To Roth or Not: A Review and Analysis of Retirement Plan and Conversion Options

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Abstract

The Roth IRA plan created in 1998 had limited access to individuals with incomes above certain limits. Tax law changes that were enacted in 2005 and later have made the benefits of a Roth retirement plan available to nearly everyone regardless of income levels through possible conversion of deductible IRAs. This paper develops a broader and multi-dimensional decision framework that includes a metric to be compared to expected marginal tax rate at withdrawal of funds as well as well as the minimum investment horizon needed to break-even in terms of expected after-tax future values of the alternatives. We also incorporate random variability in the expected returns. Roth conversion would benefit investors with long investment horizon who do not expect significant reduction in their marginal tax rates. The biggest uncertainty may be with respect to external tax law changes.

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Introduction

Tax law changes in recent years have made more choices available for retirement investments. One of the more significant changes include the provisions made in the year 2010, that has brought a Roth IRA within reach of everyone regardless of income limits. While contributions to a Roth IRA are still subject to income limits, anyone can now convert his/her traditional, tax deductible IRA or non-deductible IRA to a Roth IRA. The conversion would, of course, attract immediate taxation of the converted IRA amount. This paper analyzes the conversion decision by looking at the tax implications, the after-tax future values and the advantageous features available to Roth IRA.

The conversion decision is usually analyzed by financial planners and advisors as a trade-off between paying tax now on the converted amount against future tax savings on all withdrawals from the IRA. This approach involves computing the after-tax future value of the investment dollars for the two options. The choice, though, is far from simple or obvious because of the number of factors involved in the trade-off and the uncertainties surrounding them. This paper analyzes the conversion decision using the framework developed by Krishnan and Lawrence (2001) and Horan and Peterson (2001). The after-tax future value of the unconverted deductible IRA is compared to the after-tax future value of the Roth IRA. The decision metric computed is the *break-even tax rate* for withdrawals from the traditional IRA. This is the tax rate at the time of withdrawal that would leave the investor indifferent between the choices. If the investor's expected marginal tax rate at withdrawal is higher than the break-even tax rate, conversion to Roth would yield a higher after-tax value. We also compute the *break-even period,* which is the minimum number of years required, under the given set of assumptions for tax rates and expected rate of return, to make the after-tax future values equal for the two alternatives. The robustness of this estimate is tested using simulation exercises for random variability in returns.

The paper is organized as follows. The next section provides an overview of the extant literature on retirement investment avenues with differential tax treatment. The following section describes the analytical framework and the metrics – *breakeven tax rate* and *breakeven period* - for the conversion decision. We calculate these for a range of scenarios. We also run simulation runs for the breakeven period that accounts for the random variability in the investment rate of return for different sets of assumptions. The section also discusses the various the features that are available for the Roth but not the traditional IRA and the implications of our analysis. The final section summarizes the findings of the paper and offers some concluding comments.

Overview of Literature

Tax-deferred investments for retirement have attracted considerable research interest in the past. Early works include Burgess and Madeo (1980) who analyzed the

impact of the withdrawal penalty on premature withdrawals from IRAs and computed break-even investment horizons for optimal withdrawals using simulation. O'Neil, Saftner and Dillway (1983) incorporated the tax law changes of 1981 into their analysis of withdrawals from IRAs and found the impact of the premature withdrawal penalty made non-IRA investments better for short-time investors. Randolph (1994) compared the non-deductible IRA with open, taxable investments and found that the former dominates the latter. Randolph, however, did not allow for possible lower taxation of the open investments with capital gains. Scholes and Wolfson (1992) used lower capital gains tax rates and found that optimal choice is a function of investment horizon and percentage of return that is taxed at the lower rate.

The Tax Relief Act (1997) created the Roth IRA and expanded the choices available for retirement savings. Roth IRAs provided no up-front tax deduction but offered fully tax-free withdrawal of all accumulated gains. New research evaluated the benefits of Roth IRA vis-à-vis the traditional tax-deductible IRA. Examples included work by Crain and Austin (1997), Horan, Peterson and McLeod (1997), Shanney-Saborsky (1999), Butterfield, Jacobs and Larkins (2000), and Kutner, Doney and Trebby (2001).

Crain and Austin (1997) evaluated deductible IRAs, Roth IRAs, non-deductible IRAs, and open taxable investments assuming the applicable tax treatment of mutual funds. The authors assumed equal before-tax investments in the different investment vehicles and showed that deductible IRAs and Roth IRAs would produce identical future values if the investor's tax-rate does not change. The investor would be better off with a deductible IRA if he expected to see a lower tax rate in the future. Conversely, a Roth IRA would be better if the investor expected an increase in his tax rate. Their results showed that the Roth IRA and deductible IRA would dominate non-deductible IRA and taxable investments. The choice between non-deductible IRAs and taxable investments would depend on the rate of return and the percentage of income taxed at a lower capital gains rate.

Butterfield, Jacobs and Larkins (2000) used an approach very similar to that of Crain and Austin (1997) and came up with similar results. Kutner, Doney, and Trebby (2001) used equal after-tax investments to compare the investment performance of the deductible IRA with that of the Roth IRA and concluded that the investor's marginal tax rates at the time of investment and at the time of withdrawal affect the relative performance of the two types of IRAs. Krishnan and Lawrence (2001) extended the prior research and compared one dollar invested in the Roth IRA with one dollar invested in the deductible IRA after fully accounting for the tax savings from the latter. This approach, in effect, compared equal after-tax investments and allowed the investor to use the full potential of the tax advantages of the different investment avenues up to the limit permitted by the tax laws. This framework involved three tax rates: the tax rate at the time of investment, the tax rate at the time of withdrawals, and the tax rate at which the taxable investments are taxed. The last rate may change during the investment period and may also be two different rates – one for income treated as capital gains and the other for income treated as ordinary income. Krishnan and Lawrence assumed a uniform tax

rate. The authors developed the concept of break-even tax rate for withdrawals, which is defined as the tax rate at the time of withdrawal of funds for which alternate modes of investment will give exactly the same future value for a given investment horizon and rate of return. Horan and Peterson (2001) modified the uniform tax rate for taxable investments assumption. They used the mutual funds return approach developed by Crain and Austin (1997) and applied separate tax rates for the capital gains and ordinary income and prorated the return into capital gains and ordinary income. Thus, their derived formula for the break-even tax rate involved more terms. The results of Horan and Peterson (2001) were qualitatively similar to that of Krishnan and Lawrence (2001). In essence, the break-even tax rate tells the investor how low her tax rate has to be at the time of withdrawal of funds in order for her to benefit from investment in the deductible IRA in preference to the Roth IRA. The Roth IRA becomes more attractive at higher rates of return and longer investment horizons.

Horan (2006), developed withdrawal strategies using a uniform tax-rate structure and a progressive tax-rate structure. He suggested that best results occur when withdrawals are taken from a traditional IRA when tax rates are lower and from a Roth IRA when rates are higher. Also, Hrung (2007) determined that individuals make deductible contributions to IRA's when contribution tax rates are higher and those with more liquidity contribute to Roth IRA's.

Horan and Zaman (2009) considered all sources of retirement income as well as progressive tax rates for a range of incomes and contributions to IRAs and 401k plans. They also considered employer contributions to 401k plans. They ran simulations for a wide range of scenarios and compared the investment choices between the tax-deductible IRA and Roth IRA. They found that high-income and high saving individuals may find Roth IRAs more attractive.

In 2010, Adelman and Cross examined theoretical and practical assumptions of client behavior when comparing a traditional IRA and a Roth IRA. They found that those individuals following their theoretical assumptions would choose the traditional IRA while the Roth IRA would be the choice for those following practical assumptions. Kutner, Doney, and Trebby (2011), argued that most individuals' contribution tax rates are higher than their withdrawal tax rates because 1) they have lower income during retirement, 2) they may work in states with higher tax rates and then move to states with lower tax rates after retirement, 3) they time their IRA contribution decision to when they have higher income, 4) they also time the withdrawals to lower income, and 5) future tax rates are expected to decrease. Therefore, they concluded that a traditional IRA is preferred. It is quite likely that one or more of these arguments are subject to the individual investor's income and family profile and any change in one or more of the above would mean a very different conclusion.

While most of the above cited research deals with investing in deductible and Roth IRAs and not converting a deductible IRA into a Roth IRA, the principles, models and trade-offs involved can be easily extended to the conversion problem. Many financial services providers have pamphlets and web articles explaining the advantages of

conversion. Spiegelman (2009) gave hypothetical examples of the advantages of conversion and came to the qualified conclusion that conversion is beneficial if the expected future tax rate is higher or equal to the investor's current tax rate. Spiegelman suggests that investors most likely to benefit are the ones in the $100,000 to $250,000 income levels because investors in the higher income levels may not benefit because their tax rates are less likely to go up. Anderson and Hulse (2007) showed that converting to a Roth IRA is most advantageous when a longer investment horizon exists, one's tax rate at retirement is high, tax rate at conversion is low, their IRA basis is high, and when outside sources are used to pay taxes at conversion.

Analysis by Dammon (2009) suggested that a Roth conversion is most beneficial when non-IRA assets are used to pay the conversion tax, one has a longer time till retirement so no early withdrawal penalties, one doesn't expect future income tax rates to decline prior and during retirement, one doesn't have to draw on retirement funds and can continue tax-free investing. In addition, conversion is preferred for those who want to reduce estate taxes when their non-IRA assets are less than the estate tax exclusion and total assets are greater than the estate tax exclusion. Clayton, Davis, and Fielding (2012) used break-even analysis (years) and simulations to explore the decision of converting a traditional IRA to a Roth IRA. They determined that when an individual's expected future marginal income tax rate will be higher, they should convert to a Roth IRA. However, when future rates are expected to be lower or are uncertain, the decision to convert is not as straightforward. Also, time to break-even and the portfolio mix must be considered.

When exploring the decision to convert from an existing traditional IRA to a Roth IRA or to make a contribution to a new Roth IRA, Shynkevich (2013) found the decision may be different under different circumstances. He determined that in a progressive tax environment, contributions to a Roth IRA would be preferred rather than a traditional IRA if an individual has a shorter retirement period and if they are optimistic about their investment returns. Coombes (2014), suggested in her article in the Wall Street Journal, that individuals need to consider certain issues when deciding to convert to a Roth IRA for the benefit of their heirs. Roth IRA's are advantageous if your heirs' tax rates upon distribution would be the same rate as the investor's tax rate at conversion. However, if an individual's tax rate is higher than their heirs' tax rate will be when distributed, a Roth conversion would not be advantageous because a portion of the inheritance would be paid in taxes at conversion. Cellucci (2014) examined several situations and strategies to help determine when a Roth conversion is optimal. He concluded that the advantages to conversion occur when: 1) one expects they will be in the same or higher tax bracket upon retirement, 2) income from the IRA is not needed, 3) one wants to provide for their heirs with legacy assets, and 4) the conversion tax can be paid with funds outside of the IRA.

Analysis of the Conversion Decision

We extend the analytical framework developed by Krishnan and Lawrence (2001) to evaluate the conversion. We use the after-tax accumulated future value of the tax

deductible IRA and the converted Roth IRA for the evaluation of the optimal choice. The individual invests in the same type of investments for all investment modes and earns the same before-tax annual rate of return. The decision will be affected by a number of factors. We use the following notations:

R = Rate of return (before tax) on investment, assumed to be same for all investments.
T_0 = Marginal tax rate of the investor at the time of conversion.
T_1 = Marginal tax rate for the investor on all taxable investments during the investment period.
T_2 = Marginal tax rate of the investor at the time of withdrawal of funds from the deductible IRA at the end of the investment period.
N = Investment period or the number of years for which the funds remain in the IRA.

We use the concept of breakeven tax rate as the decision metric to evaluate the conversion decision. The breakeven tax rate, T^*, is defined as the tax rate at the time of withdrawal of funds for which the accumulated after-tax value of the unconverted deductible IRA is equal to the accumulated value of the Roth IRA, which results from the conversion. We assume all of the IRA accumulation has come from pre-tax dollars making the entire amount liable to be taxed at conversion.

Before considering conversion, the investor has to decide how she would pay the taxes owed that would be due on conversion. If the investor has to pay the taxes due from the funds in the deductible IRA, the amount converted into Roth IRA will be reduced to $1–T_0$ for each dollar of pre-conversion IRA. The after-tax future value of the Roth IRA would then be: $\mathbf{(1–T_0)\,(1+R)^n}$. This should be compared to the after-tax future value of the unconverted deductible IRA: $\mathbf{(1+R)^n\,(1–T_2)}$. The break-even tax rate in this case would obviously be T_0. In other words, the investor will benefit from conversion only if he expects his future tax rate to be *higher* than his tax rate at the time of conversion. This conclusion, which is the casual conventional wisdom, is thus really valid only when the taxes are paid out of funds from the IRA. It should also be mentioned that taking money out of the IRA to pay taxes could involve premature withdrawal penalty if the investor is younger than 59 ½ years, making conversion even less attractive.

The more interesting and worthwhile case to consider is when the investor has funds available outside the IRA to pay the taxes due. If the investor decides against conversion, she will have for each dollar of the deductible IRA additional amount equal to the tax saved, T_0. Thus, the deductible IRA and the taxable investment of T_0 would accumulate to an after-tax value of:

$$(1+R)^N\,(1-T_2) + T_0\,(1+R(1-T_1))^N$$

This should be compared to the converted Roth IRA accumulation, which would simply be:

$$(1+R)^N$$

Equating the two and solving for T_2 gives the break-even the tax rate.

$$T^* = \text{Break-even tax rate} = \frac{T_0(1+R(1-T_1))^N}{(1+R)^N}$$

If the investor expects her tax rate at the time of withdrawal to be lower than the break-even rate she would be better off not converting. If she expects it to be higher than the breakeven tax rate, she would be better off converting her deductible IRA to Roth IRA. It can be seen that the break-even tax rate will always be lower than T_0, as long as T_1 is greater than zero. In other words, the investor *has to have* a lower tax rate at the time of withdrawal for the deductible IRA to perform better than the Roth IRA. It can also be seen that the break-even rate decreases with higher rates of return, longer investment horizon, and higher values for T_1. Of course, T_1 can be lower than T_0. This happens when the return on the taxable investment is in the form of dividends and/or long-term capital gains. If T_1 is zero, then the breakeven tax rate will be T_0, investor's tax rate at conversion. This is the same result that you get when the taxes due on conversion are paid by withdrawing the IRA funds.

Another special case to consider is the situation where the entire investment return from the taxable investment is in the form of long-term capital gain realized only at the time of withdrawal of the IRA.

$$(1+R)^N(1-T_2) + T_0(1+R)^N(1-T_g) + T_0T_g = (1+R)^N$$

Solving for $T_2 = T^* =$ Break-even tax rate $= T_0(1-T_g) + T_0T_g/(1+R)^N$.

For large value of N, this would reduce to $T_0(1-T_g)$. The break-even tax rate in this case would be independent of both the investment horizon and the rate of return.

We compute the break-even tax rates for a number of scenarios. As a general assumption, we think the most favorable assumption for the tax rate of current taxable investments to be set at the highest tax rate levied on long-term capital gains. This rate is 15 percent for those investors with marginal tax rates lower than 33 percent, and 20 percent for investors with marginal tax rates higher than 33 percent. Tables 1 through 5 present the break-even tax rates for the different marginal tax rates and for a range of rates of returns and investment periods. As is to be expected, the breakeven tax rate decreases as the investment horizon increases. This has serious implications for anyone considering conversion and expects to have a long investment horizon, a variable that may be the most predictable of the variables involved. We calculated for horizons up to 40 years, which is a possibility for someone who is in his thirties. A long investment horizon is also relevant for those who expect to pass on at least some of their IRA funds as inheritance. We calculate the breakeven rate for a range of returns and again, as expected, the breakeven tax rate decreases as the rate of return increases.

BREAKEVEN TAX RATE: TABLE 1

	T0 39% T1 20%					
	RATES OF RETURN					
YEARS	5%	6%	7%	9%	11%	13%
5	37.2%	36.8%	36.5%	35.9%	35.3%	34.7%
10	35.4%	34.8%	34.2%	33.0%	31.9%	30.9%
15	33.8%	32.9%	32.0%	30.4%	28.9%	27.5%
20	32.2%	31.1%	30.0%	28.0%	26.1%	24.5%
25	30.7%	29.3%	28.1%	25.7%	23.6%	21.8%
30	29.3%	27.7%	26.3%	23.7%	21.4%	19.4%
35	27.9%	26.2%	24.6%	21.8%	19.4%	17.3%
40	26.6%	24.7%	23.0%	20.0%	17.5%	15.4%

BREAKEVEN TAX RATE : TABLE 2

	T0 35% T1 20%					
	RATES OF RETURN					
YEARS	5%	6%	7%	9%	11%	13%
5	33.4%	33.1%	32.8%	32.2%	31.7%	31.2%
10	31.8%	31.2%	30.7%	29.6%	28.7%	27.7%
15	30.3%	29.5%	28.7%	27.3%	25.9%	24.7%
20	28.9%	27.9%	26.9%	25.1%	23.5%	22.0%
25	27.6%	26.3%	25.2%	23.1%	21.2%	19.6%
30	26.3%	24.9%	23.6%	21.2%	19.2%	17.4%
35	25.0%	23.5%	22.1%	19.5%	17.4%	15.5%

Breakeven tax rate is the value for T_2 for which the FV of deductible and Roth IRAs are equal. Shaded areas show breakeven rate lower than the rate one step below T_0.
If expected value of T_2 is lower than the breakeven tax rate, one should not convert.
Breakeven tax rate is always lower than T_0 as long as T_1 is > 0.

BREAKEVEN TAX RATE : TABLE 3

	T0 28% T1 15%					
	RATES OF RETURN					
YEARS	5%	6%	7%	9%	11%	13%
5	27.0%	26.8%	26.7%	26.3%	26.0%	25.7%
10	26.1%	25.7%	25.4%	24.7%	24.1%	23.5%
15	25.1%	24.6%	24.1%	23.2%	22.4%	21.6%
20	24.3%	23.6%	23.0%	21.8%	20.8%	19.8%
25	23.4%	22.6%	21.9%	20.5%	19.3%	18.1%
30	22.6%	21.7%	20.8%	19.3%	17.9%	16.6%
35	21.8%	20.8%	19.8%	18.1%	16.6%	15.2%
40	21.0%	19.9%	18.9%	17.0%	15.4%	14.0%

BREAKEVEN TAX RATE : TABLE 4

	T0 25% T1 15%					
	RATES OF RETURN					
YEARS	5%	6%	7%	9%	11%	13%
5	24.1%	24.0%	23.8%	23.5%	23.2%	22.9%
10	23.3%	23.0%	22.7%	22.1%	21.5%	21.0%
15	22.5%	22.0%	21.6%	20.7%	20.0%	19.3%
20	21.7%	21.1%	20.5%	19.5%	18.5%	17.6%
25	20.9%	20.2%	19.5%	18.3%	17.2%	16.2%
30	20.2%	19.4%	18.6%	17.2%	16.0%	14.8%
35	19.5%	18.5%	17.7%	16.2%	14.8%	13.6%
40	18.8%	17.8%	16.9%	15.2%	13.7%	12.5%

BREAKEVEN TAX RATE: TABLE 5

	T0 15% T1 10%					
	RATES OF RETURN					
YEARS	5%	6%	7%	9%	11%	13%
5	14.6%	14.6%	14.5%	14.4%	14.3%	14.2%
10	14.3%	14.2%	14.0%	13.8%	13.6%	13.4%
15	14.0%	13.8%	13.6%	13.2%	12.9%	12.6%
20	13.6%	13.4%	13.2%	12.7%	12.3%	11.9%
25	13.3%	13.0%	12.7%	12.2%	11.7%	11.2%
30	13.0%	12.7%	12.3%	11.7%	11.1%	10.6%
35	12.7%	12.3%	11.9%	11.2%	10.6%	10.0%
40	12.4%	12.0%	11.5%	10.8%	10.1%	9.4%

Breakeven tax rate is the value for T_2 for which the FV of deductible and Roth IRAs are equal. Shaded areas show breakeven rate lower than the rate one step below T_0.
If expected value of T_2 is lower than the breakeven tax rate, one should not convert.
Breakeven tax rate is always lower than T_0 as long as T_1 is > 0.

A summary of the breakeven tax rates for a set of scenarios selected from the tables is given below. As stated before, in all cases, the breakeven tax rate is below the tax rate at the time of conversion and several percentage points lower as the investment horizon increases. An investor with a current marginal tax rate of 25 percent, and expecting an even low return of 7 percent, would need his withdrawal tax rate to be lower than 19 percent to justify staying with deductible IRA if his withdrawal will not start for the next 30 years. The conventional wisdom needs to be modified to say: "Conversion is likely to be beneficial unless your expected tax rate at the time of withdrawal is several percentage points lower than your current tax rate." The shaded boxes in the tables show values for breakeven tax rates that are below the tax rate that is one step lower than the investor's current marginal tax rate.

Summary of Breakeven Tax rates for selected tax rates and Rates of Return

Years	Initial tax rate (T_0)	Breakeven tax rate for rates of return@@			
		7%	9%	11%	13%
5	39%	36.5%	35.9%	35.3%	34.7%
10	39%	34.2%	33.0%	31.9%	30.9%
15	39%	32.0%	30.4%	28.9%	27.5%
5	28%	26.7%	26.3%	26.0%	25.7%
10	28%	25.4%	24.7%	24.1%	23.5%
15	28%	24.1%	23.2%	22.4%	21.6%
5	25%	23.8%	23.5%	23.2%	22.9%
10	25%	22.7%	22.1%	21.5%	21.0%
15	25%	21.6%%	20.7%	20.0%	19.3%

@@ Taxable investments taxed each year at the lowest capital gains tax rate applicable.

Breakeven Period and Random Variability in Investment Returns

An individual's marginal tax rates and the investment horizon are major factors affecting the conversion decision. We also estimate a different metric that uses the same analytical framework but solves for the number of years that gives the same after-tax value for a given set of tax rate and investment return assumptions. This is labeled the breakeven period. If the investor expects an investment period greater than the breakeven period, for the given rate of return, she would be better of converting to Roth. Table 6 gives the estimated breakeven periods for a range of assumptions. The estimates assume no variability in returns. As can be expected the breakeven period is lower as the rate of return increases.

TABLE 6: BREAKEVEN PERIOD				
T0	T1	T2	R	YEARS
39.0%	20.0%	33.0%	7.0%	12.7
39.0%	20.0%	33.0%	9.0%	10.0
39.0%	20.0%	33.0%	11.0%	8.3
35.0%	20.0%	33.0%	7.0%	4.5
35.0%	20.0%	33.0%	9.0%	3.5
35.0%	20.0%	33.0%	11.0%	2.9
28.0%	15.0%	25.0%	7.0%	11.5
28.0%	15.0%	25.0%	9.0%	9.1
28.0%	15.0%	25.0%	11.0%	7.6
25.0%	15.0%	15.0%	7.0%	51.8
25.0%	15.0%	15.0%	9.0%	41.0
25.0%	15.0%	15.0%	11.0%	34.1

Our analysis above gives a broad framework for the investor to decide based on the expected investment horizon and future marginal tax rate based on the investor's income projections. A major remaining uncertainty relates to the rates of return. We now present an analytical framework that can take into account potential variability in future investment returns. The framework is presented in Table 7. The analysis compares the accumulated future values for the converted Roth IRA to the accumulated after-tax value of the deductible IRA plus the accumulated value of tax paid invested in the same securities. Using an Excel spreadsheet[1], we generate random rates of returns for a given mean and standard deviation for the assumed rate of return. The ratio of the accumulated value for the Roth option to the non-conversion option is calculated for different investment horizons. Table 8 presents the result of simulations comprising thirty runs for four different sets of assumptions – two different tax sets and two rates of return. The results suggest that one has to be rather conservative before deciding to convert as the average breakeven years are higher than the one calculated with non-variable rate of return.

Implications of our analysis

Our results suggest that unless one expects significant reduction in the marginal tax rate at the time of withdrawal, conversion to Roth deserves serious consideration. A primary requirement is, of course, availability of funds to pay the taxes due on conversion. A long investment horizon would also make conversion a better option for many. A major uncertainty that does not lend itself to our analytical framework is the possibility of dramatic changes in the tax structure as a whole that is often proposed by candidates for political offices, especially the Presidential candidates. If one expects that a major reduction in marginal rates across the board, conversion to Roth IRA would not make sense. Any major change in the benefits structure of the tax-deferred or tax advantaged plans also needs to be considered separately.

[1] The spreadsheet is adapted from an exercise available in Benninga (2008).

IRAs in general can be very useful and efficient estate planning tools. Schmidt (1999) and Lederman and Cole (1999) discuss a number of issues relating to the use of IRAs as estate planning tools. The main point made by the above papers is that the traditional IRA is a great estate-planning tool. We suggest that the Roth IRA is an even better tool because it can do pretty much everything the deductible IRA does and actually enjoys more options and flexibility. Roth IRA has all the features of the deductible IRA, except the current tax deduction and has far greater flexibility and options than the deductible IRA. One is allowed tax-free withdrawals of all contributions anytime and converted amount 5 years after conversion. First-time homebuyers are permitted tax-free withdrawals of earnings after 5 years. A major plus for Roth IRA is that it does not require any minimum distribution from the age of 70½. This allows one to pass on the entire Roth IRA to ones heirs. This feature is particularly attractive to investors who require estate planning or anyone who considers leaving an inheritance. These options and flexibility should make the Roth IRA more attractive than the deductible IRA for many investors. (Slesnick and Suttle (2000)).

Summary and Conclusion

The year 2010 may end up being known as the Year of the Roth as virtually anyone can get access to a Roth IRA by converting an existing deductible (or non-deductible) IRA into a Roth. This paper analyzes the conversion decision using the concepts of the breakeven tax rate and breakeven investment period. The breakeven tax rate is the tax rate at the time of withdrawal of funds that would make the investor indifferent between the two choices. The breakeven period is the investment horizon that would give, for a given set of assumptions, equal after-tax future values for the two alternatives. The random variability of investment returns tends to increase the breakeven period without significantly affecting the basic conclusions of our analysis.

The optimal decision is a function of the individual's investment horizon, rate of return for the investment and three different marginal tax rates. We assume that the investor has funds available outside the IRA to pay the taxes due on conversion. Given this, and assuming that the investor pays taxes on her taxable investments, the break-even rate is always less than the investor’s tax rate at the time of investment and a decreasing function of: i) the rate of return on the investment, ii) the investment horizon, and iii) the tax rate on the taxable investment. The investor has to have a significantly lower tax rate at the time of withdrawal than the tax rate at the time of conversion in order to benefit from the deductible IRA.

Most investors with long investment horizons would probably be better off converting. This would be even truer for individuals who want to pass on all or most of their IRA to their heirs. In most cases, a Roth IRA would make a better estate-planning tool than the traditional, deductible IRA. A major uncertainty that is not addressed in this paper is the possibility of changes in tax laws that would lead to dramatically lower tax rates across the board or changes in the benefits of tax advantaged retirement plans.

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TABLE 7: ROTH CONVERSION WITH RANDOM RETURNS

SIMULATION WORKSHEET

INITIAL AMOUNT = $1,000
RATE OF RETURN – R = 9%
STANDARD DEVIATION OF RATE OF RETURN = 16.4%
TAX RATE AT THE TIME OF CONVERSION – T_0 = 28%
TAX RATE AT WITHDRAWAL – T_2 = 25%
TAX RATE ON CURRENT TAXABLE INVESTMENT – T_1 = 15%

	ROTH IRA				DEDUCTIBLE IRA			RATIO OF FUTURE VALUES
YEAR	VALUE AT BEGINNING OF THE YEAR	Random number normally distributed	RETURN	FUTURE VALUE	AFTER-TAX VALUE OF IRA	VALUE OF TAX SAVINGS	FUTURE VALUE	
1	1,000	-0.5144	1%	1,005.6	754.2	281.3	1035.6	0.97
2	1,006	1.2949	30%	1,309.7	982.3	353.6	1335.9	0.98
3	1,310	-0.2061	6%	1,383.3	1037.5	370.5	1408.0	0.98
4	1,383	-2.1829	-27%	1,012.6	759.4	286.1	1045.6	0.97
5	1,013	1.2696	30%	1,314.6	985.9	358.7	1344.6	0.98
10	2,149	-1.0617	-8%	1,968.4	1476.3	509.5	1985.9	0.99
15	2,681	0.3305	14%	3,067.2	2300.4	749.3	3049.7	1.01
20	4,526	0.9325	24%	5,625.0	4218.8	1263.9	5482.7	1.03
25	5,521	0.0744	10%	6,085.7	4564.2	1352.5	5916.8	1.03
30	9,333	-0.2230	5%	9,832.0	7374.0	2042.7	9416.7	1.04
35	15,269	0.6282	19%	18,216.3	13662.2	3475.8	17138.1	1.06
40	28,880	0.6088	19%	34,363.3	25772.5	6030.4	31802.9	1.08

TABLE 8: SIMULATION WITH RANDOM RETURNS

RATIO OF FUTURE VALUES OF ROTH TO DEDUCTIBLE IRA

	T0 = 39% T1 = 20% T2 = 35%				T0 = 28% T1 = 15% T2 = 25%			
	RETURN = 11%/SD = 20%		RETURN = 9%/SD = 16.4%		RETURN = 11%/SD = 20%		RETURN = 9%/SD = 16%	
YEARS	AVERAGE	STD DEV	AVERAGE	STD DEV	AVERAGE	STD DEV	AVERAGE	STD DEV
1	0.97	0.02	0.97	0.01	0.97	0.01	0.97	0.01
2	0.97	0.02	0.97	0.02	0.98	0.01	0.98	0.01
3	0.98	0.02	0.97	0.02	0.98	0.01	0.98	0.01
4	0.98	0.02	0.97	0.02	0.98	0.01	0.98	0.01
5	0.99	0.02	0.98	0.03	0.98	0.02	0.98	0.01
10	1.01	0.03	1.01	0.03	1.00	0.02	0.99	0.02
11	1.02	0.03	1.01	0.04	1.00	0.02	0.99	0.02
12	1.02	0.03	1.01	0.03	1.01	0.02	0.99	0.02
13	1.03	0.03	1.01	0.04	1.01	0.02	1.00	0.02
14	1.03	0.04	1.02	0.04	1.01	0.03	1.00	0.02
15	1.04	0.04	1.02	0.04	1.01	0.03	1.00	0.02
20	1.05	0.05	1.04	0.04	1.03	0.03	1.01	0.02
25	1.07	0.04	1.06	0.05	1.05	0.03	1.02	0.02
30	1.10	0.04	1.08	0.06	1.06	0.03	1.03	0.03
35	1.11	0.05	1.10	0.07	1.07	0.03	1.04	0.03
40	1.13	0.06	1.12	0.07	1.08	0.03	1.05	0.03