

Your Winning Retirement Plan

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Vehicles

Note: This group had an earlier meeting on Review of Vehicles for Retirement. The meeting minutes and recording can be downloaded from the ArtCentrics website [here](#).

Investment Vehicles are objects/accounts into which you put investments. One of the defining factors that distinguish different vehicles is the tax laws/treatments that the vehicles are subject to. IRAs, 401(k)s Taxable Accounts are all different investment vehicles capable of holding investments as determined by the investor..

Vehicles with Tax Deductions – These vehicles include plans such as 401(k), IRA, 403(b), Keogh and other government approved plans. Generally contributions to these funds can be deducted from your income when made and growth in these funds are not taxed until you make a withdraw. When funds are withdrawn from these accounts, they increase your taxable ordinary income. These funds have other restrictions related to the account owners age including penalties for withdrawing money to early, or not withdrawing enough money each year (RMDs) after reaching a certain age.

Employer-Sponsored Tax-Deferred Vehicles – These are deferred compensation plans that are supplemental benefits for highly compensated employees.

Nondeductible IRA Vehicles – Generally same restrictions as and IRA, but contributions to these accounts are not tax deductible. When withdrawing from these accounts you pay taxes only on the growth you earned from them over the years. *These are popular vehicles for a [Backdoor Roth](#) for higher income persons who may no longer qualify for Roth accounts. This technique may shortly [come to an end](#).*

Roth IRA Vehicles – Contributions to these accounts are not tax deductible, but all earnings and gains in these accounts grow tax free, so withdraws from these accounts have no impact on your taxable income. *Used properly, these can be extremely powerful vehicles and play a key role in tax litigation in retirement. Online tools such as [Schwab's Roth IRA Conversion Calculator](#) can help you determine if a conversion makes financial sense.*

Variable Annuities – These are insurance products that guarantee your principle and have various mutual fund investment options. Generally there are age restrictions associated with pulling money from these accounts. When the investor is ready to initiate withdraws from these they must convert the account to an annuity. *These vehicles are notorious for high fees and commissions and are generally a very poor deal for the investor.*

Index Annuities – Another insurance product that preserve the principal investment generally have a 7-10 year withdraw restriction in withdraws. Gain on these accounts are linked to an index (many indexes are available) and are generally capped at a certain percentage gain, or percentage participation to the linked index. *More information on these and other annuities can be found [here](#).*

Charitable Vehicles – **Charitable Trust** allow you to donate either cash or appreciated securities, get a tax deduction, and subsequently direct the trust to invest the money in some of their funds. You no longer can use the money for your own income, but you can, at any time, direct the trust to mail checks to legitimate charities of your choice. Other similar vehicles include the **Charitable Lead Trust** (returns principle) and **Charitable Remainder Trust** (provide you income)

Your Own Accounts – Ordinary investment accounts are not linked to any particular special tax treatment. A sale of assets in these accounts will generally trigger a taxable event. Long Term Gains (assets held for more than one year) are taxed differently than Short Term Gains (assets held for less than one year). Almost any investment can be placed in these accounts... Stocks, Bonds, Mutual Funds, etc. provided the company hosting the account supports the investment.

Finding the Best Vehicles – Recommendations for those planning for retirement:

1. **Employer Match** - Savings Plans with employer matching at minimum put in as much as employer will match (typically 401k type plans).

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2. **Roth IRA** – While you can't deduct the contributions to these funds from your taxable income the year you make them, these funds with any earnings and growth are untaxed when withdrawn provided you meet the requirements.
3. **Employers Savings Plans** – Plans such as 401(k)s even without matching funds allow you to deduct your contribution from your taxes and if you have a lower income you may qualify for an additional [Savers Credit](#) on your tax returns.

Beyond these three top items selection of best investment vehicles is more depended on each person's situation. If you own an IRA or have an old 401k you may want to consider converting part or all of them to a [Roth IRA](#). You will need to pay taxes on the funds converted, but the tax savings benefit grow over time and provide retirees a number of advantages and options including the ability to adjust their taxable income, No required Minimum Distributions, and better inheritance benefits. Take note, laws related to Roth conversions are currently under review. Make sure to get the latest information before taking this action.

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Measuring Your Vehicle's Value – What vehicle you choose for your investments makes a tremendous difference in the value of your investments when you start withdrawing from them. The higher your tax bracket in retirement the larger these differences become. We will tease out some of these differences for Stock related funds and Bond related funds in the next few sections.

Stock Funds – For Figure 3.8 the following assumptions are made:

- Initial investment: **\$1.00**
- Calculated values are after a **20 year period**.
- **10% Return** with **2% dividend** distribution
- **3% Inflation**
- Low Tax rate = **15% tax bracket** with **10% capital gains**
- High Tax rate = **40% tax bracket** with **20% capital gains**

20-Year Ride for \$1.00 in Stock Funds (After 3% inflation)		
	Low Tax	High Tax
Deferred Tax Vehicles		
401(k) with 100% matching	\$6.33	\$4.47
401(k) with 50% matching	\$4.75	\$3.35
401(k) or deductible IRA	\$3.17	\$2.23
Above with tax savings invested	\$3.72	\$3.72
Nondeductible IRA	\$3.25	\$2.48
Variable annuity with 1% costs	\$2.64	\$1.86
Variable annuity with 3% costs	\$1.82	\$1.29
Currently Taxable Vehicles		
No capital gain distributions	\$3.32	\$2.78
Turn over above fund every five years	\$3.15	\$2.51
Capital gains distributed every year	\$3.05	\$2.40
With all ordinary gains	\$2.83	\$1.78
Tax-Exempt Vehicles		
Roth IRA	\$3.72	\$3.72

FIGURE 3.8 Growth of \$1.00 with stocks invested in various kinds of vehicles.

We can see in this chart confirms the conclusion earlier as to what vehicles are most efficient for retirement. Variable annuities are hands-down the worst option. **Note there are other annuity products including index annuities that are not covered in this chart that may behave better over this time period. Don't come to the conclusion that All annuities are bad, (although probably most are). It is vital you understand what type of annuity is being discussed in conversation. Pay particular attention to the Roth IRA, this shows the power of tax free growth that becomes greater and greater over time. Another note here, I think the performance estimates of 10% may be a little on the high side and the high tax bracket may be a little excessive, but ultimately that would probably not impact the overall conclusions of this table.** Another point of importance is that the Taxable vehicles have additional inheritance advantages. Any heirs that inherit investments residing in a taxable account use the date of your death as the basis of these investments. This effectively means they may pay no taxes on these investments if they sell them shortly after your passing (with the possible exception of inheritance taxes).

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Bond Funds – For Figure 3.9 the following assumptions are made:

- Initial investment: **\$1.00**
- Calculated values are after a **20 year period**.
- **6% Return** on taxable bonds
- **4.5% Return** on Municipal bonds.
- **3% Inflation**
- Low Tax rate = **15% tax bracket** with **10% capital gains**
- High Tax rate = **40% tax bracket** with **20% capital gains**

20-Year Ride for \$1.00 in Bond Funds (After 3% inflation)		
	Low Tax	High Tax
Deferred Tax Vehicles		
401(k) with 100% matching	\$3.02	\$2.13
401(k) with 50% matching	\$2.26	\$1.60
401(k) or deductible IRA	\$1.51	\$1.07
Above with tax savings invested	\$1.78	\$1.78
Nondeductible IRA	\$1.59	\$1.29
Variable annuity with 1% costs	\$1.25	\$0.88
Variable annuity with 3% costs	\$0.85	\$0.60
Currently Taxable Vehicles		
6.0% bond	\$1.50	\$1.12
4.0% certificates of deposits	\$1.08	\$0.89
2.0% bank account	\$0.78	\$0.70
Tax-Exempt Vehicles		
Roth IRA	\$1.78	\$1.78
4.5% tax-exempt muni bonds	\$1.34	\$1.34

FIGURE 3.9 Growth of \$1.00 with bonds invested in various kinds of vehicles.

The assumption of 6% and 4.5% returns on bond funds is nowhere close to today's yields and currently (12/2021) inflation is in the 6% neighborhood. Still the data presented in the figure would just shift all values down, but the differences relative to each other will likely remain. This does however indicate that over time (provided conditions remain the same) that that 2.0% bank account is actually losing money (purchasing power). The conclusions drawn from this figure are:

- Employer match still has the best performance.
- 401(k) with tax savings invested.
- Roth – Although the Roth is next in performance here it would NOT be recommended you place bond funds in a Roth, simply because in the overall big picture you will likely have other vehicles that are better suited or conservative investments. More on this will be covered shortly.
- CD's and Bank accounts actually lose value over time. Although you can do worse by putting your money in a mattress.
- Again, with their high fees, Variable Annuities are a very bad choice.

Allocating within Vehicles

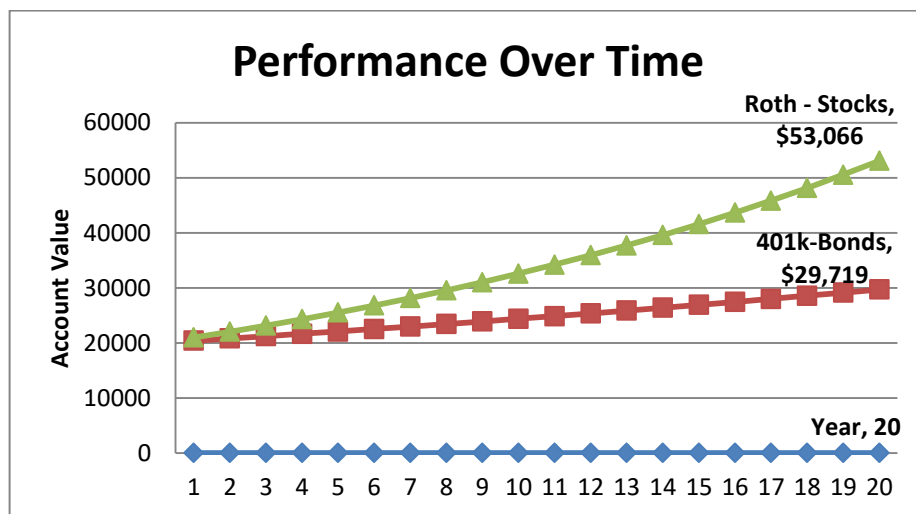
Since each investment vehicle has its own unique characteristics when it comes to adding and removing funds from them, we need to identify what particular investments are appropriate for what vehicles.

It is important that to put investments in the appropriate vehicles. Consider if we had \$20,000 to invest in conservative bonds and another \$20,000 to invest in the general stock market, and assuming the bonds have a 2% average return after inflation while the stock market has a 5% average return after inflation over a 20 year period. Additionally assume you have a tax deferred account such as a 401(k) and a Roth account to place these funds in, Ideally you would place the Bond investment in the tax deferred account and the Stock in the Roth account since over the long run the Stocks should

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Henry K. Hebler

greatly out perform the bonds, and as a result the final value of your Roth account (containing all stocks) will be much greater than the 401(k) containing all bonds.



After a 20 year period the Roth account has grown to \$53,066 tax free dollars while the 401(k) has grown to \$29,719 taxable dollars. By making the choice to place the stocks in the tax free account, we have additional \$23,347 tax free dollars than if we had we placed the bonds in the Roth and the stocks in the 401(k)

Utilizing Figure 3.11([Spreadsheet](#)) we can take assessment and determine what vehicles to place your investments into.

Figure 3.11

Current Balances and Allocations (Figure 3.11)

Line	Vehicles	Current Vehicle Balances	Allocation Classes				New Vehicle Balances
			Equities		Fixed Income	Cash	
			Real Estate	Stock			
1	Roth IRA						
2	401 (k)/Deductible IRA						
3	Nondeductible IRA						
4	Taxable or tax-exempt						
5	Variable Annuity						
6	Other						
7	Total Allocation						

Making Smart Investments

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This section provides some pointers to assist in making investment decisions.

You'll Make Mistakes – Everyone makes mistakes on occasion while investing. Try to learn from your mistakes, and minimize them by following these pointers and learning from mistakes others have made.

Be Wary of the Media – Be skeptical advice from experts, many times they cherry pick their data or don't include important details as showing performance on an after-taxes basis.

Getting Started with Mutual Funds – If you are new to the investment game, no-load mutual funds from large investment funds (Vanguard) are a good start. Depending on your risk tolerance a mix such as 40% bonds to 60% stocks, or 60% bonds to 40% stocks is a good starting point. While Index funds (see below) may be a better selection for strictly stock selections as opposed to a mutual fund; generally a well managed Bond fund will perform better than bond index funds unless you purchase the bonds directly (complicated) and hold the bonds to maturity.

A Better Approach with Stock Mutual Funds – While mutual funds with a bond/stock mix provide a quick and easy way of investing, you will probably do better by creating your own bond/stock mix by investing in an [index fund representing the stock](#) market (such as the S&P 500, Wilshire 5000, Wilshire 2000, etc) for your stocks and a [well managed bond index fund](#) (ie PIMCO).

Fees, Loads, and Taxes Can Be Painful! – Brokers, Mutual funds and money managers all charge a fee and are inherently at a dis-advantage because of this. Many studies have shown you have a much better change of better performance by using index funds (for stocks) over actively managed mutual funds. **Over a 15 year timeframe Index funds generally over perform about 90% of Actively managed Mutual funds.** Perhaps one of the greatest mutual fund managers of all time and one of the richest persons in the world(3rd richest in 2016), Warren Buffett, bet three hedge fund managers \$1million dollars that a simple index fund he selected would out perform any investments they picked over a 10 year period. Warren won the bet – This is an [interesting listen](#) if you have 20 minutes to spare. An additional barrier for mutual funds is that they tend to trade more than index funds, and this has tax consequences associated with purchasing and selling stocks.

Purchasing Individual Stocks – Purchasing individual stocks is not recommended for most investors. There are far too many factors, known and unknown to be able to make an informed decision. If you do want to dabble in purchasing stocks, only invest what you are comfortable in losing. **I must admit I purchase more individual stocks than I probably should, and historically my performance on these selections has not been great.**

Exchange Traded Funds – Exchange Traded Funds (ETFs) are very [similar to Index Funds](#) where Index funds are generally very low cost mutual funds and trades are completed at the end of the day, ETFs behave more like stocks and can be traded within the same day and behave more similar to stocks. **Honestly the distinction is so small I pretty much consider them the same.** One point of warning, there are a ton of ETFs and Index funds that can be very specialized, these targeted/sector funds lose the advantage of being a broader market selection and are subject to a much higher risk. **I would generally avoid targeted ETFs and Index funds.**

Fixed Income Investments – If you have less than \$100,000 for bond investments you will likely do best by selecting a [well managed bond index fund](#) (ie PIMCO) or a [Unit Trust](#).

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Purchasing Individual Bonds – If you have large sums of money and intend on holding bonds to maturity, you may want to work with a bond broker for your bond purchases. Be aware that many bond brokers charge excessive fees, so you must be careful in your selection of brokers. Maturity dates of purchased bonds should coincide with your need for cash and should be laddered so bonds mature in different years. The [laddering technique](#) helps reduce risk of inflation variation and provides better liquidity than purchasing bonds that mature at the same time. Make sure to minimize risk of default by purchasing bonds from different sources (ie industries, or government bodies). Restrict your purchase to aa or better rated bonds. **High risks bonds should only be purchased in an index or similar fund that will pull many high risk bonds together to spread the risk of default of any individual company.** You can also purchase government bonds such as EE and I bonds [directly from the government](#). I bonds are tied to the inflation rate and provide a good hedge against inflation. [Current rate for I bonds](#) is 7.12% for bonds issued from November 2021-April 2022. **You must hold these for a minimal of 5 years to avoid any penalties for redeeming.**

Municipal Bonds – Municipal Bonds (muni) are strictly for persons in high tax brackets. Munis have lower yields than other similar risk bonds, but the gains from their yields exempt from federal taxes and may be exempt from state taxes, so may perform better than other bonds for higher taxed individuals. Although, high muni bond interest can trigger alternative minimal taxes or taxes on Social Security benefits. Remember even Municipal bond funds can trigger capital gains.

For the Richer Set – If you have substantial taxable investments and you want to leave funds to your heirs you may want to have your stocks in a taxable account and your bonds in a tax deferred account. This is because basis of [inherited stocks](#) is valued at the price of the stock at the decedent's date of death if the stocks were held in a taxable account. Inheritance from a tax differed account (ie IRA, 401k, etc.) is taxed at [ordinary rates](#) and have a number of restrictions that may result in excessive taxes to the person receiving the inheritance.

Charitable minded individuals may want to consider a [Charitable Gift Annuity](#), [Charitable Remainder Trust](#) (CTR) or [Donor-Advised Funds](#) to litigate taxes.

Real Estate

Various types of Real Estate investments are mentioned including:

- **Real Estate Investment Trusts (REITS)** – The easiest and least demanding way to invest in real estate, you can purchase a REIT Index or individual REITS for vary specific sectors (ie Storage unit REITS, Server Farm REITS, etc.).
- **Rental Partnerships** – Very illiquid with many tax, and management pitfalls.
- **Rental** – Hands on management, book keeping, extra taxes to manage, and maintenance required.
- **Vacation Home** – If rented for less than two weeks, no special tax reporting requirements if rented for more than two weeks out of the year, same issues as a standard rental.

You Home as an Investment – You should not count your house as an asset when determining funds for retirement because you will always need a place to live. Downsizing, Reverse Mortgages and selling so you can rent will generally provide much less money then you may expect. Renting a room from your house could be an option, but there are risk with this and you will need to file taxes accordingly.

Investing in a House: Some Economic Facts! – Purchasing a home generally is a better investment than renting over extended periods, especially in periods of high inflation. For vacation homes, they almost always bad investments, an idle house is worth less than money under your mattress. Purchasing a house that is much larger than your needs is a poor investment due to the extra taxes, utilities and maintenance.

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But I Want To Relax!

Even if you enjoy managing your retirement plans and investments, there may become a time as you get older where you don't want to continue to do this. This section provides some information when looking for simple alternatives to managing your funds yourself.

Alternatives to Paying for Convenience – One of the easiest ways to manage your accounts is to get a good balanced fund, and have the dividends and capital gains go to a money market fund. Another slightly more complicated option is to buy an Index fund representing the overall market for your stock allocation, and I bonds for your fixed income.

Turning your Portfolio Over to Someone to Manage – When looking for a financial advisor make sure to get other opinions from an accountant or certified financial manager.

Fixed-Term or Lifetime Annuities – Fixed annuities pay so little you will likely do better owning a balanced mutual fund.

Variable Annuities – *Steer clear of variable annuities. Index annuities may be worth consideration.*

Some Investments to Avoid – Partnerships, Oil drilling, precious metals and gems, collectibles, commodities (except in an index fund), any living creature, almost all forms of leverage, speculation or gambling, securities with tax complications, anything that cannot easily be sold.

The Ultimate Easiest Way – Engage with a fee only (charges by the hour) professional planner that you can visit annually and review investments and plans.

Chapter Closing Thoughts

We have covered most, but certainly not all of the major types of investments one should consider in their retirement planning. The technique of applying Asset Allocation adds stability to your portfolio and a degree of predictability to how long your funds will last in retirement, additionally it has been pointed out that it is very important to place each investment in the appropriate investment vehicle to minimize taxes, provide more flexibility and maximize how long your funds will last in retirement. Each person will have a level of comfort for the volatility of their portfolio; This consideration should be key in helping you consider exactly what the correct ratio of equities/fixed income (ie stocks/bonds) is appropriate for you.

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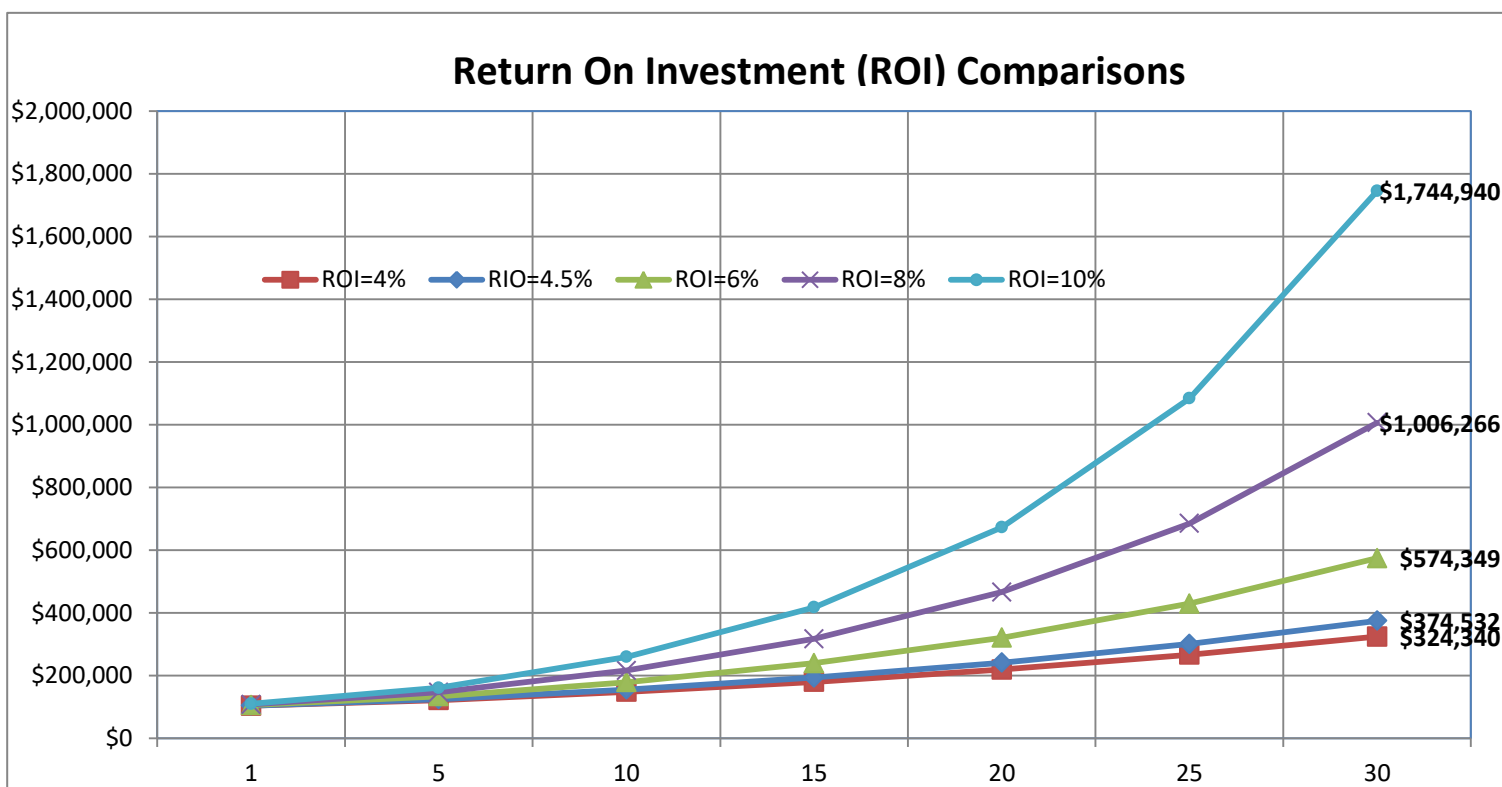
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Chapter 4: Return on Investments

Return on investment (**return**) is probably the single most important input in calculating future value of your retirement savings and determining how long your assets will last. Small changes to this value can have a dis-proportional impact on calculations so it is vital that the value assigned to the return is accurate as possible.

Return on Investment Comparisons

Line	Annualized ROI	Initial Value	ROI	Year						
				1	5	10	15	20	25	30
1	4% per year	\$100,000	4.0%	\$104,000	\$121,665	\$148,024	\$180,094	\$219,112	\$266,584	\$324,340
2	4.5% per year	\$100,000	4.5%	\$104,500	\$124,618	\$155,297	\$193,528	\$241,171	\$300,543	\$374,532
3	6% per year	\$100,000	6.0%	\$106,000	\$133,823	\$179,085	\$239,656	\$320,714	\$429,187	\$574,349
4	8% per year	\$100,000	8.0%	\$108,000	\$146,933	\$215,892	\$317,217	\$466,096	\$684,848	\$1,006,266
5	10% per year	\$100,000	10.0%	\$110,000	\$161,051	\$259,374	\$417,725	\$672,750	\$1,083,471	\$1,744,940

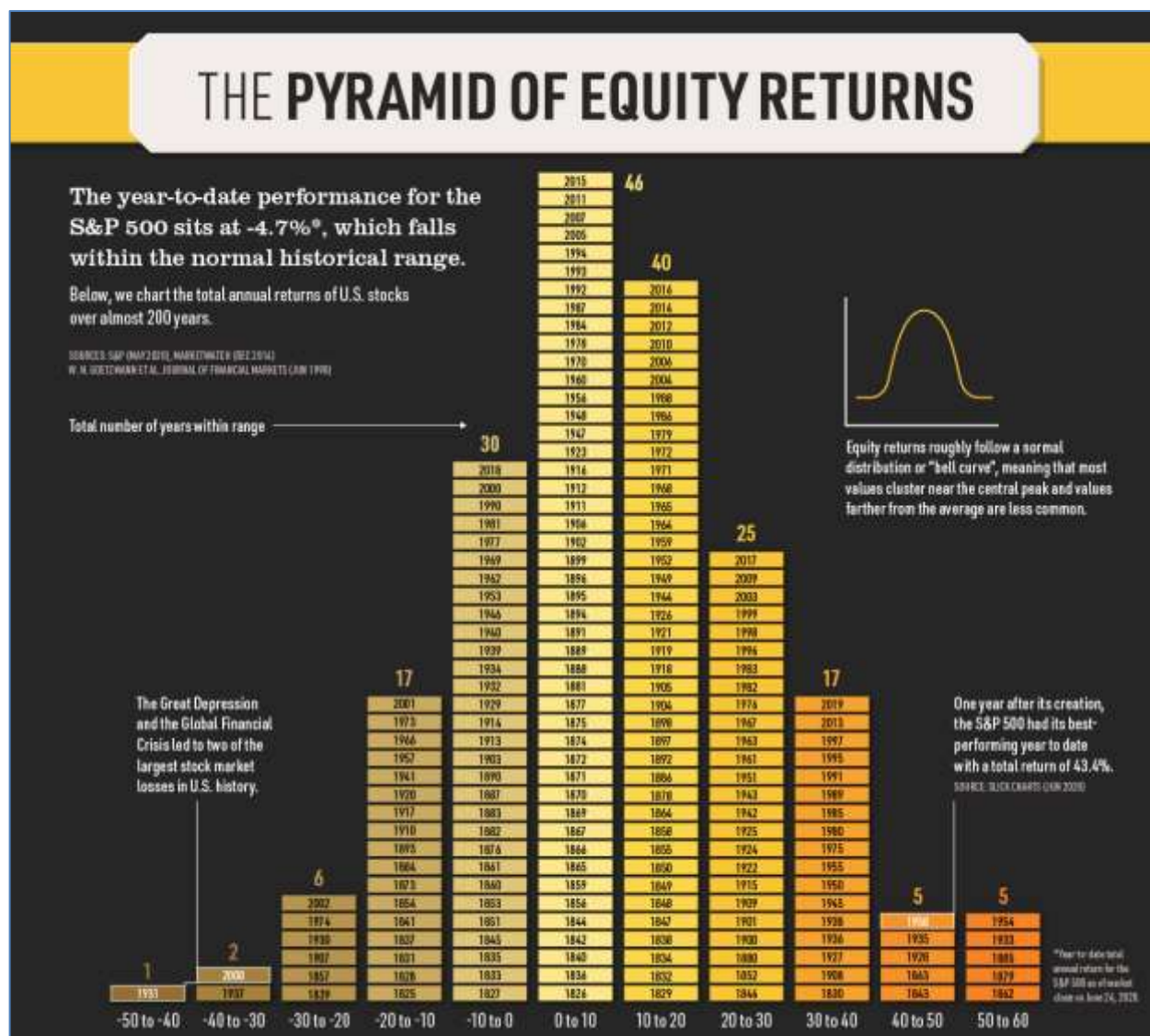


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Chapter Summary

This chapter is focused on the concept of Return on Investment (ROI) aka Returns. This may be the single most important input in your retirement planning and execution, so it is vital you understand how it works and how important it is to try to get as accurate measure and estimate of this value to be used in your calculations. This chapter also covers how to measure performance of your investments to determine if a new strategy is in order.



References and Resources

- CalculatorSoup: [Investment Calculator](#)
 - [Future Value Formula Derivation](#)
- Calculator.net: [Return on Investment \(ROI\) Calculator](#)
- Macrotrends: [Stock Indexes Charts and data](#)
- [Historic Stock Market Performance Chart - almost 200 years](#)
- Investopedia: [Bucket Strategy vs Systematic Withdrawals: Knowing the Difference](#)

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Terms and Concepts

- **Dollar Cost Averaging** – An investment strategy in which an investor purchases a fixed dollar amount of stock at set interval over a period of time. As the price of the stock may vary over time the number of shares that are purchased with the same dollar amount will vary. Ultimately this technique tends to provide the investor with slightly better returns than the overall average performance of the stock over the period of time.
- **Inflation Adjusted Returns** – Return on Investment that takes into account Inflation. Also known as **Real Return**.
- **Real Return** – Return on Investment that takes into account Inflation. Also known as Inflation Adjusted Returns.
- **Return on Investment ROI** – aka Return; The growth realized on an investment over a period of time.
- **Reverse Dollar Cost Averaging** – The process of liquidating a set dollar amount of shares at regular intervals over a period of time. This is typically performed in retirement for income. The problem with this technique is that as the price of shares varies, the number of shares required to obtain the same amount of funds from the sale will change. This has the exact opposite result of Dollar Cost Averaging, where this technique will lead to slightly lower performance of stock over time since more shares are sold when the price of the stock is at a lower price.

What is Return on Investment?

Return on Investment (return) is the same as the growth of an investment. Performance of funds and other financial instruments often quote the Return on Investment aka ROI over a given time period. It is important to remember the value supplied represents accumulated return over the time period as opposed to representing the actual variations year to year of that investment. Calculating the ROI for an investment is easily done using an [online calculator](#) where the initial amount, length of time and final value is input, the ROI is calculated.

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Calculating a Return – Historic returns for a given year is performed in this book on a yearly basis:

$$(\text{Return of Investment}) = \frac{(\text{Year end balance}) - (\text{Start of year balance})}{(\text{Start of year balance})}$$

Return values provided in this book are calculated for each year using the above equation; this does not represent the compounded rate of returns over a time period of more than one year. Further adjustments to the returns are made to incorporate the inflation for the year in question. Furthermore, these calculations include all dividends and interest that may be realized over the year.

Are Your Investments Good Choices or Dogs?

Utilize the equation below to get a rough estimate of your Return on Investment for a given year. This equation takes into account deposits and withdrawals.

$$(\text{Actual Return of Investment}) = \frac{(\text{Year end balance}) - (\text{Start of year balance}) - \text{Deposits} + \text{Withdrawals}}{(\text{Start of year balance}) + (0.5 * \text{Deposits}) - (0.5 * \text{Withdrawals})}$$

Use the [spreadsheet for this chapter](#) for your own calculations. Note that using this equation does not include external cost, for example you may be paying an investment manager a 1% fee from your wages, in such a case you would need to take the calculated return and subtract the fee for the actual performance.

Figure 4.2

Calculate Your Own Return (Figure 4.2)

Line	Item	Value	Comments
1	Year-end balance		
2	Starting balance		
3	Ending balance divided by starting balance		Line 1 divided by Line 2
4	Deposits		
5	Withdrawals		
6	Net Deposits		Line 4 minus Line 5
7	Net deposits divided by starting balance		Line 6 divided by Line 2
8	Calculated Return		Ref Figure 4.3 using Line 3 and Line 7

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Figure 4.3

Are Your Returns As High As They Should Be?																
Row 3 from Figure 4.2	Net Deposits Divided by Initial Balance (Row 7 from Figure 4.2)															
	-0.10	-0.08	-0.06	-0.04	-0.02	0.00	0.02	0.04	0.06	0.08	0.10	0.12	0.14	0.16	0.18	0.20
0.70	-19%	-21%	-23%	-25%	-28%	-30%	-32%	-35%	-37%	-40%	-42%	-45%	-47%	-50%	-53%	-56%
0.73	-16%	-18%	-20%	-22%	-24%	-27%	-29%	-31%	-34%	-36%	-39%	-41%	-44%	-46%	-49%	-52%
0.77	-13%	-15%	-17%	-19%	-21%	-23%	-26%	-28%	-30%	-33%	-35%	-38%	-40%	-43%	-45%	-48%
0.80	-10%	-12%	-14%	-16%	-18%	-20%	-22%	-24%	-27%	-29%	-32%	-34%	-37%	-39%	-42%	-44%
0.83	-6%	-8%	-10%	-12%	-15%	-17%	-19%	-21%	-23%	-26%	-28%	-30%	-33%	-36%	-38%	-41%
0.87	-3%	-5%	-7%	-9%	-11%	-13%	-15%	-18%	-20%	-22%	-25%	-27%	-29%	-32%	-34%	-37%
0.90	0%	-2%	-4%	-6%	-8%	-10%	-12%	-14%	-16%	-19%	-21%	-23%	-26%	-28%	-31%	-33%
0.93	3%	1%	-1%	-3%	-5%	-7%	-9%	-11%	-13%	-15%	-18%	-20%	-22%	-25%	-27%	-30%
0.97	6%	4%	3%	1%	-1%	-3%	-5%	-7%	-10%	-12%	-14%	-16%	-19%	-21%	-23%	-26%
1.00	10%	8%	6%	4%	2%	0%	-2%	-4%	-6%	-8%	-11%	-13%	-15%	-17%	-20%	-22%
1.03	13%	11%	9%	7%	5%	3%	1%	-1%	-3%	-5%	-7%	-9%	-11%	-14%	-16%	-19%
1.07	16%	14%	12%	10%	9%	7%	5%	3%	1%	-1%	-4%	-6%	-8%	-10%	-12%	-15%
1.10	19%	17%	16%	14%	12%	10%	8%	6%	4%	2%	0%	-2%	-4%	-7%	-9%	-11%
1.13	22%	21%	19%	17%	15%	13%	11%	10%	8%	6%	4%	1%	-1%	-3%	-5%	-7%
1.17	25%	24%	22%	20%	18%	17%	15%	13%	11%	9%	7%	5%	3%	1%	-1%	-4%
1.20	29%	27%	25%	24%	22%	20%	18%	16%	14%	13%	11%	9%	6%	4%	2%	0%
1.23	32%	30%	28%	27%	25%	23%	22%	20%	18%	16%	14%	12%	10%	8%	6%	4%
1.27	35%	33%	32%	30%	28%	27%	25%	23%	21%	19%	18%	16%	14%	12%	10%	7%
1.30	38%	37%	35%	33%	32%	30%	28%	27%	25%	23%	21%	19%	17%	15%	13%	11%
1.33	41%	40%	38%	37%	35%	33%	32%	30%	28%	26%	25%	23%	21%	19%	17%	15%
1.37	44%	43%	41%	40%	38%	37%	35%	33%	32%	30%	28%	26%	24%	22%	21%	19%
1.40	48%	46%	45%	43%	42%	40%	38%	37%	35%	33%	32%	30%	28%	26%	24%	22%

FIGURE 4.3 Find your return for the year.

Using Returns to Give Your Investments a Tune-Up – You should divide up your investments into fixed income and equities. You should then determine your return on both for last year. Compare your [results with what the market performed for both categories](#). If your results differ significantly lower than the market you should consider changes that may be needed to rectify this problem.

Accounting for Inflation: Real Returns – Discussion on how to calculate the Real Return over a period of time. This can be easily done by using the [spreadsheet for this chapter](#) in the Figure 4.1 tab.

Figure 4.1

Calculate Real Return Over time (Figure 4.1)			
Line	Item	Value	Comments
1	Starting balance		
2	Number of Years		
3	Yearly Growth		
4	Yearly Inflation Rate		
5	Real Return (Inflation Adjusted Returns)		

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Using Real Returns in Your Retirement Planning

As mentioned earlier getting the estimate your returns as accurate as possible is vital to a successful retirement plan. One should generally expect returns on investments to be higher before retirement and lower after retirement due to reverse dollar cost and the disproportional influence inflation has on items and serves required in retirement.

Preretirement Returns – Download [chapter 4 excel spreadsheet](#), and utilize the 4.4 tab to calculate your real returns. The following columns need to be filled in:

- Security – You can add additional columns for fine tuning of the types of securities listed.
- Investment Value – Current market value for the identified security.
- Representative Real Returns – Estimated historical values have been provided for some of these columns. Feel free to update for your particular situation, if unique. Historic return
 - Stocks – S&P 500 index historical data used.
 - Bonds – Long term corporate bond rates used.
 - Growth Stocks – Small Stock index used.
 - Money Markets.... – Treasury indexes used.

Figure 4.4

Calculate the Real Return for Your Plan (Figure 4.4)

Line	Security	Investment Value	% of your Investments	Representative Real Returns	Real Return	Comments
1	Stocks			6.7%		
2	Growth Stocks			9.0%		
3	Other Equities					
4	Bonds			2.4%		
5	Other Fixed Income Investments					
6	Money Markets, T-Bills, Short Term CDs, etc.			0.8%		
7	Net deposits divided by starting balance					
8	Totals					
9	Estimated Cost (For Funds, brokers, etc.)					
10	Net Real Return					

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Theory versus Reality in Preretirement Planning – Figure 4.6 compares the performance of a 5.7% constant rate of return compared to real world performance starting in 1939 and 1949. This demonstrates how in the real world variations in the stock market can throw off your retirement projections. We see the importance of re-evaluating every year and making adjustments accordingly, it also points out the fact that you can always delay your retirement if needed.

Figure 4.6

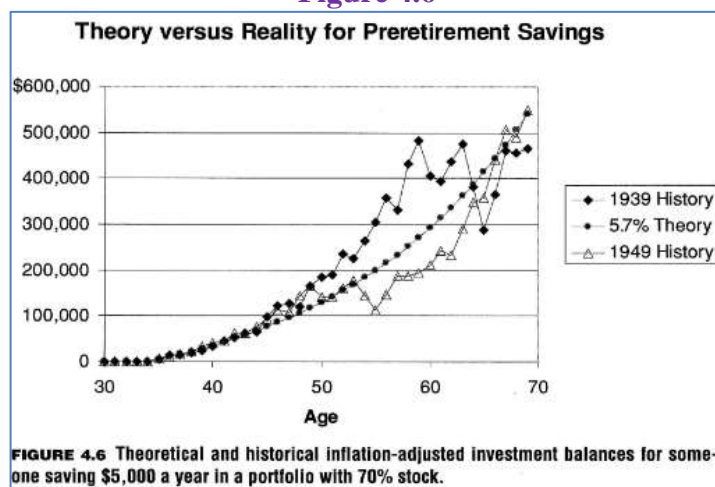


Figure 4.5

Amount of Stock Largely Determines Real Returns					
Stock as % of Investments	Portfolio Description				Long-Term Real Return Excluding Costs
	Large Co. Stock	Growth Co. Stock	Long- Term Corp. Bonds	Treas- ury Bills	
90%	50%	40%	0.0%	10%	7.0%
80%	50%	30%	10.0%	10%	6.4%
70%	50%	20%	20.0%	10%	5.7%
60%	50%	10%	30.0%	10%	5.1%
50%	50%	0%	40.0%	10%	4.4%
40%	40%		50.0%	10%	4.0%
30%	30%		60.0%	10%	3.5%
20%	20%		70.0%	10%	3.1%
10%	10%		80.0%	10%	2.7%
0%	0%		90.0%	10%	2.3%

FIGURE 4.5 By calculating the percentage of stock in your portfolio, you may find a representative real return listed that you can use for retirement planning. Remember to subtract investment costs before using the real return in your plan.

Remember, this represents percentage of stock representing the overall stock market. If I were to own 90% of a single or basket of individual stocks in my portfolio (systematic risk) my performance could be totally different from what is indicated in this table (ie 100 % of the stock was Enron, I would be bankrupt now, 100% TESLA, I would be a multi millionaire).

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Theory versus Reality in Postretirement Planning – In the figures below we begin have the following initial conditions:

- One million dollars in assets.
- Funds should last until the retiree is 85 years old.
- Allocation of investments is 50% stocks, 40% bonds, 10% T bills

For Figure 4.7 we assume a 4.4% Return and observe:

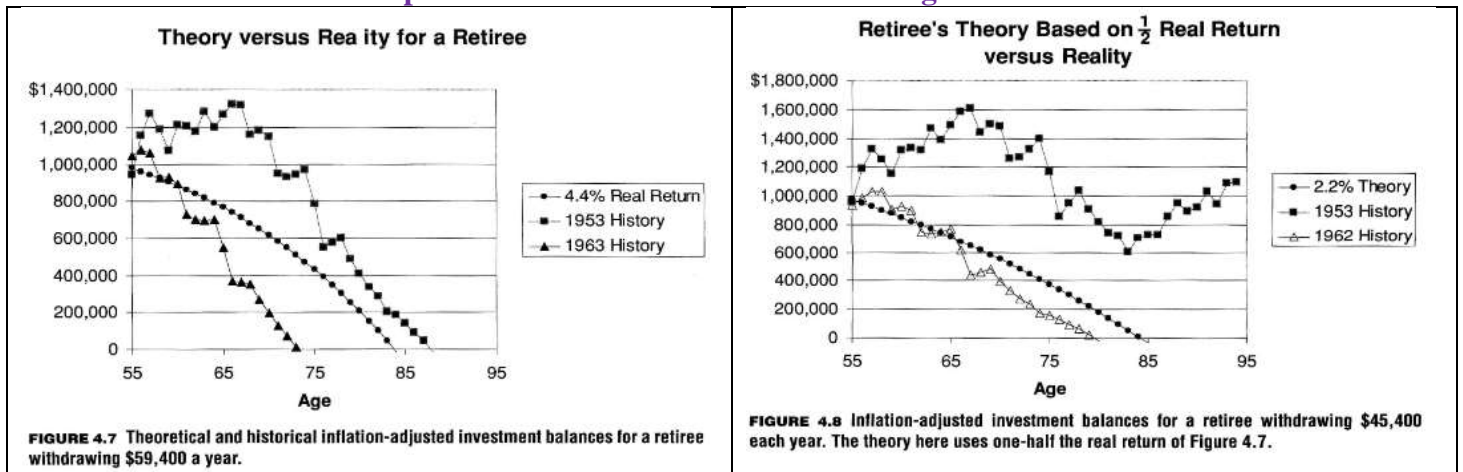
- The retiree is told they can withdraw \$59,400/year for funds to last until they are 85 years old.
- There is a 50% chance of the retiree running out of funds before reaching the age of 85.
- In the 1963 retirement scenario we see the funds run out at age 73, 12 years earlier than the desired age of 85.

For Figure 4.8 we assume a 2.2% Return and observe:

- The retiree is told they can withdraw \$45,400/year for funds to last until they are 85 years old.
- There is still a 20% chance of running out of fund before retirement.
- In the 1963 retirement scenario we see the funds run out at age at about 80 years old.
- In the 1953 retirement scenario the retiree never runs out of funds.

Figure 4.7 and Figure 4.8

Impact of Return Estimates on How Long Assets Last



A few observations to take away from this information:

- Assuming overly optimistic expectations for returns can have disastrous impacts in your retirement.
- Variations in stock market performance can also cause devastation.
- An additional mechanism is needed to help the retiree to make adjustments in retirement to help compensate for these risks. This is where life expectancy factor in, this will be handled later in the book.

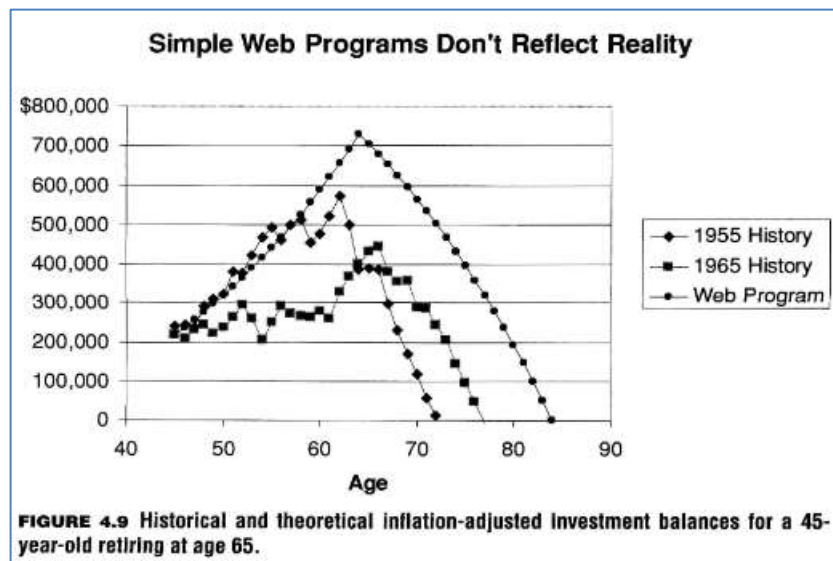
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Using the Web or a Commercial Computer Program? Be Careful! – Most programs are overly optimistic on expected returns, under estimate inflation for retirees, investment fees, forget to account for taxes and don't take into account reverse dollar cost averaging. Finally, the estimates they provide you are based on a based on a 50% probability that you won't run out of funds which means there is a 50% probability that you will run out of funds. Figure 4.9 is an example of a typical program with the typical assumptions:

- Tax deferred accounts.
- \$200,000 starting balance at age 45.
- \$10,000 contribution each year (Inflation Adjusted).
- A conservative portfolio of 50% Large Caps with 1.5% cost, 40% Long term bonds with 1% cost, 10% Money Markets with 0.3% cost.
- Federal and State taxes of 16%
- 7% Return
- 3% Inflation

Figure 4.9



We can see in the program funds reaching \$700,000 at retirement of age 65 and dropping to zero at age 85 in a smooth curve. When historic values from 1955 and 1965 are calculated we can see the real world results are much worse.

This is why it is important to use conservative values when providing inputs into these types of programs.

Your Winning Retirement Plan

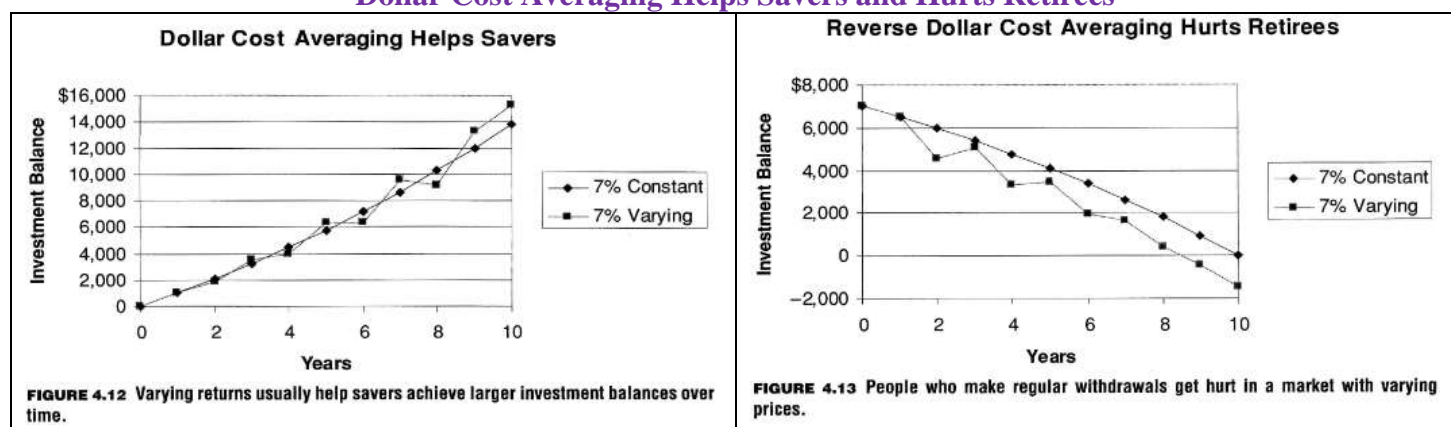
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Reverse Dollar Cost Averaging

Dollar averaging is when equities are purchased or sold at regular intervals. The amount of money involved in the transaction is to remain constant over each cycle, but the amount of stocks purchased or sold will vary due to the fluctuations of the price of the stock. When purchasing shares the net result is better performance than the average return over the period. When selling stocks the opposite is the case, and performance will be lower than the average since you will have to sell more shares when stock prices drop to obtain the same amount of money.

Note that in this example when purchasing shares results in a real world return of 9% compared to the 7% average. When selling shares the real world performance is 4.8% return compared to the 7% average.

Figure 4.12 and Figure 4.13
Dollar Cost Averaging Helps Savers and Hurts Retirees



Using the [Bucket approach](#), one may help extend ones savings by minimalizing liquidation of stocks in down years. Something not really covered too much in this book, that may be worth working into your retirement plans.

Be Wary of Compound Growth Projections!

Hebeler points out that most sales pitches are dishonest in that the growth projections the often provide are often over estimated and their projections leave out critical elements that would lower their projections including inflation, Fees, and actual performance due to compounding. He walks through a typical sales pitch where \$1,000 grows to \$100,000 in forty years. Hebeler then points out the impact if these other factors would be considered, and the actual return to expect in that forty year period would probably be more in the range of \$3,400.

Finally the example of a roman depositing a penny with a 3% growth would be worth 470×10^{21} in 2,000 years, but with 3% inflation, that penny would be worth a penny today. Pointing out the importance of taking into account these other factors.

Chapter Closing Thoughts

In addition to pointing out the importance of taking as many factors as possible in determining ROI, the concept of Dollar Cost Averaging, and how it can benefit the investor is introduced. It is also pointed out that Reverse Dollar Cost Averaging has an equally detrimental impact on the real returns a retiree may experience when tapping into their retirement portfolio.