

Comparing the Roth IRA to the Traditional IRA: An After-Tax Cash Flow Analysis

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Abstract: *This article compares the after-tax returns for investors who maximize contributions in a Roth IRA versus investors who maximize contributions in a traditional IRA and, in addition, invest the annual tax savings generated from the traditional IRA deductible contributions into a separate taxable investment account. The results of this research study indicate that, when the investment parameters and marginal income tax brackets are similar, the Roth IRA investor can achieve higher after-tax returns over the traditional deductible IRA investor, even when the annual tax savings are invested by the traditional IRA investor.*

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Introduction

Since the traditional IRA was introduced in 1974 and the Roth IRA was added with The Taxpayer Relief Act of 1997, many individuals who invest in either or both of these tax-sheltered retirement plans are able to experience income tax savings while saving for retirement. All U.S. taxpayers may contribute 100% of earned income into a traditional IRA, a Roth IRA or both types up to the annual contribution limits. If you do not have earned income, you may still contribute into an IRA if your spouse has earned income and you file your taxes as married filing jointly.

In 2012, IRA contribution limits are \$5,000 per year for individuals age 49 and younger and \$6,000 per year for individuals age 50 and older. All qualified taxpayers who invest in IRAs can defer the taxation of the annual investment earnings on their accounts. However, the annual contributions made by the Roth IRA investor are not tax deductible and the contributions made by the traditional IRA investor are not tax deductible under certain circumstances.

If a taxpayer is covered by an employer-sponsored retirement plan, then the deductibility of traditional IRA contributions is phased out as specified income levels are reached. In 2012, full deductibility of contributions is available to single taxpayers whose modified adjusted gross income (AGI) is \$58,000 or less and for married taxpayers filing jointly whose AGI is \$92,000 or less. If you live with your spouse or file a joint return, and your spouse is covered by a retirement plan at work but you are not, your deduction is phased out if your modified AGI is more than \$173,000. When your AGI is

\$183,000 or more, you cannot take a deduction for contributions to a traditional IRA.

The Roth IRA has been a valuable alternative to the traditional IRA for some investors. An investor who puts his/her money into a Roth IRA pays income taxes on the wages used for the contributions during the investment years. The annual investment earnings within the Roth account accumulate without being subject to annual income taxation, similar to the traditional IRA, but the Roth investor enjoys tax-free withdrawals during the retirement years (provided certain requirements are met). The traditional IRA investor pays income taxes on the withdrawals.

In 2012, qualified Roth IRA contributions are phased out for a single taxpayer, head of household, or taxpayers who are married filing separately and have not lived with their spouse at anytime in 2012 when modified AGI is between \$110,000 and \$125,000. If your income is above \$125,000, you cannot make a Roth IRA contribution. For those who are married filing jointly, the contributions are phased out when modified AGI is between \$173,000 and \$183,000.¹

The research on comparing the investment performance of the Roth IRA and the traditional IRA indicates that the investor's marginal income tax rate during the working years and during the retirement years is a key factor in the appropriate IRA selection. The Roth IRA is preferable whenever an investor anticipates a higher annual income tax rate during retirement years than during the contribution years. Conventional wisdom has held that the traditional IRA is preferable whenever a lower income tax rate is expected during the retirement years. Investors who are in the same marginal income tax bracket during the contribution time period and during the retirement years should be indifferent to either the Roth or traditional IRA.² The examples that follow demonstrate that this might not always be true.

When investment parameters change during the contribution years, especially the modified AGI and marginal income tax rate, one of the options available to the traditional IRA investor is converting to a Roth IRA. Those who expect to be taxed at a higher rate in retirement than they are now have the most to gain by converting to a Roth IRA. The Tax Relief, Unemploy-

ment Insurance Reauthorization, and Job Creation Act of 2010 repealed the \$100,000 modified AGI limitation for Roth IRA conversions.

While the long-term future of limitations on IRA conversions is uncertain, this can currently be a very effective tax planning strategy for retirement. In addition to possible tax savings, the Roth IRA has some other advantages that may be important to certain investors. Mandatory distributions are required from a traditional IRA after the age of 70½; however, distributions are not required from a Roth IRA. The major disadvantage of an IRA conversion is that income taxes must be paid on the funds converted from the traditional IRA to the Roth IRA.

Both the traditional IRA and the Roth IRA are very valuable investment vehicles for retirement planning. The ease of contributing to traditional and Roth IRAs and the tax-free growth of assets they allow have made them one of the most popular tools for retirement planning.³ However, careful retirement planning is important when using any tax-sheltered or tax-deferred retirement account to avoid withdrawal penalties and unnecessary taxation.⁴

Since individual investment performance is measured in after tax-returns, the investor's proper selection of available investment accounts, such as a tax-sheltered traditional IRA or a tax-deferred Roth IRA, is very important in obtaining the highest possible after-tax return for each investor's specific investment situation and investment goal.⁵

Analysis

In order to examine the after-tax returns when comparing the traditional IRA to the Roth IRA, we explore different investment parameters for two hypothetical investors. In the comparison analysis illustrated in our examples, we assume that one individual invests \$5,000 per year into a Roth IRA account and another individual invests \$5,000 per year into a traditional IRA. Because the traditional IRA contributions are made with before-tax earnings, this investor also invests the tax savings into a taxable investment account. In Example 1, we assume that both investors are in the 25% marginal tax bracket. When an individual invests \$5,000 into a Roth IRA account, the Roth IRA investor pays \$1,666.67

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more in annual income taxes than the traditional IRA investor. For a qualified traditional IRA investor, the \$5,000 annual contribution is not subject to federal income taxation. With the Roth IRA investor, a marginal tax rate of 25% results in a required \$6,666.67 in before-tax earnings in order to generate the \$5,000 in after tax contributions [$\$5,000 / (1 - .25) = \$6,666.67$].

In Example 1, we assume that the taxable income savings of \$1,666.67 recognized by the traditional IRA investor is invested after income taxes into a taxable investment account. The annual investment earnings generated from the \$1,250 [$\$1,666.67 \times (1 - .25)$] invested per year will be taxed at a rate depending upon whether the annual earnings generated in the account are capital gains or ordinary income.

Currently, the long-term capital gains tax rate is 15% for individuals whose tax bracket is 15% or higher.⁶ Annual dividend income in the taxable investment account would also be taxed at the 15% rate in the year the dividend is received. Any annual interest earnings would be taxed at the investor's marginal income tax rate, unless tax-exempt, interest-paying investments, such as municipal bonds, were used.

Assumptions Used in the Analysis

In each comparison, we assume that the investors will make the current available maximum annual contributions of \$5,000 (\$416.67 per month) and that the contributions are paid into each account monthly. Also, we assume that each investor is fully eligible to participate in a tax-sheltered or tax-deferred account⁷ and that the same average annual before-tax rate of return of 10% can be earned on each separate investment account during the contribution years.⁸

When each individual investor reaches retirement age, we assume that the investor adjusts his/her investment asset allocations to a more conservative portfolio and receives only a 4% annual return during retirement years. This is mainly due to the fact that investors are generally more risk averse during retirement, which decreases their allocation in stocks and increases their allocation into less volatile fixed-income securities.

In each example, we assume that a qualified investor can invest \$5,000 annually (\$416.67 monthly) into a Roth IRA, or he/she can invest \$5,000 into a traditional IRA, which provides the investor with an additional tax savings per year to invest into a taxable investment

TABLE 1

**Roth IRA versus Traditional IRA, Tax Bracket during Contributions and Withdrawals of 25%,
Assuming Average Annual Tax Rate of 10% on the Earnings Generated in the Taxable Investment Accounts**

Assumed tax bracket during contributions and withdrawals	25%
Monthly contributions to Roth IRA and traditional IRA	\$416.67
Additional monthly investable amount after tax	\$104.17
Years of contribution	35 (420 months)
Average annual return during contribution years before tax	10%
Average annual return after tax (only for tax savings)	9% (10% average tax rate)
Total account balance at retirement:	
Roth IRA	\$1,581,933
Traditional IRA	\$1,581,933
Conventional investment account	\$306,436
Total (traditional IRA + conventional account)	\$1,888,369
Monthly income assuming 20-year annuity:	
Average annual return during contribution years before tax	4%
Average annual return after tax (only for tax savings)	3.6% (10% average tax rate)
Roth IRA	\$9,586
Traditional IRA: $\$15,140 (1 - .25)$	\$7,190
Conventional investment account	\$1,793
Total (traditional IRA + conventional account)	\$8,983

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account. While the actual annual taxes paid on the taxable account will vary based upon many factors, including the types of assets held in the investment account, we assume an average annual tax rate on the earnings generated in the taxable account of 10%.

Results

In Example 1, the after-tax cash flow investment performance of the two investors contributing \$5,000 per year into the different IRAs is compared using after-tax cash flow analysis. Investor A is the individual who chooses the Roth IRA and Investor B is the individual who chooses the traditional IRA and also invests the \$1,250 annual after-tax savings into a taxable investment account.

After 35 years, Investor A has \$1,581,933 in his investment account. Investor B also has \$1,581,933 in his account. However, in addition to the funds invested in the traditional IRA, Investor B would have \$306,436 in the taxable investment account after paying the annual taxes of 10% per year on the annual earnings generated within the taxable investment account. This leaves Investor B with a total of \$1,888,369 after 35 years.

Next, both Investor A and Investor B make monthly

withdrawals over the next 20 years. Each investor will be able to withdraw \$9,586 from their IRA accounts. Investor A, the Roth IRA investor, receives the \$9,586 monthly income tax free. However, Investor B will be left with \$7,190 per month after taxes [$\$9,586 \times (1 - .25)$] from the traditional IRA account. Investor B will also receive an additional after-tax amount of \$1,793 per month from the taxable investment account using a 20-year annuity, for a total after-tax monthly income of \$8,983. As can be seen in Example 1, Investor B, who invested into the traditional IRA and the taxable account, has a total of \$8,983 income per month in retirement after taxes, while Investor A, the Roth IRA investor, has \$9,586 income per month in retirement after taxes.

When the tax rate for both investors during the contribution years and during the retirement years is 25%, the investor choosing the Roth IRA generates a higher after-tax return, even when the traditional IRA investor invests the tax savings into a separate taxable investment account.

Much of the previous research indicates that investors who are in the same marginal income tax bracket before and after retirement should be indifferent to either the

TABLE 2

**Roth IRA versus Traditional IRA, Tax Bracket during Contributions and Withdrawals of 15%,
Assuming Average Annual Tax Rate of 10% on the Earnings Generated in the Taxable Investment Accounts**

Assumed tax bracket during contributions and withdrawals	15%
Monthly contributions to Roth IRA and traditional IRA	\$416.67
Additional monthly investable amount after tax	\$62.50
Years of contribution	35 (420 months)
Average annual return during contribution years before tax	10%
Average annual return after tax (only for tax savings)	9% (10% average tax rate)
Total account balance at retirement:	
Roth IRA	\$1,581,933
Traditional IRA	\$1,581,933
Conventional investment account	\$813,862
Total (traditional IRA + conventional account)	\$1,765,794
Monthly income assuming 20-year annuity:	
Average annual return during contribution years before tax	4%
Average annual return after tax (only for tax savings)	3.6% (10% average tax rate)
Roth IRA	\$9,586
Traditional IRA: $\$15,140 (1 - .25)$	\$8,148
Conventional investment account	\$1,076
Total (traditional IRA + conventional account)	\$9,224

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Roth or traditional IRA. However, when investors maximize IRA contributions and the traditional IRA investor invests the tax savings into taxable investments, the Roth IRA investor outperforms the traditional IRA investor in the after-tax cash flow comparison analysis.

In Example 2, we use the same parameters as in Example 1, except we compare the results when both investors are subject to a 15% annual income tax rate during contribution and retirement years. The annual tax savings for the traditional IRA investor is now reduced to \$750 per year or \$62.50 per month, which is available for investment into the taxable investment account. We assume that the average annual tax rate for the taxable investment account is 10%. After 35 years, Investor A and Investor B each have the same \$1,581,933 in their IRA accounts, while Investor B, the traditional IRA investor, also has an additional \$183,862 after taxes in the taxable account for a total of \$1,765,795.

Again, assuming a 20-year annuity is used earning a 4% annual interest rate, both investors will be able to withdraw \$9,586 per month before taxes from their IRA account. Investor A is not subject to taxation, while

Investor B will receive \$8,148 per month after taxes [$\$9,586 \times (1 - .15) = \$8,148$] from the traditional IRA. The taxable account will generate an additional after-tax amount of \$1,076 per month for a combined monthly total income after taxes of \$9,224. As can be seen in Table 2, the Roth IRA investment account again provides a greater after tax return to the investor when maximizing contributions and investing the annual income tax savings. A comparison of Tables 1 and 2 demonstrate that the lower the income tax brackets are, the less the differential in after-tax cash flows between the traditional and Roth IRAs.

Next, we use different income tax rates during contribution years and withdrawal years and keep all other investment parameters the same. In Example 3, we examine a 28% tax bracket for the contribution years and a 25% income tax bracket for the monthly withdrawals during the retirement years. As can be seen in Table 3, the Roth IRA investor generates a slightly higher after-tax income in retirement than the traditional IRA investor who also invests tax savings in a taxable investment account. The outcome is somewhat

TABLE 3

Roth IRA versus Traditional IRA, Tax Bracket during Contributions of 28% and Tax Bracket during Withdrawals of 25%, and an Average Annual Tax Rate of 10% on the Earnings Generated in the Taxable Investment Accounts

Assumed tax bracket during contributions and withdrawals	28%
Monthly contributions to Roth IRA and traditional IRA	\$416.67
Additional monthly investable amount after tax	\$116.67
Years of contribution	35 (420 months)
Average annual return during contribution years before tax	10%
Average annual return after tax (only for tax savings)	9% (10% average tax rate)
Total account balance at retirement:	
Roth IRA	\$1,581,933
Traditional IRA	\$1,581,933
Conventional investment account	\$343,208
Total (traditional IRA + conventional account)	\$1,925,141
Monthly income assuming 20-year annuity:	
Assumed tax bracket during withdrawals	25%
Average annual return during contribution years before tax	4%
Average annual return after tax (only for tax savings)	3.6% (10% average tax rate)
Roth IRA	\$9,586
Traditional IRA: $\$15,140 (1 - .25)$	\$7,190
Conventional investment account	\$2,008
Total (traditional IRA + conventional account)	\$9,198

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TABLE 4

**Roth IRA versus Traditional IRA, 35-Year Contribution Period at 10% Annual Return,
20-Year Retirement Annuity at 4% Return, Average Annual Tax Rate on Taxable Investment Account of 10%**

Investment Parameters

Income tax rate during contributing years	10%	15%	25%	28%
Monthly contribution (\$5,000)	\$416.67			
Additional investable amount after tax	\$41.67	62.50	104.17	116.67
Assumed average tax rate on taxable investment account	10%			
Contribution years—average annual return	10%			
Withdrawal years—average annual return	4%			
Contribution years—average annual return on taxable investment account	9.0%			
Withdrawal years—average annual return on taxable investment account	3.6%			

35 Years of Contributions—Total Account Balance at Retirement

Roth and traditional IRAs	\$1,581,933	\$1,581,933	\$1,581,933	\$1,581,933
Value of invested tax savings in taxable investment account	122,574	186,862	306,436	343,208
Total from traditional IRA	1,704,507	1,765,794	1,888,368	1,925,141

Monthly income after tax assuming 20-year annuity:

Roth IRA (not subject to tax)		9,586	9,586	9,586	9,586
Traditional IRA, future tax rates	10%	9,345	9,703	10,421	10,636
	15%	8,865	9,224	9,941	10,156
	25%	7,907	8,265	8,983	9,198
	28%	7,619	7,978	8,695	8,910

30 Years of Contributions—Total Account Balance at Retirement

Roth and traditional IRAs	941,870	941,870	941,870	941,870
Value of invested tax savings in taxable investment account	76,281	114,421	190,702	213,587
Total from traditional IRA	1,018,151	1,056,291	1,132,572	1,155,457

Monthly income after tax assuming 20-year annuity:

Roth IRA (not subject to tax)		5,708	5,708	5,708	5,708
Traditional IRA, future tax rates	10%	5,583	5,806	6,253	6,387
	15%	5,298	5,521	5,967	6,101
	25%	4,727	4,950	5,396	5,530
	28%	4,556	4,779	5,225	5,359

25 Years of Contributions—Total Account Balance at Retirement

Roth IRA and traditional IRA	552,847	552,847	552,847	552,847
Value of invested tax savings in taxable investment account	46,713	70,070	116,784	130,798
Total from traditional IRA	599,561	622,917	669,631	683,645

Monthly income after tax assuming 20-year annuity:

Roth IRA (not subject to tax)		3,350	3,350	3,350	3,350
Traditional IRA, future tax rates	10%	3,288	3,425	3,698	3,780
	15%	3,121	3,258	3,531	3,613
	25%	2,786	2,923	3,196	3,278
	28%	2,685	2,822	3,095	3,177

surprising since the investors in Example 3 have a slightly higher income tax rate during the contribution years than during the withdrawal years, and conventional wisdom tells us that the traditional IRA investor should outperform the Roth IRA investor under these conditions. As with Examples 1 and 2, the lower the income tax rates, the less the differential.

Table 4 provides a comprehensive analysis of the after-tax investment results for both investors using different income tax rates during the contribution time period and the withdrawal time period (10%, 15%, 25%, and 28%) and different investment time periods (35 years, 30 years, and 25 years). The other investment parameters are the same as in the previous examples. In Example 4, the summary analysis indicates that the Roth IRA investor can outperform the traditional IRA investor on an after-tax cash flow basis when the income tax rate during the withdrawal years is equal to the income tax rate during the investment years and also when the income tax rate during the withdrawal years is somewhat lower than the income tax rate during the investment years.

Conclusion

The investor's proper selection of an investment account, such as a traditional or a Roth IRA, is very important in obtaining the highest possible after-tax return for each investor's specific situation. When the Roth investor and the traditional investor maximize contributions, and the traditional IRA investor also invests the annual income tax saving into a taxable investment account, the after-tax cash flow analysis favors the Roth IRA investor.

From a financial planning perspective, as can be seen in the after-tax cash flow analysis, if the income tax rates during the investment years are expected to be substantially higher than those during the withdrawal years, the traditional IRA selection rules apply. However, as seen in Table 4, whenever the estimated income tax rates during the IRA investment time period and the IRA withdrawal time period are relatively close, the Roth IRA outperforms the traditional IRA in after-tax cash flow performance under a variety of conditions. ■

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- (1) Department of the Treasury, "Individual Retirement Arrangements," *IRS Publication 590* (December 16, 2011).
- (2) Clarence C. Rose, "Comparing the Roth IRA to Other Tax-Sheltered Retirement Plans," *Personal Financial Planning* (May/June 1999): 116-121.
- (3) John Stromeyer, "Swimming against the Stream," *Probate and Property* 25 (July/August 2011).
- (4) Harvey B. Wallace II, "Retirement Benefits Planning Update," *Probate and Property* 24 (January/ February 2010).
- (5) Clarence C. Rose and Alvin Engelhard, "Helping Clients Manage Their Portfolios in Retirement," *Personal Financial Planning Monthly* (July 2001): 16-22.
- (6) The reduction on long-term capital gains was initially reduced to 15% and to 5% for individuals in the lowest two income tax brackets in 2003. The Tax Increase Prevention and Reconciliation Act, signed into law by President Bush on May 17, 2006, reduced the 5% rate further to 0%, starting in 2008. The tax reductions were extended through 2012 in legislation passed by Congress and signed by President Obama in 2010, yet, they are scheduled to expire at the end of 2012.
- (7) If the investor is covered by an employer-sponsored retirement plan, full deductibility is available to active participants whose 2012 AGI is \$58,000 or less (single) or \$92,000 or less (joint); partial deductibility for AGI up to \$68,000 (single) and \$112,000 (joint).
- (8) According to C.P. Jones, *Investments Analysis and Management*, Eleventh Edition (New York: John Wiley and Sons, 2010), the geometric annual return on the S&P 500 from 1926 to 2007 was approximately 10%.

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