

Which Retirement Investment Vehicle Generates the Greatest Return?

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ABSTRACT

There are numerous retirement investment options. Best known are the Roth IRA, Traditional IRA, Non-deductible IRA, 401(k) Traditional and Roth, 403(b) Traditional and Roth, and the 457 plans. Each has restrictions and certain desirable features. Key factors in choosing the one most beneficial to an individual are their eligibility, the tax advantages of each, the tax rates currently and at retirement, rate of return on the investment, and the time-span from investment to retirement. Other factors to consider include withdrawals, tax rates, and tax brackets and their relation to inflation over time. This analysis assesses which retirement savings vehicle would be most beneficial for an individual who wishes to invest \$5,000 pre-tax or less into a retirement fund. Retirement investment needs and expectations vary, as do prospective investors into a retirement plan. This analysis evaluates deferred account alternatives for individuals who are either just beginning to save for their retirement or who have a 401(k) Traditional or Roth, 403(b) Traditional or Roth, IRA's Traditional or Roth, or 457 plan that they are not using to its' full capacity.

INTRODUCTION

There are many options for retirement investments. Each has unique restrictions and advantages. In this study we analyze various retirement saving vehicles to determine which investment plan will generate the greatest net worth for an individual. The Roth IRA, Traditional IRA, Non-Deductible IRA, 401(k)/403(b) Traditional and/or Roth retirement investment plans, 457 Traditional plan, and a Non-Deferred investment account are included in the assessment. The analysis evaluates the differences between pre-tax deposits versus post-tax deposits and the corresponding tax consequences or lack of tax consequences at the end of the investing period. We assess whether or not pre-tax investments generate enough interest on the deferred tax portion to make up for the difference in tax consequences when the funds are withdrawn. The effects of different time periods of investments prior to retirement are also evaluated.

The results of the analysis show that although there are various benefits associated with each type of tax-advantage accounts, they are structured differently and different tax-advantaged accounts will be beneficial for different types of investors at different times in their lives. The analyses indicate which tax-advantage accounts generate the greatest value for investors with a finite amount of capital to invest. If an individual is already investing in a retirement vehicle and/or other retirement programs, the findings can be generalized to show the best course of action to generate the greatest net worth for the individual for future deposits. The results indicated that the best retirement vehicle for an individual depends upon their eligibility, the difference in the income tax rate at the time of the investment and income and capital gains tax rates at retirement, the rate of return on the investment, the time from when the investment is

made to retirement, and the different tax advantages for the various types of tax-advantage accounts.

EVIDENCE OF THE NEED FOR MORE SAVINGS

In a 2011 article on factcheck.org¹ they state:

“Payroll taxes exceeded benefit payments regularly until 2010. But the fact is that Social Security has now passed a tipping point, beyond which the Congressional Budget Office (CBO) projects that it will permanently pay out more in benefits than it gathers from Social Security taxes. The imbalance is made even larger this year by a one-year "payroll tax holiday" that was enacted as part of last year's compromise on extending the Bush tax cuts. The lost Social Security tax revenues are being made up with billions from general revenues that must all be borrowed. The combined effect is to add \$130 billion to the deficit in the current fiscal year.

It's important to note that benefit payments are not in immediate danger. Under current law, scheduled benefits can be paid until about 2037, according to the most recent projections. But keeping those benefits flowing is already requiring the use of funds borrowed from the public. So we judge the claim that Social Security is not currently contributing to the deficit to be false.”

“The nonpartisan Congressional Budget Office issued its most recent projections for Social Security's income and outgo Jan. 26, along with its twice-yearly "Budget and Economic Outlook." What those numbers show is that Social Security ran a \$37 billion deficit last year, is projected to run a \$45 billion deficit this year, and more red ink every year thereafter.”

“In December 2010, Congress passed a Social Security tax reduction. Workers are temporarily paying 2 percentage points less, from 6.2 percent to 4.2 percent, in Social Security payroll taxes this calendar year. Since the government is making up the shortfall out of general revenues, CBO's deficit projections for the trust funds do not include that. But CBO's figures predict that the "payroll tax holiday" will cost the government's general fund \$85 billion in this fiscal year and \$29 billion in fiscal year 2012 (which starts Oct. 1, 2011.) Since every dollar of that will have to be borrowed, the combined effect of the " tax holiday" and the annual deficits will amount to a \$130 billion addition to the federal deficit in the current fiscal year, and \$59 billion in fiscal 2012.

Social Security has passed a tipping point. For years it generated more revenue than it consumed, holding down the overall federal deficit and allowing Congress to spend more freely for other things. But those days are gone. Rather than lessening the federal deficit, Social Security has at last — as long predicted — become a drag on the government's overall finances.

As recently as October, CBO was projecting that it would be 2016 before outlays regularly exceed revenues. But Social Security's fiscal troubles are more severe than was thought, and the latest projections show the permanent deficits started several years ahead of earlier predictions.”

“According to a Feb 19, 2011 article in the Wall Street Journal, "the median household headed by a person aged 60 to 62 with a 401(k) account has less than one-quarter of what is needed in that account to maintain its standard of living in retirement." This is according to a study commissioned by the Journal, and conducted by the Center for Retirement Research at Boston College.”^{2, 3}

¹ “Democrats Deny Social Security's Red Ink”, FactCheck.org, February 25th, 2011, <http://www.factcheck.org/2011/02/democrats-deny-social-securitys-red-ink/>

² <http://en.wikipedia.org/wiki/401%28k%29>

³ “Retiring Boomers Find 401(k) Plans Fall Short” WSJ, February 19th, 2011

http://online.wsj.com/article/SB10001424052748703959604576152792748707356.html?mod=WSJ_hp_MIDDLEN exttoWhatsNewsTop

With these facts and growing numbers of similar reports/estimates, Americans are realizing they need to plan and save for their retirement needs themselves. The decision that they must save more for retirement by investing funds in one of the retirement vehicles available to them is only logical. The question that arises is which retirement vehicle generates the greatest portfolio value/net worth at retirement after taxes? In this study it is assumed that an individual has \$5,000 pre-tax or less to invest and is currently not utilizing any of the retirement vehicles available, (Roth - 401(k)/403(b)/IRA, Traditional IRA, Non-Deductible IRA, Traditional 401(k)/403(b)/457 plan, Non-Deferred Investment Account, or other retirement program). Suppose an individual is already utilizing a 401(k)/403(b)/457 plan but not fully and has over \$5,000 remaining allocation space that they can invest in the deferred account plan, and is not currently utilizing an IRA of any kind, which vehicle would generate the greatest net worth after taxes at retirement? The results of this analysis can also help direct future investments in retirement programs generating the greatest net worth for an individual. Because of restrictions, if an investor cannot utilize certain retirement vehicles, they should be eliminated from their options for retirement savings. Not assessed in this study are specialized retirement programs offered by employees, such as matching programs, profit sharing, and other incentive programs tied to retirement programs. In most cases, if an employer matches a qualified deferred plan, it is like receiving an increase in salary and, thus it is usually prudent to take full advantage of the matching program.⁴

In this analysis we assume that the current codes and regulations governing retirement vehicles remain constant in the future, and that the tax rates, tax brackets, and deposit limits

⁴ This concept of matching is not assessed in this study because each employer has their own plan and conditions. Thus, attempting to generalize will only lead to confusion.

remain unchanged or move in tandem when both are adjusted by the inflation rate. Then, we determine which retirement vehicle is of the greatest benefit for the individual.

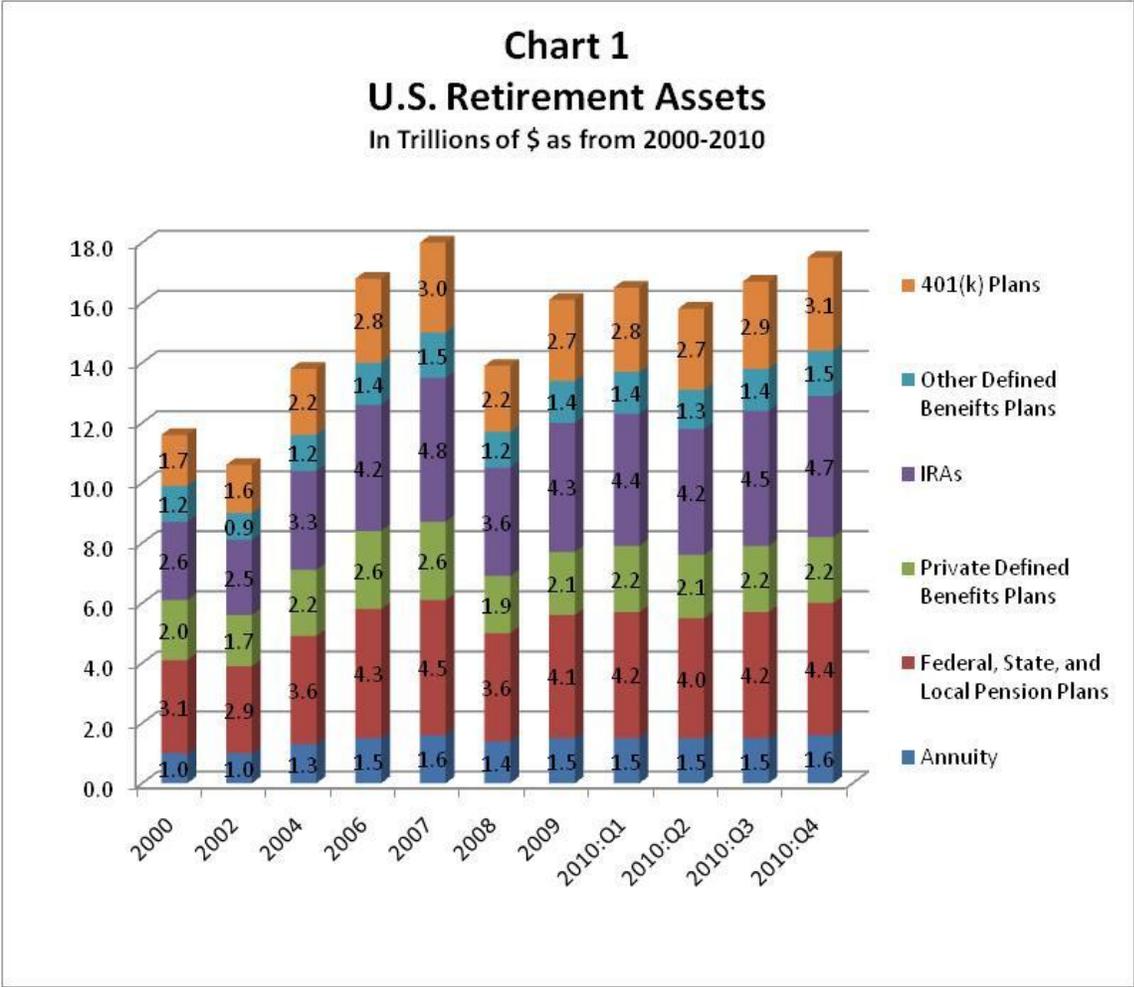
RETIREMENT SAVINGS IN THE UNITED STATES

There was over \$17.5 trillion in retirement accounts in the United States at the end of 2010.⁵ As shown in Table 1, defined contributions (DC)⁶ retirement plans and individual retirement accounts (IRA) have grown to their second highest level since 1990, with the highest level in 2007 before the impact of the financial crises in 2008.⁷ In fact DC plans are at an all time high exceeding pre 2007 levels and IRA plans are only 0.1 trillion lower than the 2007 levels (see Table 1/Chart1 for data).

⁵ Source: Investment Company Institute (2011a) page 100.

⁶ Defined Contribution (DC) plans include 403(b) plans, 457 plans, and private employer-sponsored plans (for example 401k plans, etc.)

⁷ “Since 1990, assets in IRAs have grown primarily due to the investment performance of the securities held in IRA portfolios and rollovers into IRAs from employer-sponsored plans. In addition, various laws enacted since 1996 introduced new types of IRAs. Furthermore, the Economic Growth and Tax Relief Reconciliation Act (EGTRRA), enacted in 2001, increased the amount investors – especially those age 50 and over – can contribute to IRAs.” (Investment Company Institute (2010a)).



Source ici.org "Defined Contribution Plan Participants' Activities, 2010" pg 2

Year	Annuity	Federal, State, and Local Pension Plans	Private Defined Benefits Plans	IRAs	Other Defined Benefits Plans	401(k) Plans	Total
2000	1.0	3.1	2.0	2.6	1.2	1.7	11.7
2002	1.0	2.9	1.7	2.5	0.9	1.6	10.5
2004	1.3	3.6	2.2	3.3	1.2	2.2	13.8
2006	1.5	4.3	2.6	4.2	1.4	2.8	16.7
2007	1.6	4.5	2.6	4.8	1.5	3.0	17.9
2008	1.4	3.6	1.9	3.6	1.2	2.2	13.9
2009	1.5	4.1	2.1	4.3	1.4	2.7	16.0
2010:Q1	1.5	4.2	2.2	4.4	1.4	2.8	16.5
2010:Q2	1.5	4.0	2.1	4.2	1.3	2.7	15.7
2010:Q3	1.5	4.2	2.2	4.5	1.4	2.9	16.6
2010:Q4	1.6	4.4	2.2	4.7	1.5	3.1	17.5
% Change from 2000	60%	42%	10%	81%	25%	82%	50%
% Change from 2007	0.0%	-2.2%	-15.4%	-2.1%	0.0%	3.3%	-2.2%

Source ici.org "Defined Contribution Plan Participants' Activities, 2010" pg 2

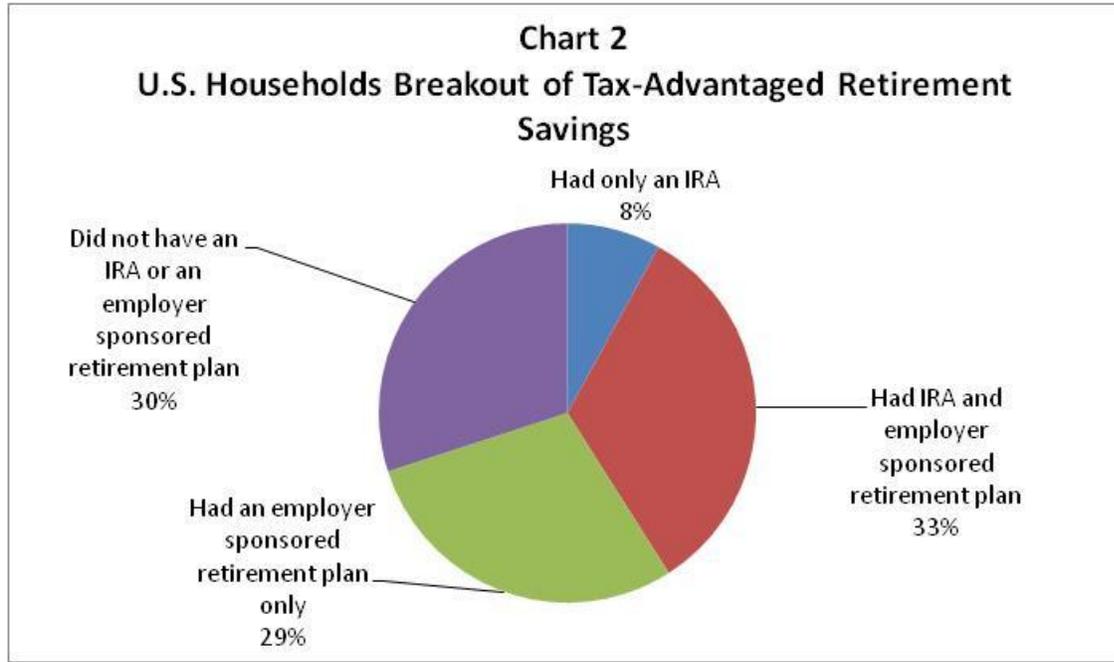
From Chart/Table 1 we can observe that Federal State and Local Pension Plans are the largest retirement pool and are up 42% from 2000, but down 2.2% from 2007, less Social Security. Note also that IRA's make up the second largest portion of individual retirement plans and are up 81% from 2000, but down 2.1% from 2007. Additionally, note that 401(k)'s are up 82% from 2000 and up 3.3% from 2007. Finally notice the changes in the Private Defined Benefits Plans that are only up 10% from 2000 and down 15.4% from 2007. This data indicates that individuals are realizing that they need to fund their own retirement with the increase in 401(k) savings and strong recovery of IRA's values after the 2008 financial crises. In addition, the Investment Company Institute reported that participants who have stopped contributing to defined contribution plans have been declining from 2008 to 2010 (from 3.7% to 2.4%, respectively).⁸ In addition, participants who took any withdraws' are also down 0.4%, however, hardship withdrawals are up 0.4%.⁹ Finally, as an indication of the struggles some individuals are having in the current economy, loan activity of 401(k) accounts as a percentage of plan participants have been trending upward from 2008 to 2010.¹⁰

According to the Investment Company Institute's Fact Book 2011, 82 million households in America reported that they had either an employer sponsored retirement plan, and/or an IRA, constituting about 70 percent of U.S. households. Forty one percent of U.S. households had assets in an IRA, and 33% of U.S. households had assets in both an IRA and an employer sponsored retirement plan (see Chart 2).

⁸ ici.org "Defined Contribution Plan Participants' Activities, 2010" pg 4

⁹ ici.org "Defined Contribution Plan Participants' Activities, 2010" pg 4

¹⁰ ici.org "Defined Contribution Plan Participants' Activities, 2010" pg 5



Source: *ici.org* "2010 ICI Fact Book" pg 102

The tell tale sign that people are concerned about saving for their retirement is that it is being observed that the younger generations are starting to save earlier and in greater amounts than past generations. This has been shown in the data from the Investment Company Institute reports where they stated that 70% of heads of households between the ages of 31-40 that were born in the 1970's held assets in IRA or Defined Contribution (DC) plans. In comparison only 65% of heads of households between the ages of 32-41 that were born in the 1960's held assets in an IRA or DC plan. Even more pronounced was the fact that only 48% of the heads of households born in the 1950's between the ages of 33-42 held assets in an IRA or DC plan.¹¹ These numbers, however, are skewed because the numbers of defined benefit pension plans covered by the Pension Benefit Guarantee Corporation (PBGC) have been dramatically declining from 112,000 plans in 1985 to only 27,260 single employer sponsored plans in 2009, a 75.7%

¹¹ See *ici.org* "Fact Book 2010" pg 103

decline. Also, multiemployer plans have shown a reduction from approximately 2,250 plans in 1985 to about 1,600 plans in 2009, a 28.9% decline. In addition, the total number of active employees from a single employer has declined from 78% of their total insured participants in 1980 to only 41% of their covered participants in 2007.¹² Most of these plans were either frozen or discontinued and replaced with employer sponsored 401(k) or other defined contribution plans. Also note that the findings of the Pension Research Counsel at The Wharton School of Business at the University of Pennsylvania reported in a News Days Article the following facts:¹³

- 1 – The number of new defined-benefit pension plans with more than 1,000 participants created in the past decade (the United Methodist Church's pension plan for its pastors and lay workers).
- 11 Percent of companies that have terminated or frozen their pension plans, up from 5 percent in 2001.
- 20 Percent of U.S. workers covered by a defined-benefit plan, down from 40 percent in 1980. 52 Percentage of plans covering 1,000 or more participants that are underfunded, compared to 15 percent in 1992.
- 31,000 Estimated number of companies offering a defined-benefit pension plan, down from 150,000 in 1980.
- 518,000 Number of people being paid benefits by the PBGC, totaling \$3 billion, after their pension plans were terminated because of distress or bankruptcy.

They also reported the data shown in Table 2

Table 2		
The number of active workers in traditional pension plans has been dropping.		
Year Active workers in defined-benefit plans		
1988	27.3 million	
1996	22.6 million	
2004	18.8 million*	
The percentage of active workers in traditional pension plans has been dropping.		
	Active workers	Retirees
1988	69%	31%
1996	55%	45%
2004	45%	55%

¹² Note the data and calculations are based on the “Pension Insurance Data Book 2009”. It is noted that the PGIC is a voluntary program and that the PBGC collects insurance premiums from employers that sponsor insured pension plans, and only covers those plans. Thus, there could have been a reduction of participants from the PBGC after the huge hits they sustained in 2004 and 2005 from the airline and steal industry problems. In addition, even after raising premiums they posted a deficit to single employer plans of \$21.1 billion in fiscal year 2009.

¹³ See “Newsday: "The vanishing pension: If your company still offers a guaranteed retirement plan you're fortunate these days. But how safe is it?" By Peter King Newsday, August 6, 2005, <http://www.pensionresearchcouncil.org/news/?id=22>

Thus, it can be argued that the 401(k) and other DC plans are replacing the old defined benefits pension plans of the past.¹⁴

According to a 2011 Retirement Confidence Survey conducted by the Employee Benefit Research Institute, 70 percent of Americans indicated that they are not where they need to be in retirement savings. In fact, 40 percent of those surveyed indicated that they are a lot behind where they need to be. In a study conducted by the Employee Benefit Research Institute, they estimated that 47.2 percent of their oldest grouping (the Early Baby Boomers now ages between 56-62) are at risk of not having enough money to cover their basic retirement expenses. This drops to 43.7 percent for their middle grouping (the Late Boomers now ages between 46-55) and increases slightly to 44.5 percent for the youngest group (the Generation Xers now ages between 36-45).¹⁵ Other studies have also shown that individuals are just not preparing for retirement and there will most likely be change in a large number of American's life style when they have to retire. On Feb 16th 2011, The Wall Street Journal reported on a study by the Center for Retirement Research at Boston College that indicated, "the median household headed by a person aged 60 to 62 with a 401(K) account has less than one-quarter of what is needed in that account to maintain its standard of living in retirement... Even counting Social Security and any pensions or other savings, most 401(k) participants appear to have insufficient savings."¹⁶

¹⁴ Note it is not the objective of this paper to determine the retirement savings rates from generation to generation. This section is only included to support the idea that Americans are not saving enough for retirement. This is compounded by the discussions and potential problems surrounding the entitlements from the U.S. government and the potential for changes in the current entitlements going forward. It is also not the author's intent to forecast what these changes in entitlement programs might be or if they will happen at all.

¹⁵ A summary of this study can be found at http://www.ebri.org/publications/ib/index.cfm?fa=ibDisp&content_id=4593 The full report of the study can be found at http://www.ebri.org/pdf/briefspdf/EBRI_IB_07-2010_No344_RRR-RSPM1.pdf

¹⁶ This article can be found at online.wsj.com/article/SB10001424052748703959604576152792748707356.html

According to the Investment Company Institute (2010a), as of mid-2010, approximately 48.6 million households or about forty one percent of U.S. households owned an IRA. The various types of IRA's ownership by households are displayed in Table 3. This indirectly shows that a less than majority of households in the United States are currently utilizing the IRA deferred retirement vehicles in their plans for generating retirement funds.

	Number of Households in Millions				Percentage Share of U.S. Households				Total U.S. Households* in Millions
	Any type of IRA**	Traditional IRAs	Roth IRAs	Employer-sponsored IRAs***	Any type of IRA**	Traditional IRAs	Roth IRAs	Employer-sponsored IRAs***	
2000	38	30.5	9.8	7.2	36%	29%	9%	7%	106.4
2001	39.2	31.3	10.6	8.7	36.2	28.9	9.8	8	108.2
2002	38	30.8	11.8	8.4	34.8	28.2	10.8	7.7	109.3
2003	40.8	32.9	13.9	8.3	36.7	29.6	12.5	7.5	111.3
2004	40.9	33.2	13	9	36.5	29.6	11.6	8	112
2005	43	34	14.5	8.4	37.9	30	12.8	7.4	113.3
2006	43.8	36.3	15.3	8.8	38.3	31.7	13.4	7.7	114.4
2007	46.2	37.7	17.3	9.2	39.8	32.5	14.9	7.9	116
2008	47.3	37.5	18.6	10	40.5	32.1	15.9	8.6	116.8
2009	46.1	36.6	17	9.6	39.3	31.2	14.5	8.2	117.2
2010	48.6	38.5	19.5	9.4	41.4	32.8	16.6	8	117.5

* The number of households as of March of the year indicated.
 ** IRA ownership excludes ownership of Coverdell Education Savings Accounts (formerly called Education IRAs).
 *** Employer-sponsored IRAs include SEP IRAs, SAR-SEP IRAs, and Simple IRAs.
 Sources: Investment Company Institute Annual Mutual Fund Shareholder Tracking Survey (2000 through 2010) and U.S. Census Bureau.¹⁷

With only about 4 out of 10 U.S. households are utilizing an IRA and most individuals not fully utilizing their 401(k), 403(3), or their 457 plan, the question is which plan (the different IRAs the 401(k)/403(b)/457, the Roth based plans or the non-deferred investment account) will generate the greatest net value at retirement? Table 1 shows that there are more assets in IRA's

¹⁷ The full report can be found at http://www.ici.org/pdf/fm-v19n8_appendix.pdf

than in 401(k)'s even though an individual can currently withhold \$16,500 pre-tax annually in a qualified 401(k)/403(b)/457 plan and currently can only deposit \$5,000 annually in an IRA or Roth IRA.¹⁸ This might be misleading because an individual can rollover a 401(k)/403(b)/457 plan into an IRA or Roth IRA with a change of employment or upon retirement.

Table 4 shows a typical 401(k) plan in 2009 was invested in the following assets.

	Company Stock	Equity Funds	Non-Target Date Balanced Funds	Target Date Funds	GIC/other Stable Value Funds	Bond Funds	Money Funds	Other
Participants in their twenties	7.3%	38.3%	11.2%	23.5%	5.5%	7.7%	3.5%	3.3%
Participants in their sixties	8.3%	32.2%	6.9%	7.6%	19.9%	13.9%	7.3%	4.1%

Source: Investment Company Institute (2010a)

According to the Investment Company Institute (2010a), the average 401(k) account balance, excluding plan loans, was \$71,500 at year-end 2010.¹⁹ Table 5 shows the breakdown of the average 401(k) by age cohort and by the number of years that the individual has worked for their currently employer. Notice that the average worker in their 60's with at least 30 years of job tenure with their current employer had an average 401(k) account balance of \$198,993 in 2009.²⁰

¹⁸ This is not considering the catch-up clause that allows individuals the opportunity to place \$16,500 in addition if they are over 50 years of age they can contribute an additional \$5,500 into their DC plan. Likewise with an IRA an individual has the ability to place \$5,000 a year into any type of IRA, and there is an opportunity for individuals over the age of 50 to place an additional \$1,000 in the IRA each year. However, with high income earner there are restrictions that must be considered as well.

¹⁹ From a US News article: <http://money.usnews.com/money/blogs/planning-to-retire/2011/02/25/average-401k-balance-finally-tops-2007-high>

²⁰ Most 401(k) participants do not borrow from their plans. At year-end 2009, only 21 percent of those eligible for loans had loans outstanding. The average unpaid loan balance for these participants represented about 15 percent of their remaining account balances (net of the unpaid loan balances, Investment Company Institute (2011a).

Table 5						
Average 401(k) Account Balance by Age and Tenure, 2009						
Age Cohort	Participant Job Tenure (years)					
	0 to 2	>2 to 5	>5 to 10	>10 to 20	>20 to 30	>30
20s	\$4,976	\$10,064	\$14,920			
30s	11,052	20,355	36,091	\$50,696		
40s	16,146	26,975	49,222	82,127	\$125,257	
50s	20,817	30,768	54,169	92,304	171,290	\$179,150
60s	23,796	30,990	51,887	86,694	155,662	\$198,993

Tabulations from EBRI/ICI Participant-401(k) Plan Asset Allocation, Account Balances, and Loan Activity in 2009. They note that the average account balance for the 20.7million 401(k) was \$58,351 with median account balance of \$17,794. Also the tenure is how long a participant worked at their current employer not how long they have been contributing to their 401(k) plan.

Source: Investment Company Institute EBRI/ICI Participant-401(k) Plan Asset Allocation, Account Balances, and Loan Activity in 2009. ²¹

ANALYSIS

In this study, we evaluate the basic retirement programs including the Roth - 401(k)/403(b)/IRA, traditional IRA, non-deductible IRA, and the general 401(k), 403(b), or the 457 plan (assuming no matching by the employer) and a non-deferred investment account. The requirements for each of the deferred retirement accounts are included in Table A in the Appendix. Thus, for this analysis, the differences in the structure between the deferred investment accounts are presented in Table 6. The analysis is mainly focused on a fixed investment amount of \$5,000 pre-tax for the different investment horizons.

Table 6					
Comparison Chart for Various Retirement Plans					
	Roth – 401(k)/403(b)/IRA	Traditional IRA	Non-Deductible IRA	401(k), 403(b), 457 Plan	Non-Deferred Investment Account
Deposits tax status	Post-tax	Pre-tax	Post-tax	Pre-tax	Post-tax
Withdrawal tax status	No tax upon distribution	Tax on both principal and gains at ordinary income levels	Tax on gains but not principal at ordinary income levels	Tax on both principal and gains at ordinary income levels	Gains taxed at capital gains tax rate
Limit on deposit amount	\$16,500 for the 401(k), 403(b), and the 457 plans for qualifying individuals. ²² \$5,000 for the IRAs for qualifying individuals. ²²	\$5,000 for qualifying individuals. ²²	\$5,000 for qualifying individuals. ²²	\$16,500 for the 401(k), 403(b), and the 457 plans. 6,000 for the IRAs for qualifying individuals. ²²	None

²¹ EBRI/ICI Participant-401(k) Plan Asset Allocation, Account Balances, and Loan Activity in 2009. Pg 15, <http://www.ici.org/pdf/per16-03.pdf>

²² See footnote 18 contribution limits. Note that the Roth and Traditional IRA plans have income limits and other restrictions.

METHODOLOGY

It is assumed that the individual is able to utilize any of the following retirement plans: a Roth - IRA/401(K)/403(B), Traditional IRA, Non-Deductible IRA, 401(k)/403(b)/457 plan, or a Non-Deferred Investment Account. Additionally, it is assumed in the analysis that the individual has the ability to invest the equivalent of \$5,000 pre-tax each year until they reach retirement. The study utilizes the same investment in the different retirement vehicles, thereby eliminating the choice of different investments by different investors, thus generating an equitable comparison between the retirement vehicles.

The analysis is structured with a deposit of \$5,000 pre-tax each year in the retirement vehicles that allow pre-tax deposits and the appropriate adjustments for post-tax investments in the retirement vehicles that require post-tax deposits (at the current 2011 tax rates). Then, at the desired years to retirement the funds are removed from the retirement vehicles with a tax adjustment taken into account, if required. The taxes owed on the withdrawal are calculated based on the investor's current tax rate and on current long-term capital gains tax rates and are removed from the portfolio when applicable for the investment. The taxes assessed are at the current tax rates.²³ The rationale for making the tax rate static is based on the fact that by law the tax brackets must be revised each year to keep pace with inflation. Therefore, if a client's current tax is in a specific bracket and the client wants to keep their current standard of living adjusted by inflation, the tax bracket will be adjusted along with their current standard of living level.²⁴ The different retirement vehicles are assessed by comparing the overall value in the portfolio after taxes at retirement. Then, if at retirement the individual's tax bracket drops by

²³ AMT is not considered for the choices because the vast majority of Americans do not fall into this category of the alternative tax treatment.

²⁴ The forecasted tax brackets based on current inflation rates have been calculated and are available upon request.

one bracket the retirement vehicles are assessed to see the effect on the different alternatives available to the client.

In the analysis, the calculations are evaluated at each period. It is assumed that the deposits are made at the beginning of the time period and the withdrawals are made at the end of the time period. The formulas shown below are the generalized formulas for the different investment alternatives.

- For the Roth – Accounts

$$[D*(1-t_{o,c})]*\{((1+r)^n - 1)/r\}*(1+r)$$

- For the Deferred (Deductable) IRA, 401(k), 403(b), or the 457 plan

$$[D*\{((1+r)^n - 1)/r\}*(1-t_{o,w})*(1+r)$$

- For the Non-Deferred IRA

$$[D*(1-t_{o,c})]*\{((1+r)^n - 1)/r\}*(1+r) - (E_w)*(t_{o,w})$$

- For the Non-Deferred Investment Account (Non Interest Investments)

$$[D*(1-t_{o,c})]*\{((1+r)^n - 1)/r\}*(1+r) - (E_{cg,n})(t_{cg,n})$$

- For the Non-Deferred Investment Account (Interest Generating Investments)

$$[D*(1-t_{o,c})]*\{((1+r)^n - 1)/r\}*(1+r) - \Sigma[(E_{i,n})(t_{o,c})] - (E_{cg,n})(t_{cg,n})$$

Where:

- D = deposit amount before tax,
- r = rate of return,
- n = number of periods,
- t_{o,c} = is the individuals ordinary current income tax rate,
- t_{o,w} = is the individuals ordinary income tax rate at the time of withdrawal,
- t_{cg,n} = is the individuals capital gains tax rate at time n,
- E_w = is the earnings on the account at the time of withdrawal,
- E_{cg,n} = is the earnings on the account that are capital gains at time n,
- E_{i,n} = is the earnings on the account that are interest at time n.

DATA

In the analysis of deferred accounts and the non-deferred investment account, certain rates of returns for different investments must be assumed. Table 7 shows the most common IRA and 401(k) investments reported by the Investment Company Institute (2010a). According to the Investment Company Institute (2010a), 53% of individuals in their 20's held over 80% of their portfolios in equities, vs. only 23% individuals in their 60's held over 80% of their portfolios in equities.

	3 month T-Bill ¹	Bonds Aaa ²	Bonds Baa ²	S&P 500 ³
Average	2.82	5.09	6.42	11.49%
Median	2.83	5.14	6.43	15.50%
Maximum	6.24	8.25	10.23	37.40%
Minimum	0	2.12	3.99	-37.00%

¹The 3 month T-Bill average was obtained from the St. Louis Federal Reserve FRED data on 10/10/2011 and is assessed over a 30 year time period.

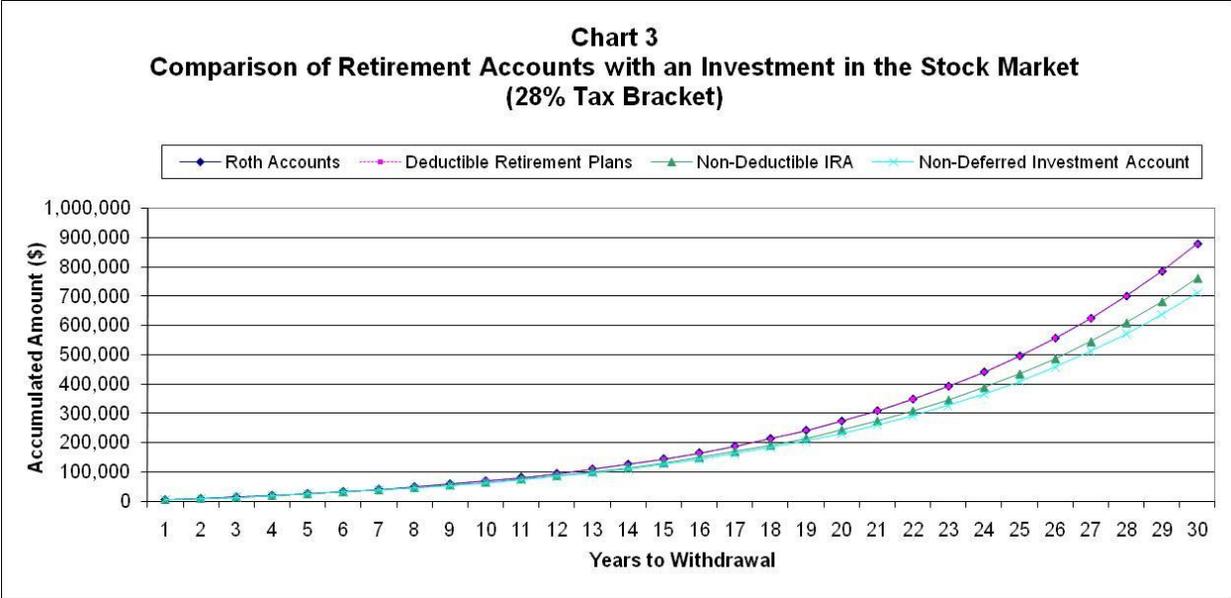
²Aaa bonds and Baa bonds from the St. Louis Federal Reserve (2011). The average is obtained utilizing the Bank of America's Merrill Lynch US Corporate Aaa and Baa effective yield, both datasets cover from 1997 to 2011.

³S&P 500 data was the annual returns from yahoo.com finance section the statistics were generated over the period of 1973 to 2010 (see Yahoo (2011)).

RESULTS

Assessment of Different Deferred Instruments and Investment Account

The results are assessed by comparing the different deferred investment vehicles consisting of the Roth IRA/401(k)/403(b)/457 plan, Non-deductible IRA, Deductible Retirement accounts IRA/401(k)/403(b)/457 plan, and the non-deferred investment account. Chart 3 shows the retirement account for an individual who is currently in the 28 percent tax bracket and has the ability to invest in any of the above deferred plans or investment account.



As shown in Chart 3, the Roth IRA and the Deductible Retirement Plans generate the greatest net worth over long time periods. Both the Roth accounts and the Deductible Retirement Plans have equal account values, which might seem strange. However, upon closer evaluation it is logical when assessing the investment for (n) periods time horizon, as shown below:

$$[D \cdot (1 - t_{o,c})] \cdot \left\{ \frac{((1+r)^n - 1)}{r} \right\} \cdot (1+r) = \text{or } > \text{ or } < [D \cdot \left\{ \frac{((1+r)^n - 1)}{r} \right\} \cdot (1 - t_{o,w}) \cdot (1+r)]$$

The left hand side of the equation is the Roth accounts investment, and the right hand side is the Deductible Retirement Plans. To conduct an accurate comparison, for the Roth accounts we have to remove the tax effect on the amount invested versus not having to remove the tax effect on the amount invested in the Deductible Retirement Plans. The investment will grow at the investment rate of return (r). For the Deductible Retirement Plans, a deposit of the full amount grows at the investment rate of return (r), then when the individual retires taxes must be paid at

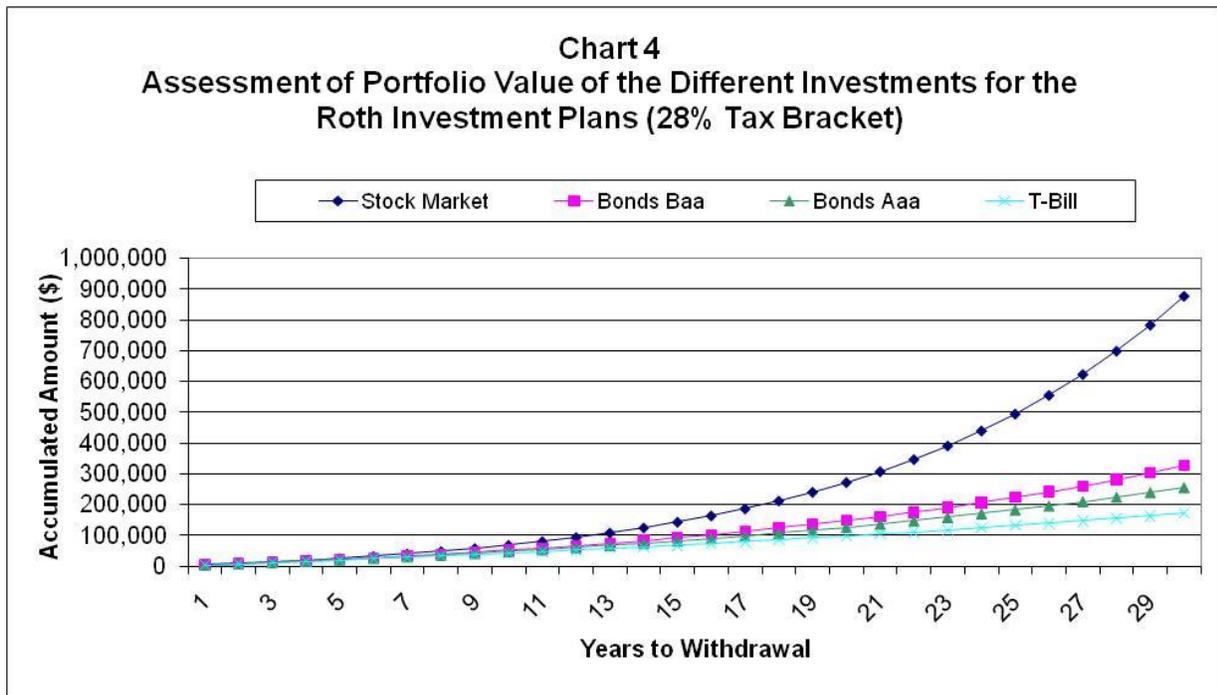
the ordinary income rate on the principal and the gains. Thus, the two investments are identical when compared on an after-tax basis, assuming the individual remains in the same tax bracket.

An interesting outcome occurs between the Non-Deductible IRA and the Non-Deferred Investment Account. When comparing the two accounts, note that the Non-Deferred Investment Account has a higher value after the taxes are considered. This is because, in the Non-Deferred Investment Account, the gains are taxed at the capital gains/dividends tax rate and the Non-Deductible IRA gains are taxed at the individual's ordinary tax rate. Currently, the capital gains tax rates are lower than the ordinary income tax rates. Therefore, if capital gains tax rates remain lower than the corresponding ordinary tax rates, the Non-Deductible IRA should not be selected over a Non-Deferred Investment Account. However, this is not true if the individual invests in fixed income investments because the interest earned is taxed at ordinary tax rates not at the lower capital gains tax rates (this chart is not shown for sake of brevity).

It should be noted that the Roth accounts and the Deductible Retirement Plans do have some significant differences when an individual dies and the funds have not been withdrawn. With the Roth accounts, the accumulated earnings can be transferred to the beneficiaries' income tax free. Beneficiaries pay income tax on the inherited funds with the Deductible Retirement Plans. Another important difference is that, with the Roth accounts there is no age requirement for when a taxpayer must start taking withdrawals or stop making contributions. The Deductible Retirement Plans have greater restrictions (refer to Table A in the Appendix for the specific account restrictions).

Assessment of the Different Investments on the Plan's Value

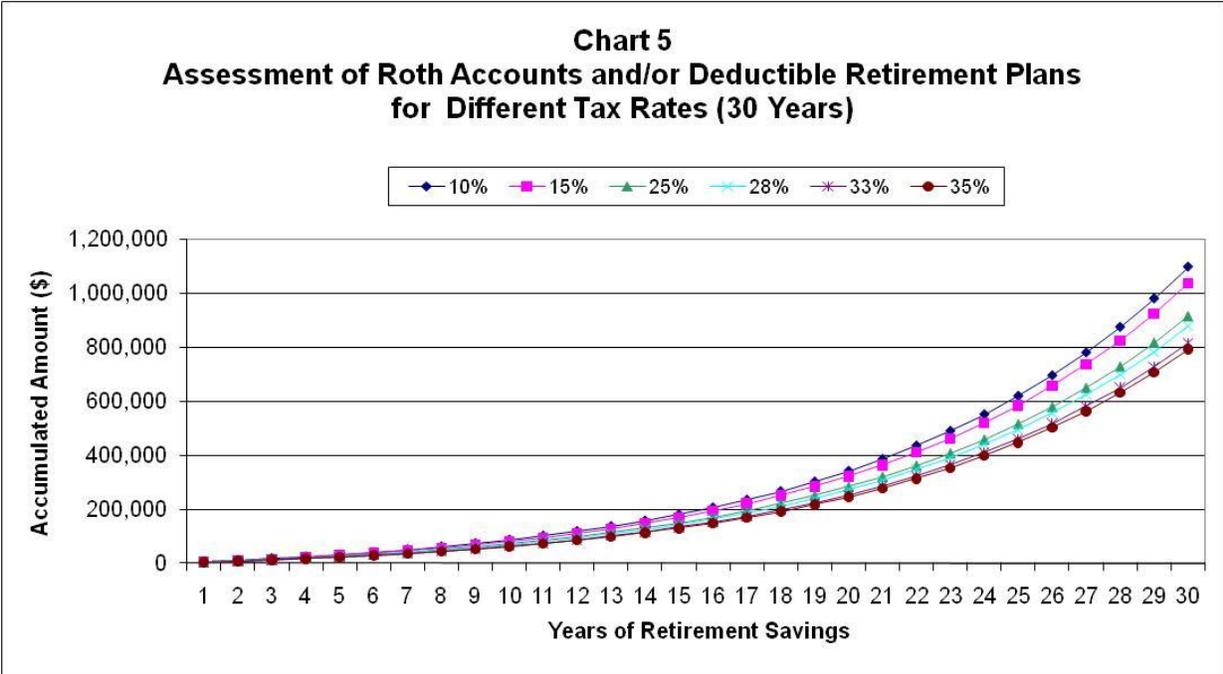
Chart 4 shows an assessment of the different investments available in the analysis and the resulting after-tax account values. The analysis is conducted for an individual in the 28% tax bracket utilizing either a Roth IRA, or a Deductible Retirement Plan.



As expected, the different investments will result in different values at the individual's retirement date. The investments with the greatest return will generate the greatest overall value for the individual.

Assessment of the Different Tax Rates

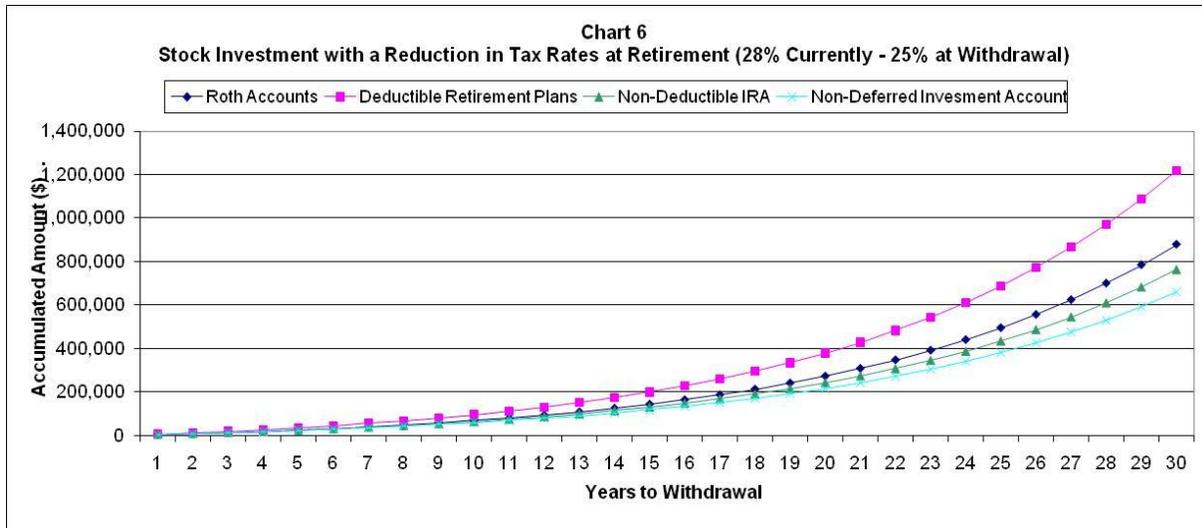
Chart 5 shows the results of a S&P 500 investment in either a Roth IRA and/or Deductible Retirement Plans for different tax brackets.



The data presented in Chart 5 shows that when the deposit/withdrawal is adjusted for the tax rates, the greatest benefits are gained by those individuals in the 10 and 15 percent tax brackets. This is assuming that the individual remains in the same tax bracket over time. Investors in the higher tax brackets do not benefit as much.

Assessment of a Drop in Tax Brackets at Retirement

The data in Chart 6 shows the result of investing in either the Roth accounts, or Deductible Retirement Plans when the tax rate of the individual drops by one tax bracket upon retirement resulting in a lower tax rate during the withdrawal of the funds.



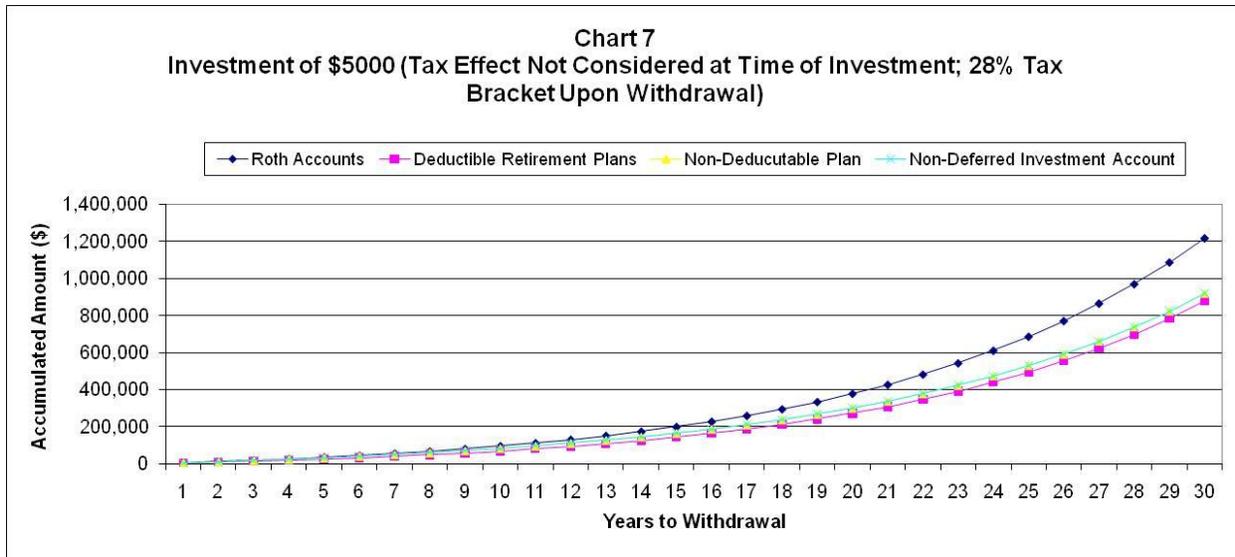
The results shown in Chart 6 indicate that, if the tax bracket drops, the Deductible Retirement Plans actually are greater than the Roth accounts in total value. This is because the taxes for the Deductible Retirement Plans are taken out at the time of retirement when the individual is in a lower tax bracket.²⁵ With the Roth IRA, the taxes are taken out at the time of deposit and there are no taxes assessed on the portfolio at the time of retirement. If the individual actually ends up in a higher tax bracket at retirement, the opposite is true, that is, the Roth IRA would have a greater value than the Deductible Retirement Plans (this chart is not shown for sake of brevity and is available upon request).

Investment of \$5000 (Tax Effect Not Considered at Time of Investment)

The data shown in Chart 7 address the scenario for an individual who wants to invest \$5,000 for retirement and is not concerned about whether the \$5,000 comes from pre-tax or post-tax dollars. The reason for this assessment is that some financially challenged individuals might

²⁵ This analysis leaves open a large un-assessed but noted question about the optimal withdrawal strategy for an individual at/during retirement. This is beyond the scope of this paper which is assessing which investment alternative is best for generating the greatest net wealth at retirement.

look at the above analysis and conclude that investing \$5,000 in either the Roth Account or the Deductible Retirement Plans will have the same result.



The data presented in Chart 7 shows that, if an individual invests a total of \$5,000 in any of the pre- or post-tax alternatives, the Roth accounts would generate the greatest net worth for the individual at retirement. However, note if an individual invests \$5,000 post-tax in a Roth account, it is not equal to an investment of \$5,000 pre-tax in the Deductible Retirement Plans.

SUMMARY AND CONCLUSIONS

This study examines the choices that an individual has for retirement savings between Roth accounts, a Deductible IRA, a Non-Deductible IRA, a 401(k)/403(b)/457 plan and a Non-Deferred Investment Account. Given that the alternatives have different structures and tax consequences, the study examines which retirement plan will generate the greatest net worth if an individual has a finite amount of money.

The results show that an individual should be indifferent between a Roth account, Deductible IRA, 401(k), 403(b), or the 457 plan, given that the individual is going to remain in

the same tax bracket as they are currently and at the time of the withdrawals.²⁶ However, given the situation where an individual expected to end up with a lower tax rate at the time of the withdrawals from their Roth accounts, Deductible IRA, 401(k), 403(b), or a 457 plan, then the Deductible IRA, 401(k), 403(b), or the 457 plan will generate a greater value than the Roth account for the individual. However, if the individual has a higher tax rate at retirement they will generate a greater net worth with the use of a Roth account. These scenarios, however, should be evaluated based on other different qualifications and expectations of the individual, as well. A Roth account has an advantage if the individual has an untimely death or has money left in the account upon their death. If this occurs, the funds will be passed income tax free to their beneficiaries, whereas with the Deductible IRA, 401(k), 403(b), or a 457 plan, income taxes will be assessed to the beneficiaries for the assets in the account. Additionally, the Roth account has more flexibility with the choice of the timing of the withdrawals.

From the results, we can conclude that the Non-Deductible IRA will generate a lower value at retirement than a Non-Deferred Investment Account, as long as the capital gains tax rate is lower than the ordinary income tax rate. We can also conclude that, if an individual predicts that they are going to be in the same tax bracket or a higher tax bracket at the time of the withdrawals, or has an expectation they might have a untimely death, or plans on working past the age of 70 ½, they should fund the Roth account over the Deductible IRA, 401(k), 403(b), or a 457 plan. However, if the individual predicts that they are going to be in a lower tax bracket at the time of the withdrawals and plans on surviving and using all the accumulated funds in the account, they should use the Deductible IRA, 401(k), 403(b), or a 457 plan over a Roth account.

²⁶ This is assuming that the employer is not matching any of the deposits in the retirement accounts.

Note that an individual can use both an employer sponsored account and an IRA, for retirement savings.²⁷ If an individual does not qualify for a Roth account a Non-Deductible IRA should not be used if the individual assumes that the capital gains tax rate will remain lower than the ordinary income tax rates and they intend to invest in a Non-Deferred Investment Account using equity exchange traded funds. But, if they intend to invest in fixed income instruments, they would not want to choose the Non-Deductible IRA over the Non-Deferred Investment Account.

²⁷ Note an individual ability to use personal IRA accounts are subject to income limitations see footnote 18.

REFERENCES

- Factcheck (2011), "Democrats Deny Social Security's Red Ink", website
<http://www.factcheck.org/2011/02/democrats-deny-social-securitys-red-ink/>
- Investment Company Institute (2010a), "2010 Mutual Fund Fact Book", 2011,
- Investment Company Institute (2010), "Defined Contribution Plan Participants' Activities, 2010"
- Investment Company Institute EBRI/ICI Participant-401(k) Plan Asset Allocation, Account Balances, and Loan Activity in 2009.
- Investment Company Institute and U.S. Census Bureau "Annual Mutual Fund Shareholder Tracking Survey" (2000 through 2010).
- Newsday: "The vanishing pension: If your company still offers a guaranteed retirement plan you're fortunate these days. But how safe is it?" By Peter King Newsday, August 6, 2005,
<http://www.pensionresearchcouncil.org/news/?id=22>
- Pension Benefit Guaranty Corp., U.S. Department of Labor, Pension Rights Center, Employee Benefit Research Institute, Watson Wyatt, 2011
- St Louis Federal Reserve, (2011) FRED II Data, Retrieved October, 2011, from
<http://research.stlouisfed.org/fred2/>.
- US News: <http://money.usnews.com/money/blogs/planning-to-retire/2011/02/25/average-401k-balance-finally-tops-2007-high>
- Wikipedia 2011, <http://en.wikipedia.org/wiki/401%28k%29>
- Wall Street Journal, "Retiring Boomers Find 401(k) Plans Fall Short" WSJ, February 19th, 2011
http://online.wsj.com/article/SB10001424052748703959604576152792748707356.html?mod=W_SJ_hp_MIDDLENexttoWhatsNewsTop
- Yahoo (2011), website <http://finance.yahoo.com/q/hp?s=SPY>

APPENDIX A

Table A					
Expanded Comparison Table					
	Roth Accounts	Traditional IRA-Deductible	Non-Deductible IRA	Spousal IRA	401(k) / 403(b) / 457 Plan
Qualifications to Make Contributions	Individual (or spouse) must have earned income. May be any age (including over 70 ½)	Must have earned the income. Must not be 70 ½ by the end of the year	Individual (or spouse) must have earned income. Must not be 70 ½ by the end of the year.	A spouse can make contributions based on other spouse's earned income. Must not be 70 ½ by the end of the year.	Employee for a company with a qualified plan
Income Limitations (AGI)	None on employer sponsored programs. For the Roth IRA regardless of employer sponsored program MFJ \$166,000-\$176,000 Single, HOH, and QW \$105,000 - \$120,000 MFS \$0- \$10,000	If active in employer sponsored program phase out rules MFJ \$89,000 - \$109,000 Single and HOH \$55,000 - \$65,000. No limits if not participating in employer retirement plan	No limitations	If active in employer sponsored program the nonworking spouse's IRA is phased out when AGI is between \$166,000 - \$176,000	No limitations
Contribution Limit	Refer to Footnote 18 for limits on contribution limits.				
Allowable Deduction	No deduction allowed. Contributions can be withdrawn any time tax free and penalty free.	Full deduction if individual is not an active participant in an employer maintained retirement plan / or if meet AGI of less than \$166,000-176,000 for MFJ/ Phase out rules apply	No deduction allowed.	Full deduction if spouse is not an active participant in an employer maintained retirement plan / phase out rules apply	Employer sponsored plans
Earnings Upon Withdrawal	Not taxed	Taxed at withdrawal at ordinary tax rate	Taxed at withdrawal at ordinary tax rate	Taxed at withdrawal at ordinary tax rate	Taxed at withdrawal at ordinary tax rate
Principal Upon Withdrawal	Not taxed	Taxed at withdrawal at ordinary tax rate	Not Taxed	Cost basis portion of distributions is tax free	Taxed at withdrawal at ordinary tax rate
Allowable Distributions (not subject to 10% penalty)	Qualified distributions not allowed during first five years of plan. Entire distribution is nontaxable for: 1) Participant over age 59 ½ 2) Death or disability of participant. 3) Qualified first-time home purchase. —Earnings portion of nonqualified distribution is taxable (but penalty free) for: 1) Qualified college expenses. 2) Qualified medical expenses that exceed 7.5 of AGI 3) Substantially equal payments over life of participant. 4) Health insurance premiums for certain unemployed individuals 5) Distribution due to the IRS	Allowable distributions (not subject to 10% penalty) include: 1) Participant over age 59 ½ 2) Death or disability of participant. 3) Series of substantially equal payments over life of participant (or joint lives of participant and beneficiary) 4) Payment of qualified medical expenses that exceed 7.5% of AGI 5) Payment of health insurance premiums for certain unemployed individuals 6) Payment of qualified college expenses 7) Payment of qualified first-time home purchasers 8) Payment due to IRS levy 9) Qualified distributions made to certain military reservists.			Refer to employer's plan
Taxed on Qualified Distributions	Qualified distributions are nontaxable (including earnings). Certain nonqualified distributions are not subject to the 10% penalty, but the earnings portion is taxable.	All distribution are taxable	Cost basis portion of distribution is tax free; earnings portion is taxable.	All distribution are taxable	Refer to employer's plan
Penalties	None on principal withdrawals, Earnings are taxed at ordinary income. 10% penalty on early withdrawals.	All distributions are taxed at ordinary income. 10% penalty on early withdrawals.	All distributions are taxed at ordinary income. 10% penalty on early withdrawals.	All distributions are taxed at ordinary income. 10% penalty on early withdrawals.	Refer to employer's plan
Required Distributions	Distributions are required only after death of participant.	Must begin by April 1, following the year participant turns 70 ½			Refer to employer's plan
Rollover and Conversions	Funds from one Roth accounts may be rolled over tax free into another Roth account.	IRA funds may be rolled into another IRA. IRA funds may also be rolled over into Roth IRA penalty free: 1) Rollovers are subject to income tax. 2) Other restrictions may apply	Funds may be rolled into another non-deductible IRA. Other restrictions may apply	IRA funds may be rolled into another IRA. IRA funds may also be rolled over into Roth IRA penalty free: 1) Rollovers are subject to income tax. 2) Other restrictions may apply	Refer to employer's plan

APPENDIX B (Income Tax Bracket Forecast Based on Inflation) (Table B1)

This appendix shows the projected income tax brackets based on an inflation rate of 2.9 percent, which was derived by assessing the CPI over a 15-year period. The data was obtained from the St. Louis Federal Reserve website (2004).

Table B1												
Income Tax Bracket Forecast Based on Inflation												
Adjusted for Inflation Inflation Rate of 2.9 percent												
Single, Projected Tax Brackets												
						Tax Rate						
Year	10%	10%	15%	15%	25%	25%	28%	28%	33%	33%	35%	35%
2004	0.00	7,000.00	7,001.00	28,400.00	28,401.00	68,800.00	68,801.00	143,500.00	143,501.00	311,950.00	311,951.00	over
2005	0.00	7,203.00	7,204.03	29,223.60	29,224.63	70,795.20	70,796.23	147,661.50	147,662.53	320,996.55	320,997.58	over
2006	0.00	7,411.89	7,412.95	30,071.08	30,072.14	72,848.26	72,849.32	151,943.68	151,944.74	330,305.45	330,306.51	over
2007	0.00	7,626.83	7,627.92	30,943.15	30,944.24	74,960.86	74,961.95	156,350.05	156,351.14	339,884.31	339,885.40	over
2008	0.00	7,848.01	7,849.13	31,840.50	31,841.62	77,134.73	77,135.85	160,884.20	160,885.32	349,740.95	349,742.07	over
2009	0.00	8,075.60	8,076.76	32,763.87	32,765.03	79,371.63	79,372.79	165,549.84	165,551.00	359,883.44	359,884.59	over
2010	0.00	8,309.79	8,310.98	33,714.02	33,715.21	81,673.41	81,674.60	170,350.79	170,351.98	370,320.06	370,321.25	over
2011	0.00	8,550.78	8,552.00	34,691.73	34,692.95	84,041.94	84,043.16	175,290.96	175,292.18	381,059.34	381,060.56	over
2012	0.00	8,798.75	8,800.01	35,697.79	35,699.05	86,479.15	86,480.41	180,374.40	180,375.66	392,110.06	392,111.32	over
2013	0.00	9,053.91	9,055.21	36,733.03	36,734.32	88,987.05	88,988.34	185,605.26	185,606.55	403,481.25	403,482.55	over
2014	0.00	9,316.48	9,317.81	37,798.28	37,799.62	91,567.67	91,569.01	190,987.81	190,989.14	415,182.21	415,183.54	over
2015	0.00	9,586.66	9,588.03	38,894.43	38,895.80	94,223.14	94,224.51	196,526.46	196,527.83	427,222.50	427,223.86	over
2016	0.00	9,864.67	9,866.08	40,022.37	40,023.78	96,955.61	96,957.02	202,225.72	202,227.13	439,611.95	439,613.36	over
2017	0.00	10,150.74	10,152.19	41,183.02	41,184.47	99,767.32	99,768.77	208,090.27	208,091.72	452,360.69	452,362.14	over
2018	0.00	10,445.12	10,446.61	42,377.33	42,378.82	102,660.57	102,662.07	214,124.89	214,126.38	465,479.15	465,480.65	over
2019	0.00	10,748.02	10,749.56	43,606.27	43,607.81	105,637.73	105,639.27	220,334.51	220,336.04	478,978.05	478,979.59	over
2020	0.00	11,059.72	11,061.30	44,870.85	44,872.43	108,701.22	108,702.80	226,724.21	226,725.79	492,868.41	492,869.99	over
2021	0.00	11,380.45	11,382.08	46,172.11	46,173.73	111,853.56	111,855.19	233,299.21	233,300.84	507,161.60	507,163.22	over
2022	0.00	11,710.48	11,712.16	47,511.10	47,512.77	115,097.31	115,098.99	240,064.89	240,066.56	521,869.28	521,870.96	over
2023	0.00	12,050.09	12,051.81	48,888.92	48,890.64	118,435.13	118,436.86	247,026.77	247,028.49	537,003.49	537,005.21	over
2024	0.00	12,399.54	12,401.31	50,306.70	50,308.47	121,869.75	121,871.53	254,190.55	254,192.32	552,576.59	552,578.37	over

2025	0.00	12,759.13	12,760.95	51,765.59	51,767.42	125,403.98	125,405.80	261,562.07	261,563.90	568,601.32	568,603.14	over
2026	0.00	13,129.14	13,131.02	53,266.80	53,268.67	129,040.69	129,042.57	269,147.37	269,149.25	585,090.75	585,092.63	over
2027	0.00	13,509.89	13,511.82	54,811.53	54,813.46	132,782.87	132,784.80	276,952.65	276,954.58	602,058.39	602,060.32	over
2028	0.00	13,901.67	13,903.66	56,401.07	56,403.05	136,633.58	136,635.56	284,984.27	284,986.26	619,518.08	619,520.06	over
2029	0.00	14,304.82	14,306.86	58,036.70	58,038.74	140,595.95	140,597.99	293,248.82	293,250.86	637,484.10	637,486.15	over
2030	0.00	14,719.66	14,721.76	59,719.76	59,721.87	144,673.23	144,675.33	301,753.03	301,755.14	655,971.14	655,973.24	over
2031	0.00	15,146.53	15,148.69	61,451.64	61,453.80	148,868.76	148,870.92	310,503.87	310,506.04	674,994.30	674,996.47	over
2032	0.00	15,585.78	15,588.01	63,233.73	63,235.96	153,185.95	153,188.18	319,508.48	319,510.71	694,569.14	694,571.37	over
2033	0.00	16,037.77	16,040.06	65,067.51	65,069.80	157,628.34	157,630.63	328,774.23	328,776.52	714,711.64	714,713.94	over
2034	0.00	16,502.86	16,505.22	66,954.47	66,956.83	162,199.56	162,201.92	338,308.68	338,311.04	735,438.28	735,440.64	over

Married and Filing Jointly (MFJ), Projected Tax Brackets												
						Tax Rate						
Year	10%	10%	15%	15%	25%	25%	28%	28%	33%	33%	35%	35%
2004	0.00	14,000.00	14,001.00	56,800.00	56,801.00	114,650.00	114,651.00	174,700.00	174,701.00	311,950.00	311,950.00	over
2005	0.00	14,406.00	14,407.03	58,447.20	58,448.23	117,974.85	117,975.88	179,766.30	179,767.33	320,996.55	320,996.55	over
2006	0.00	14,823.77	14,824.83	60,142.17	60,143.23	121,396.12	121,397.18	184,979.52	184,980.58	330,305.45	330,305.45	over
2007	0.00	15,253.66	15,254.75	61,886.29	61,887.38	124,916.61	124,917.70	190,343.93	190,345.02	339,884.31	339,884.31	over
2008	0.00	15,696.02	15,697.14	63,680.99	63,682.12	128,539.19	128,540.31	195,863.90	195,865.02	349,740.95	349,740.95	over
2009	0.00	16,151.20	16,152.36	65,527.74	65,528.90	132,266.83	132,267.98	201,543.96	201,545.11	359,883.44	359,883.44	over
2010	0.00	16,619.59	16,620.78	67,428.05	67,429.23	136,102.56	136,103.75	207,388.73	207,389.92	370,320.06	370,320.06	over
2011	0.00	17,101.56	17,102.78	69,383.46	69,384.68	140,049.54	140,050.76	213,403.00	213,404.23	381,059.34	381,059.34	over
2012	0.00	17,597.50	17,598.76	71,395.58	71,396.84	144,110.98	144,112.23	219,591.69	219,592.95	392,110.06	392,110.06	over
2013	0.00	18,107.83	18,109.12	73,466.05	73,467.35	148,290.19	148,291.49	225,959.85	225,961.14	403,481.25	403,481.25	over
2014	0.00	18,632.96	18,634.29	75,596.57	75,597.90	152,590.61	152,591.94	232,512.69	232,514.02	415,182.21	415,182.21	over
2015	0.00	19,173.31	19,174.68	77,788.87	77,790.24	157,015.74	157,017.11	239,255.55	239,256.92	427,222.50	427,222.50	over
2016	0.00	19,729.34	19,730.75	80,044.75	80,046.16	161,569.19	161,570.60	246,193.96	246,195.37	439,611.95	439,611.95	over
2017	0.00	20,301.49	20,302.94	82,366.04	82,367.49	166,254.70	166,256.15	253,333.59	253,335.04	452,360.69	452,360.69	over
2018	0.00	20,890.23	20,891.73	84,754.66	84,756.15	171,076.09	171,077.58	260,680.26	260,681.76	465,479.15	465,479.15	over
2019	0.00	21,496.05	21,497.59	87,212.54	87,214.08	176,037.29	176,038.83	268,239.99	268,241.53	478,978.05	478,978.05	over
2020	0.00	22,119.44	22,121.02	89,741.71	89,743.29	181,142.37	181,143.95	276,018.95	276,020.53	492,868.41	492,868.41	over
2021	0.00	22,760.90	22,762.52	92,344.22	92,345.84	186,395.50	186,397.13	284,023.50	284,025.13	507,161.60	507,161.60	over
2022	0.00	23,420.96	23,422.64	95,022.20	95,023.87	191,800.97	191,802.65	292,260.18	292,261.86	521,869.28	521,869.28	over

2023	0.00	24,100.17	24,101.89	97,777.84	97,779.57	197,363.20	197,364.92	300,735.73	300,737.45	537,003.49	537,003.49	over
2024	0.00	24,799.08	24,800.85	100,613.40	100,615.17	203,086.73	203,088.50	309,457.06	309,458.83	552,576.59	552,576.59	over
2025	0.00	25,518.25	25,520.07	103,531.19	103,533.01	208,976.25	208,978.07	318,431.32	318,433.14	568,601.32	568,601.32	over
2026	0.00	26,258.28	26,260.16	106,533.59	106,535.47	215,036.56	215,038.44	327,665.83	327,667.70	585,090.75	585,090.75	over
2027	0.00	27,019.77	27,021.70	109,623.07	109,625.00	221,272.62	221,274.55	337,168.14	337,170.07	602,058.39	602,058.39	over
2028	0.00	27,803.34	27,805.33	112,802.14	112,804.12	227,689.53	227,691.51	346,946.01	346,948.00	619,518.08	619,518.08	over
2029	0.00	28,609.64	28,611.68	116,073.40	116,075.44	234,292.52	234,294.57	357,007.45	357,009.49	637,484.10	637,484.10	over
2030	0.00	29,439.32	29,441.42	119,439.53	119,441.63	241,087.01	241,089.11	367,360.66	367,362.76	655,971.14	655,971.14	over
2031	0.00	30,293.06	30,295.22	122,903.27	122,905.44	248,078.53	248,080.69	378,014.12	378,016.28	674,994.30	674,994.30	over
2032	0.00	31,171.56	31,173.79	126,467.47	126,469.70	255,272.81	255,275.03	388,976.53	388,978.76	694,569.14	694,569.14	over
2033	0.00	32,075.53	32,077.83	130,135.03	130,137.32	262,675.72	262,678.01	400,256.85	400,259.14	714,711.64	714,711.64	over
2034	0.00	33,005.73	33,008.08	133,908.94	133,911.30	270,293.31	270,295.67	411,864.30	411,866.66	735,438.28	735,438.28	over