	Increase in present value of after-tax distributions minus income tax paid upon conversion	
Expiration date	Under current law, the option to convert continues indefinitely, although the tax treatment was more favorable in 1998.	
Dividend	Continuously accruing benefit of tax-free compounding	
Risk-free interest rate	Risk-free interest rate	

Conversion is an option; it is not mandatory. If it seems beneficial, you can do it. If it doesn't, you can walk away.

A call option gives you the right to buy shares of stock. The conversion option gives you the right to buy the difference between the after-tax distributions of a Roth IRA and a regular IRA.

Shares of stock have a price. The difference between the after-tax distributions of the IRAs has an expected present value. In the example in Chapter 1, the expected present value is \$53,322.

The difference between the after-tax distributions is uncertain. You can expect it to vary over time, reflecting changes in realized and expected investment returns, future tax laws, your expected tax rate in retirement, and the discount rate. The volatility of this difference is analogous to the volatility of the stock price that underlies a call option, although the sources of volatility are not the same.

A call option has a stated, fixed exercise price. The exercise price of the Roth IRA conversion option is the income tax that must be paid upon conversion. For conversions after 1998, this is determined by the tax rate in the year of conversion. For conversions in 1998, the income is spread equally over four years, so the tax liability is determined by the tax rate in each year. The tax payments are also spread over four years. You therefore face an uncertain exercise price. However, if you can legally control your reported income in one or more years through various tax planning techniques, you can also control the exercise price.

In the Chapter 1 example, the exercise price in 1999 is \$34,000. For a 1998 conversion, let's assume that spreading the income over four years reduces the marginal tax rate from 34% to 32%. Discounted at 6%, the four payments of \$8,000 (i.e., \$25,000 x 32%) would have a present value of \$29,384. If the marginal tax rate remained at 34%, the present value would be \$31,221. If your income fluctuates wildly, a well-timed single payment might be less costly than income spreading, but for most people the 1998 tax treatment would be favorable.

The intrinsic value of a call option is the current stock price minus the exercise price (or zero, if the exercise price exceeds the stock price). The intrinsic value of the conversion option is the present value of the difference in after-tax distributions minus the income tax payment; in other words, the net present value. The intrinsic value is zero if the regular IRA generates higher distributions than the Roth IRA.

A call option has a stated, fixed expiration date. Under current law, the option to convert to a Roth IRA continues indefinitely. Of course, future legislation could add restrictions or eliminate the option entirely.

For a call option on dividend-paying stocks, dividends reduce the stock price on the ex-dividend date, and therefore they reduce the value of the call option. For the conversion option, the passage of time has the same effect as a dividend payment: it reduces the advantage of the favorable tax treatment of the Roth IRA. The Chapter 1 example illustrates how this works.

Suppose you convert a year later, so that there will now be 19 years of accumulation followed by 20 years of distribution. The present value (as of 1999) of the difference in after-tax distributions will still be \$53,322; that number doesn't change. However, the IRA balance will be \$108,000, so the income tax payment upon conversion will be \$36,720. The present value is \$34,642. Therefore, the net present value is \$18,680, rather than the original \$19,322.

It's helpful to turn this around and look at the difference in after-tax distributions per dollar of income tax payment, using present values. If you convert a year later, a \$34,642 tax payment produces a \$53,322 increase in after-tax distributions; that's \$1.539 per \$1. You could also choose to pay \$34,000 and convert 98.1% of the IRA, with a difference of \$52,326 (i.e., 1.539 x 34,000).

By holding the exercise price constant at \$34,000, you can see that the after-tax difference in distributions drops from \$53,322 to \$52,326, a 1.9% decrease. This is analogous to a continuously-paid dividend that causes a 1.9% decline in the price of a stock.

A call option has a price. For exchange-traded options, the price is determined by transactions in the marketplace. For over-the-counter options, the price is negotiated among the participating parties, and there may also be a secondary market for subsequent transactions. Economists have devised methods to determine the value of options and the optimal timing of their exercise, and these methods guide sophisticated buyers and sellers in their dealings with one another. A sophisticated option owner knows, for example, that it is foolish to exercise a call option merely because it is in the money. As we saw in Chapter 2, the rules for optimal exercise are more complicated than that.

Real options generally cannot be traded, so they don't have a published or negotiated price. They do have a value, however. If you could somehow sell your option to convert to a Roth IRA, it would be easier to appreciate its value, because there would be a visible number on display. You would also see that it is foolish to convert to a Roth IRA merely because some easy arithmetic suggests that the future distributions will be higher. The rules for optimal exercise are more complicated than that.

In the conventional approach to investment analysis, the value of an investment opportunity is its net present value. If the NPV is positive (using appropriate risk-adjusted cash flows and discount rates), you should make the investment. In the options approach to investment analysis, the value of an investment opportunity is given by this formula:

expanded NPV = static NPV + value of real options

Static NPV is the conventional measure of investment worth. It ignores the value of the various dimensions of flexibility — the real options — that most investment opportunities possess. In personal finance, the most important real option is the option to wait for new information about the merits of an investment — or the merits of a proposed action, such as buying a financial product, using a planning technique, or making a career change. When you decide to make an investment today, you give up the opportunity to make it tomorrow. You kill the option to wait,

and you give up its value. The value of the option to wait is an opportunity cost of making the investment today. On the other hand, by waiting to invest you may forgo some benefits that the investment generates. Therefore, to decide if it makes sense to invest today rather than tomorrow, you need to compare today's static NPV against the present value of tomorrow's expanded NPV. If the benefit of waiting exceeds the cost of waiting, you should wait; otherwise, you should invest today. This procedure ensures that you will squeeze the greatest expected benefit from the investment opportunity, instead of leaving money on the table.

For the Roth IRA conversion option, the static NPV is the net gain in the present value of aftertax distributions if you convert now and pay income tax. The primary real option in this situation is the option to wait, and this flexibility may make the conversion opportunity more valuable than its static NPV suggests. If you convert now, you give up the ability to wait for more information about your future tax rate and other variables. As you wait, however, the advantage of the Roth IRA diminishes, because the period of tax-advantaged compounding is shorter. To make a decision about whether to convert to a Roth IRA, you need to weigh the benefit of waiting against the cost of waiting.

What is the conversion option worth, and when should you exercise it? The answer to this question requires knowledge of statistical modeling, stochastic calculus, dynamic programming, and other numerical methods. I leave this problem for others to solve.

### **Chapter 4: The journey continues a little further**

Wherein the author returns with a few more things to say

While we're waiting for a volunteer to tackle this challenging problem, can we at least reach some tentative conclusions about the best course of action?

Let's make these assumptions:

Income tax payment = \$34,000 Present value of after-tax difference in distributions = \$53,322 and other selected values Standard deviation of present value of after-tax difference = 20% Annual depreciation rate = 1.9% Risk-free interest rate = 6% Expiration date = 30 years Stochastic process governing the present value of after-tax difference in distributions: geometric Brownian motion (i.e., a random walk)

Also, let's use (or perhaps misuse) an option pricing spreadsheet that is available at the Real Options in Petroleum website.

The table below shows the intrinsic value, the value of the conversion option, the time until the necessary conditions are expected to be met to trigger exercise (also called the "first passage time"), and the recommended action for several assumed levels of initial present value of after-tax difference in distributions:

Difference in distributions	Intrinsic value	Option value	Years until exercise	Action
\$37,400	\$3,400	\$21,300	30	Wait
53,322	19,322	33,600	30	Wait
68,000	34,000	45,400	30	Wait
102,000	68,000	74,400	27	Wait

This shows that waiting is the best action in each case, because the intrinsic value (the static NPV) of converting today is less than the value of the opportunity to convert sometime in the future. These results are not unusual; you can find examples in the real options literature where it makes sense to wait until the present value of the benefits is at least double the investment cost.

Not surprisingly, the results are sensitive to the assumptions used. For a 4% risk-free rate and a 3.9% annual depreciation rate, here are the results:

Difference in distributions	Intrinsic value	Option value	Years until exercise	Action
\$37,400	\$3,400	\$10,800	24	Wait
53,322	19,322	21,400	13	Wait
68,000	34,000	34,100	2	Wait
102,000	68,000	68,000	0	Convert

The numbers in both tables assume conversion in 1999, with a \$34,000 tax payment. What if we assume that you convert in 1998 and that your four tax payments have a present value of \$30,000? Now the intrinsic value of the conversion option is \$4,000 higher, and you have to compare the higher intrinsic value against the option values in the tables above. For example, in the second table the option value for a \$53,322 difference in distributions is \$21,400, but the revised intrinsic value is \$23,322. Therefore, the option to convert is worth more if you exercise it in 1998 than if you wait until 1999, when you can no longer spread the tax payments over four years.

On the other hand, if the difference in distributions is only \$37,400, the second table shows that the option is worth \$10,800, compared with a revised intrinsic value of \$7,400. It would make sense to wait, even though you give up the favorable tax treatment for 1998 conversions.

You can make two mistakes in handling options wisely: you can exercise an option that should be held, or you can hold an option that should be exercised. The results in the two tables suggest that it may be less costly to make the second mistake, especially after 1998. We just saw that it is better to exercise the option in 1998 if the difference in distributions is 53,322. If you mistakenly hold the option, you lose 1,922 (i.e., 23,322 - 21,400). The worst possible expected loss would be 4,000; that's the loss that you suffer if you fail to exercise an option that should be exercised in 1998 even without the favorable tax treatment (see the last row in the second table). After 1998, the worst possible expected loss from waiting one more year should be even less than 4,000, because the impact of depreciation is less severe than the impact of the 1998 income spreading provision.

On the other hand, there are many cases where the option is worth significantly more than its intrinsic value. When you exercise the option, you lose all of its value above the intrinsic value. It appears, therefore, that you should be more vigilant against being too hasty than against waiting too long.

To avoid putting undue weight on these conclusions, remember that this option pricing model may not be appropriate for the Roth IRA conversion decision. It's doubtful, for example, that the future difference in distributions is adequately described as geometric Brownian motion, because the political process that generates tax laws is not the same as the economic process that generates asset prices. (There are no lobbyists on the floor of the New York Stock Exchange.)

In addition, the simple example in Chapter 1 omits potentially important differences between regular IRAs and Roth IRAs. Here's a partial list:

- The mandatory distribution requirements that apply to regular IRAs do not apply to Roth IRAs during the lives of a primary accountholder and a surviving spouse, so assets can compound until the death of both spouses. Tax-free distributions could then take place over the life of a younger beneficiary. For people who do not need IRA assets in retirement, the Roth IRA can be a powerful wealth transfer vehicle. An additional benefit is that the income tax payment upon conversion is removed from the taxable estate.
- By using a Roth IRA trust, rather than a custodial account, it may be possible to make an irrevocable gift to beneficiaries, thereby removing the IRA from the taxable estate. Because the effective transfer tax cost is lower for gifts than for inheritances, more wealth can be transferred to beneficiaries. Proposed Treasury regulations would eliminate this planning technique, however.
- Under current law, it appears that Roth IRA distributions are excluded when determining what portion of Social Security benefits is taxable.
- Some states may not follow the Federal income tax treatment of Roth IRAs, so state income tax would be due. This would reduce the tax advantage of Roth IRAs over regular IRAs.
- Unlike regular IRA assets, Roth IRA assets may not be protected from creditors in some states.

When the Roth IRA is used primarily for estate planning rather than retirement planning, the example in Chapter 1 needs to be modified to measure the difference in after-tax distributions received by beneficiaries, taking account of estate and gift tax as well as income tax. It would also be reasonable to take account of the possibility of death each year. By waiting to convert, you run the risk that you will die before you can implement a more favorable estate plan.

# Choosing between a regular deductible IRA and a Roth IRA

Some taxpayers have the choice of contributing up to \$2,000 annually to either a regular deductible IRA or a Roth IRA. A happy byproduct of looking at the conversion decision from an options perspective is that it provides a framework for examining this choice, too. If you put money in a regular deductible IRA, you have the option to convert to a Roth IRA later, but if you put money in a Roth IRA, you don't have the option to convert to a regular IRA. Therefore, you need to compare the present value of the Roth IRA benefits with the sum of the present value of the regular IRA benefits plus the value of the option to convert.

If you intend to invest \$2,000 in either type of IRA and if you assume that the tax rate is the same when you contribute and when you withdraw, the Roth IRA wins. But does it still win when you take account of the value of the option to convert?

# Some practical advice about the conversion decision

The articles and calculators that I've seen provide good answers to this question: if you have a one-time-only opportunity to convert to a Roth IRA, should you take advantage of it? For that question, it's appropriate to use a conventional net present value or net future value analysis. However, that's not the question that people are asking, because that's not the situation that they face. They have the option to convert now or next year or the year after that, and they want to know what to do with that option. Should they exercise it now, or should they wait?

According to *InvestmentNews*, financial advisers have found that most clients are unwilling to make the income tax payment that a Roth IRA conversion requires. "When they see that entrance fee, they get that ouch feeling," one adviser explained. Some of these clients may be guilty of shallow thinking, but some of them may intuitively understand that the tax payment is irreversible, that the benefits are uncertain, that the decision can be postponed, and that these features create a high hurdle to overcome, much higher than simply demonstrating that the expected net present value is positive today.

The fact that advisers are not explicitly considering the optionality of the conversion option may explain why some clients are reluctant to take the leap into conversion. They realize that something important is missing from the analysis, even if they can't articulate exactly what it is.

How should you deal with this situation?

First, recognize that an informed decision is not possible at this time, because an adequate analytical framework to deal with the problem has not yet been constructed. You'll just have to make an educated guess about the best course of action.

Use one of the online Roth IRA calculators to project the difference between after-tax distributions of a regular IRA and a Roth IRA for one or more sets of assumptions. Then rework these numbers to show the relationship between the income tax payment and the present value of the difference in distributions. The higher the ratio of the present value of the difference in distributions to the income tax payment (in other words, the more deeply in the money the conversion option is), the more likely it is that conversion makes sense.

Be alert to any legislative action that might affect the conversion option. Obviously, a proposal to eliminate the option to convert after a certain date or to scale back the benefits of Roth IRAs established after a certain date could make immediate conversion attractive. To conclude otherwise, you would have to look further ahead to the possibility that subsequent legislation would restore the benefits. Although that is a valid way to construct an option pricing model, many people would balk at taking such a long-term view.

Some people who should have converted in 1998 will fail to do so, for whatever reason. If you find yourself in that group in 1999 or beyond, take ample time to consider all of the aspects of your financial situation that make a Roth IRA more or less attractive than a regular IRA. Remember that waiting has a benefit as well as a cost.

If your best efforts at analysis produce inconclusive results, consider converting a portion of your IRA. If you do that, you can feel certain that you are both right and wrong. You may prefer that certainty to the nagging feeling that you made a mistake by converting when you shouldn't have, or by not converting when you should have.

The Roth IRA conversion decision is not the only financial planning question that involves irreversibility, uncertainty, and the ability to wait. If you keep your eyes open, you'll run across many others. When you do, remember these remarks from Professor Steven A. Ross's keynote address at the 1994 annual meeting of the Financial Management Association:

"For most investments, the usefulness of the NPV rule is severely limited. As a formal matter, it applies only in those cases where the investment opportunity instantly disappears if it is not immediately undertakenÿWe must take very seriously the caveat to the NPV [rule] that it applies only in cases where an investment does not preclude some alternative investment, because every investment competes with itself delayed in time. It is not that the NPV rule is wrong, rather it is somewhat irrelevant, and at best, it must generally be modified to be usefulÿIf modern finance is to have a practical and salutary impact on investment decision making, it is now obliged to treat all major investment decisions as option pricing problems."

# **Chapter 5: References**

Wherein the author points the reader in the right direction to reach the destination

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