MATHEMATICS OF TAX-ADVANTAGED RETIREMENT SAVINGS – PART 2

ANSWERS

1. There are lots of reasons this might happen. If one's income or deductions change, one's tax bracket can change. Getting married, having children, or even moving can all affect one's tax rate. In addition, the government may pass legislation changing tax rates.

2. If you are married, filing jointly and have a taxable income of $250,000:
   Your marginal tax rate for your income over $201,050 is 25%.
   Income tax paid:
   Suppose you are married, filing jointly and have a taxable income of $250,000. What is your marginal tax rate, income tax paid and average tax rate?
   10% on the first 23,200 → $2320
   12% on the next 94,300-23,200= $71,100 → $8,532
   22% on the next 201,050-94,300= $106,750→ $23,485
   24% on the next 250,000-201,050= $48,950→ $11,748
   2320+8,532+23,485+11,748 = $46,085 income tax paid.
   $\frac{46,085}{250,000} = 0.184 = 18\%$ average tax rate.

3. A person is more likely to have a lower tax rate during the education, early career and retirement phases of their lives. Their income is likely to be far lower during these phases of life than during the other phases of life.

4. A person is more likely to have a higher tax rate during the mid and late Career phases of their lives. Their income is likely to be far higher during these phases of life than during the other phases of life.

5. τ_w is that tax rate when working, τ_r is the tax rate during retirement
$$\frac{(1-\tau_r)}{(1-\tau_w)} = \frac{(1-20\%)}{(1-18\%)} = 0.9756 = 97.6\%$$
In this case the ratio is just a little smaller than one and so we expect the Roth IRA to slightly outperform the Traditional IRA. The Traditional IRA underperforms by only 2.4%.

6. τ_w is that tax rate when working, τ_r is the tax rate during retirement
$$\frac{(1-\tau_r)}{(1-\tau_w)} = \frac{(1-22\%)}{(1-33\%)} = 1.1641 = 116.4\%$$
In this case the ratio is higher than one and so we expect the traditional IRA to outperform the Roth IRA, yielding a 16.4% greater return.

7. τ_w is that tax rate when working, τ_r is the tax rate during retirement

$$\frac{(1 - \tau_r)}{(1 - \tau_w)} = \frac{(1 - 25\%)}{(1 - 25\%)} = 1 = 100\%$$

This means it doesn't matter which you use. You will receive the same amount of money after taxes either way.