Ruminations on Expected Returns

I believe many investors, commentators, and even financial advisors and analysts are looking at market data and drawing incorrect conclusions. Following is an analogy to explain how to think about expected return and what actions might be prudent if that expected return changes followed by an exposition of how to actually calculate the returns.

The Magic Box. Imagine there is a magic box and at the end of each year a dollar mysteriously appears inside. Suppose you pay $10 to acquire this box. At the end of the first year, it produces the aforementioned dollar as it always has. What is your expected return on your investment? Well, if you continue to receive $1 per year on an investment of $10, then you have a 10% return ($1 return divided by a $10 investment). At the end of the first year, after collecting your dollar, you sell the box to someone else for $20. What has been your actual return? You received 10% from the dollar produced, and an additional $10 (100%) from your gain on the sale, so your total return was 110% ($11 total profit divided by $10 cost) for the year.

So far, so good, but now it gets a little more complicated. What is the expected return for the person who *bought* the magic box from you? One way he or she might look at it is that the box has "always" produced 110% return per year for as long as we have historical data. Therefore, we should expect 110% each year in the future. Many people do this with the stock and bond markets and simply look at the historical total returns that have been achieved to arrive at an estimate of future returns.

Some analysts go a step further and suggest that price appreciation (P/E multiple expansion) may not continue as it has, so we should remove the 100% appreciation from the total return leaving us with 10% expected return. This seems plausible until we realize that the person who bought the box from us paid $20 and will likely receive $1 per year for a 5% return. Of course someone may in the future purchase the box for $30 or $10, we simply don't know in advance. Historically, the stock market has paid about $15 for a dollar of earnings; currently it is slightly higher than that. That does not necessarily imply that the market must go down, but it does imply some probability of lower returns in the future. In general, I believe that markets work, and current prices are the best estimate of future prices.

Two Boxes. Now let me change the example slightly. Suppose there are two types of magic boxes. One works just like the one in the previous example. It magically produces $1 each and every year like clockwork. We will call that box the "bond box." The second box type on average creates $2 per year, but it is highly uncertain. Some years there is nothing, some years there is more than $2, but on average it has been about $2 per year. We will call this box type the "stock box." Due to the uncertainty of the stock box, both of these boxes cost the same amount. In other words, you can choose to purchase a bond box and get $1 per year or purchase a stock box and *on average* receive $2 per year but at irregular intervals. Given this scenario, suppose you choose to buy equal numbers of each box to reduce your risk a little but get returns higher than $1 per year. On average, you will receive $1.50 per box with some uncertainty due to the stock boxes.

Now suppose that it appears that the stock box, instead of producing $2 per year on average, is only producing $1.50 per year on average. It may be hard to tell due to the irregularity of the pattern, but suppose we are convinced that it is now $1.50 and not $2.00. What should you do?

As with many questions, it depends. If you absolutely, positively *must* average $1.50 per year return as you always have, you have no choice but to sell *all* of your bond boxes and buy stock boxes. That is the only way to get $1.50 on average. Of course, you will have a lot of risk given the irregularity of the payments, but *on average* (a very important caveat) you will receive the $1.50 you always have.

Another option is to look at it another way. You previously received a premium of $1 per stock box for taking the risk that in any given year you might get nothing at all. Now you are only getting $0.50 premium for taking that same risk. It would seem logical to have more bond boxes in that case since you aren't getting as much compensation for that risk. Looked at from this perspective, it would be rational to have fewer stock boxes and more bond boxes. Of course your expected return is lower than it would be otherwise, but so is the risk.

Let's move on now to determining the returns we should expect on our investments. In the following discussion, I make no claim whatsoever to knowing what will occur in the short run, and in the long run these estimates will undoubtedly be wrong, but should give us the midpoint of a range of returns we should expect. In particular, these exercises can be an objective yardstick when everyone seems either panicked or euphoric about the market.

Expected Returns on Bonds. Calculating the expected returns on bonds is relatively easy; it is the yield to maturity less any expected defaults. For investment grade bonds, the default risk can be mostly ignored, but for non-investment grade (aka junk bonds) the defaults can be significant.

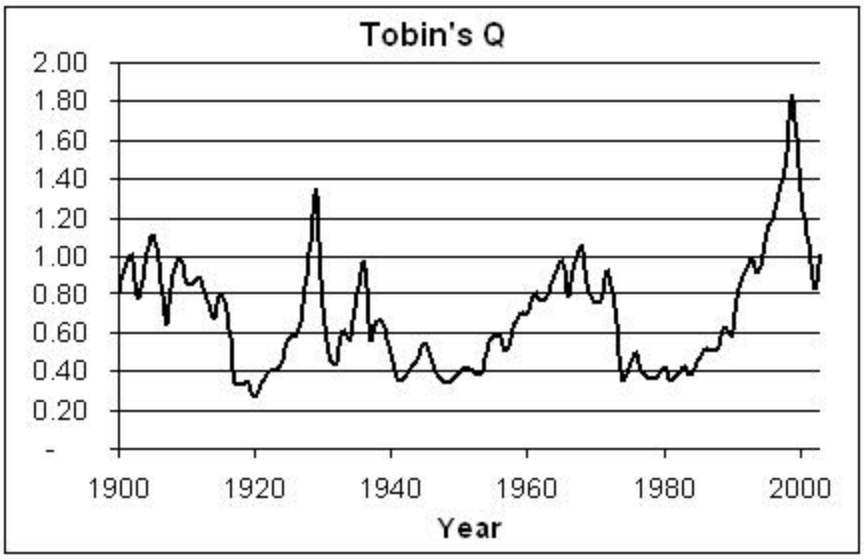
Expected Returns on Stocks. It is a mistake, in my view, to try to achieve some target rate of return. It is far better to take an appropriate level of risk and accept the returns the market is currently offering. Wanting or needing a particular level of returns doesn't make it available. But it is nice to know what types of returns are on offer.

When appraising a home, there are three ways to arrive at a valuation, 1) comparing the home to the sales price of other, similar, homes, 2) determining the cost to replace the home, and 3) determining what a fair price would be given what income the home could generate as a rental. These three methods also apply to stocks. Let's take them one at a time. (The astute reader will notice that past performance is not a factor in any of this.)

1) **Comparables.** This is most useful when trying to determine if an individual stock is fairly valued. Comparing the company to its peers on a variety of metrics including the stock price relative to fundamentals such as sales, cash flow, earnings, book value, etc. can be very useful. It is less useful in trying to determine the return of the market as a whole, although since bonds compete with stocks for the investor's dollar, comparing stocks to bonds can sometimes be useful.

2) **Cost.** The value of a company in bankruptcy is the value of the assets net of the outstanding liabilities. This serves as a lower bound on the value of the stock, because it should be worth at least the value of the stuff in the company. There may be other intangible values as well. For example, the Coca-Cola brand is of significant value as long as the company is a going concern. If there isn't a significant "goodwill" value (like the brand) then a company should be worth what it could be built for. In other words, why pay more for an existing company than what it could be created for from scratch? There is a ratio called Tobin's Q that measures exactly this.

Tobin's Q is the ratio of the value of the stock market divided by corporate net worth. Using this metric is not easy since assets are carried on the balance sheet at their historical value, not the current fair market value. Further, many intangible assets are not included. Thus adjustments are needed and are difficult (indeed, there is divergence of opinion on exactly what adjustments should be made and how to do them). In theory, a "correctly" valued market will have a q ratio of one, but as you can see from the chart, historically the value has been less than one most of the time. This is a puzzle since intangible assets should cause the ratio to be above one. This may indicate that assets on the corporate balance sheets are being carried at values that are too high – i.e. not enough depreciation is being taken or write offs being done. During the dot com boom, the q ratio was higher than it had ever been, portending the coming debacle. (The graph is from Wikipedia.)



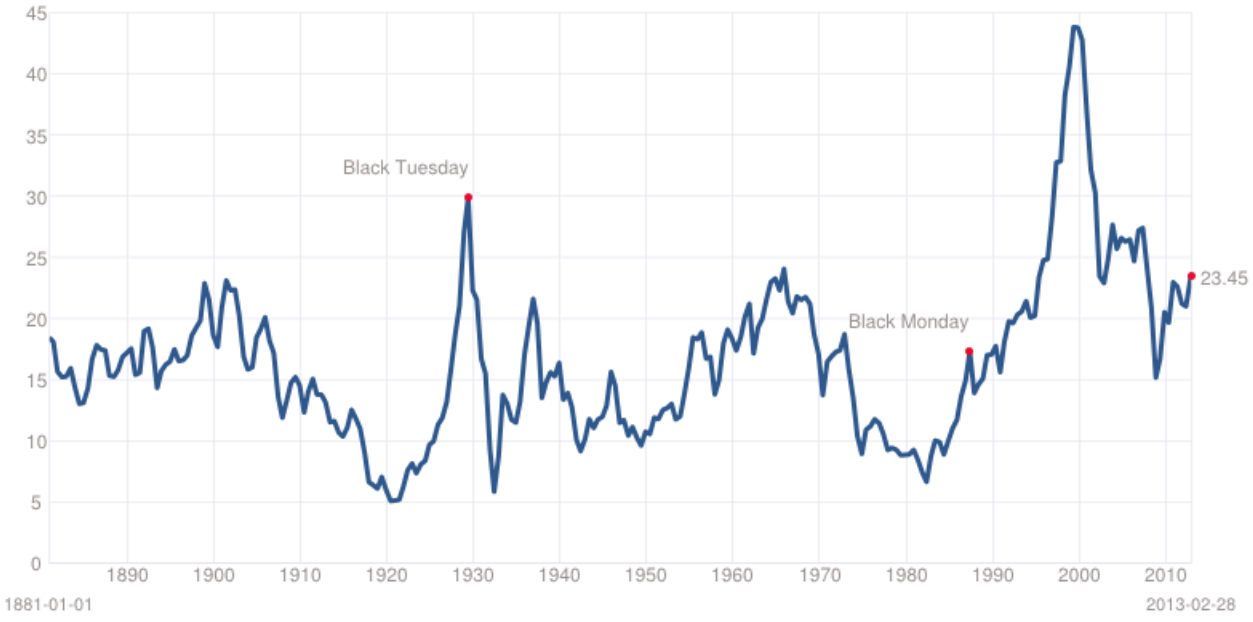
3) **Present value of the cash flows.** In theory the value of a stock is the present value of the future cash flows you expect to get from that stock. Thus, as a starting point the expected rate of return is the dividend yield. Of course the company's dividend may grow through time as well, so we should add to the dividend yield that growth rate. The lower the dividend the company pays out, the higher its growth should be and vice versa. If we are looking at the entire market however, we can assume to a first approximation that the capitalization of the stock market will grow proportionally with the overall economy. That is, companies in aggregate will reinvest enough to grow at the same rate as the overall economy, keeping the ratio the same. This is probably too high a growth rate for two reasons: First, management at public companies invest retained earnings suboptimally, i.e. the funds they don't pay out are spent poorly. This is either unintentional because of overconfidence in internal projects and acquisitions or intentional in building corporate edifices. (This is an example of the "agency problem"; the manager's desires – self-aggrandizement – don't exactly match the owner's desires – profits.) Second, it seems reasonable to assume that privately held companies, which are generally smaller, might grow faster than publicly held companies thus leading to GDP growing faster than the public company's market capitalizations. (IPOs plug the gap to keep the ratio the same over time.) As I write this, the dividend yield on the market is just over 2%.

The growth of the economy (GDP) can be divided into "real" growth and inflation. The real growth has been relatively stable over time at about 3%. Expected inflation can be determined by the spread of yields on nominal treasuries over TIPS. Currently, that spread is about 2.5%. So combining the dividend yield, the real growth in the economy, and expected inflation, we arrive at an estimate of about 7.5%. This sounds low, but in the context of 2.5% expected inflation and 2% (or so) yields on nominal bonds, we are getting a 5% real return and a 5.5% equity risk premium. That is not a horrible return expectation.

The immediately preceding analysis used dividend yield as the starting point. There is another approach where we begin with earnings. In theory, if a company paid out 100% of its earnings it wouldn't grow but it wouldn't whither and die either (depreciation expense is taken out before earnings and, again in theory, would allow enough reinvestment to remain in a steady state). The company would be able to raise prices with inflation though and costs would increase with inflation. (This will vary for companies in different industries and with different capital structures and cost structures, but in aggregate it should be roughly true.) Thus our estimated rate of return on stocks is the inverse of the PE ratio of the market (the earnings yield) plus expected inflation. As I write this, the market PE is 18, so the earnings yield is 5.5% (the inverse). Adding the previously computed inflation of around 2.5% gives us an expected return of about 8%. As in the previous method, this calculation is probably slightly high since earnings are far more likely to be overstated rather than understated in relation to economic reality.

There is also an issue with earnings varying over the business cycle. When times are abnormally good, assuming those are the perpetual earnings is a mistake. It is also a mistake to assume that in a recession, the current earnings are the correct ones. Irrationally, PE ratios are higher in good times and lower in bad times – they are positively correlated with profit margins. This is the opposite of what should be the case. It appears people inappropriately assume that the current state of the world will persist rather than revert to a more normal state.

Benjamin Graham, widely recognized as the father of value investing, suggested averaging earnings over a period of time rather than using the current earnings. Robert Shiller, professor of economics at Yale, maintains this data and refines the method by adjusting the earnings for inflation. (The graph is from www.multpl.com based on Dr. Shiller's data.)



The current "Shiller PE" (also known as the PE10 because the earnings are averaged over a decade, or the CAPE for Cyclically Adjusted PE) is about 23. The inverse of this gives us 4.5%. Adding inflation again, we arrive at an estimate for future returns on the market of about 7%.

So, in closing, and with apologies to Rudyard Kipling:

If you can keep your head when all about you
Are losing theirs and trading like crazy people;
If you can trust your valuation models when all men doubt you,
But make allowance for their models too;
If you can force your heart and nerve and sinew
To maintain your asset allocation long after they are gone,
And so hold to your prudent portfolio when there is nothing in you
Except the Will which says to them: "Hold on"
Yours is the risk adjusted return and the alpha goes along with it,
And – which is more – you'll be a successful investor my son!

Notes:

The analysis in this report has been prepared by David E. Hultstrom, MBA, CFP©, CFA©.

Mr. Hultstrom is the president of Financial Architects, LLC, a financial planning and wealth management firm. Questions or comments are welcome, and he may be reached at David@FinancialArchitectsLLC.com or ***(770) 517-8160****.*

Reasonable care has been taken to assure the accuracy of the data contained herein and comments are objectively stated and are based on facts gathered in good faith. We disclaim responsibility, financial or otherwise, for the accuracy or completeness of this report. Opinions expressed in these reports may change without prior notice and we are under no obligation to update the information to reflect changes after the publication date. Nothing contained in this material is intended to constitute legal, tax, securities, or investment advice, nor an opinion regarding the appropriateness of any investment, nor a solicitation of any type. The general information contained in this publication should not be acted upon without obtaining specific legal, tax, and investment advice from a licensed professional. Past performance is no guarantee of future results. This is not an offer, solicitation, or recommendation to purchase any security or the services of any organization. The foregoing represents the thoughts and opinions of Financial Architects, LLC, a registered investment advisor. Your mileage may vary.

This report was originally written in July, 2005 and was last reviewed/updated in April, 2013.