HELPING FINANCE STUDENTS UNDERSTAND DIFFERENCES BETWEEN TRADITIONAL AND ROTH IRAS: A STUDENT EXERCISE

Lee Tangedahl, School of Business Administration, University of Montana, Missoula, MT 59812, 406-243-6687, lee.tangedahl.business.umt.edu
Second Author, Timothy Manuel, School of Business Administration, University of Montana, Missoula, MT 59812, 406-243-2511, tim.manuel@business.umt.edu
Third Author, Kent Swift, School of Business Administration, University of Montana, Missoula, MT 59812, 406-243-4182, kent.swift@business.umt.edu

ABSTRACT

This paper (abstract only) presents a simple spreadsheet exercise students complete to help them understand under what circumstances an individual should choose a traditional IRA or a Roth IRA. The exercise demonstrates that income levels (Modified Adjusted Gross Income), current and expected future tax rates, filing status, level of contributions, the expected account return, and the expected number of payments form a complex nexus that determine which choice is more appropriate. Our main decision variable in the choice is to maximize total lifetime real consumption, or to trade off real consumption in working and retirement years. This metric is presented in Bodie, Kane and Marcus (2008), *Essentials of Investments*, Ch. 21, McGraw-Hill Irwin.

TRADITIONAL IRA VS. ROTH IRA

Traditional Individual Retirement Account or IRA

In a Traditional IRA the contributions and the earnings from the IRA are not taxed until the individual begins to withdraw the money. There is a tax penalty if one withdraws the funds before age 59 ½. An IRA is not an investment per se, but rather a tax advantaged investment vehicle. Under IRS rules at age 70 ½ you **must** begin making withdrawals from the IRA. All tax details are available at www.irs.gov.

Roth IRA

In a Roth IRA the contributions are never tax deductible. However, the contributions and account earnings are not taxable when withdrawn as long as the individual has had the Roth IRA for five years or more and does not make withdrawals before age 59 ½. Under these conditions, Roth IRA distributions are not subject to income taxation.

Which to Choose?

When determining whether to choose a Traditional IRA or a Roth IRA usually one should look at what the tax rates will be in the future as compared to tax rates today. If one expects that tax rates will be the same or lower in the future, then a Traditional IRA will probably be the best choice because of the deductibility of the contributions during your working life as long as you don't make more than $70,000 if single, or $116,000 if married filing jointly as of 2014. If one expects that tax rates will be higher in the future, then it may be better to open a Roth IRA because the earnings on a Roth IRA will not be taxed in the future; thus eliminating a potentially large tax liability. However, contributions to Roth IRAs are not tax deductible, and choosing the Roth reduces your real consumption during your working years compared to a Traditional IRA. One should evaluate **total real consumption** over your lifetime with the two alternatives. Our model demonstrates that the optimal choice depends on several factors:

- Income levels (Modified Adjusted Gross Income)
- Tax rates: both current and expected future rates
- Filing status (Single, Married Filing Jointly, Head of Household, Widower)
- Contributions, particularly if in excess that is deductible
- Expected return
- Expected number of payments (age)

THE STUDENT ASSIGNMENT

Students download the spreadsheet model from Moodle and are instructed to change only the shaded input cells. As the students make a variety of changes in the different input variables they are instructed to observe the results and answer the questions below.

Model assumptions

The model assumes a couple's filing status is married, filing jointly with neither individual covered by a retirement plan at work. This is a critical assumption. If either individual is covered by a retirement plan at their work then not all of the Traditional IRA contributions will be tax deductible and the spreadsheet will then incorrectly favor the Traditional IRA over the Roth IRA. Taxes, allowable IRA contributions and standard exemption are all assumed to be indexed to inflation. This roughly follows IRS procedures, but actual amounts are likely to be substantially different over time than assumed in the spreadsheet. This can materially affect the results. The spreadsheet does NOT replace the advice of a financial planner and should only be used for the purpose of this exercise.

Questions for students

1. Why do the taxes paid differ for the Traditional and the Roth IRA during both the working years and the retirement years?
2. How does the choice of the different type of IRA shift consumption between working years and retirement years? Why?
3. Construct a scenario where the Roth IRA is better and a scenario for the same age and starting income where the Traditional IRA is better. Show the spreadsheet summary results for both and then explain why they differ.

Early observations

The exercise has been used in a senior finance course as part of an independent exercise where students are provided with basic background information and then asked to manipulate a spreadsheet to generate an outcome where the traditional IRA is preferable to the Roth IRA and vice versa and then discuss the scenario. The exercise is still preliminary and we have very little usage data. Although retirement age is a common input, the starting withdrawal date is also a critical variable in choosing the type of IRA, and the latter is not typically incorporated into the choice. Although we have not yet done so, we plan on incorporating this latter decision into the choice of IRA.