The Economy and Markets:

The riskiness of the U.S. stock market continues to appear relatively high. At the close of trading on June 30, the S&P 500 was at a level of 2,063.12, very close to its 2,058.20 level at the beginning of the year, and the worst first-half annual performance of the S&P 500 since 2010.

Markets at a Glance (June 30, 2015)	
S&P 500	2,063.12
Dow Jones	17,619.51
10 yr. U.S. Treasury	2.35%
3mo U.S. Treasury	0.08%
GDP Growth (last quarter)	-0.2%
Unemployment Rate	5.5%

The Shiller "cyclically adjusted price ratio", the CAPE indicator we've discussed in past newsletters, is at about 26.48, down slightly from our last report. This is still an unusually high reading from this measure, and research has shown this measure to be inversely related to future long-term market performance. However, while I believe this to be the best measure of long-term market performance available, it is important to keep in mind that it is still a relatively weak instrument for market return forecasts.

The S&P 500 market volatility index (or VIX) is about 18.23, indicating that the market volatility is up a good bit from three months ago. This increased risk is largely attributable to the solvency issues in the country of Greece. Last week, before the Greek crisis came to a head, this measure was around 12.5. It is worth noting that while the implied volatility captured by the VIX provides useful information, I have found it to subject to rapid changes – as this past week has demonstrated. The indicators that we have available continue to suggest below average long-term performance (defining long-term performance here as in the academic literature – roughly a 10-year horizon). In the short term, of course, there are no reliable predictors of stock market performance, and the volatility in the market is currently above the long-term market average.

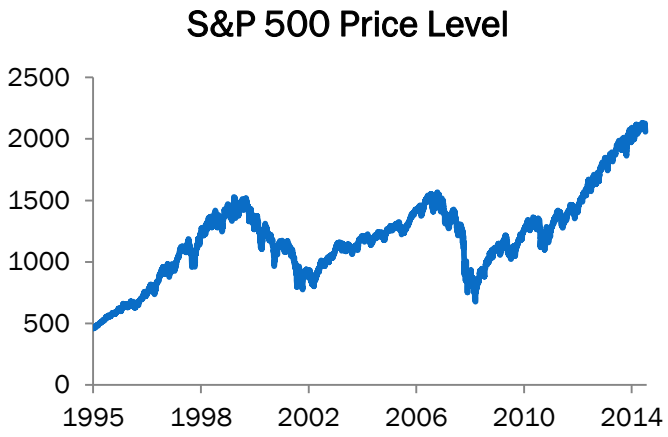
As of June 30, the 10-year U.S. Treasury yield is 2.35%. This is remains a very low level, though higher than three months ago. The emerging consensus amongst economists appears to be that the Federal Reserve will raise the federal funds rate in the latter part of this year, for the first time since 2006.[1] For the real economy, this is reflective of the increasing strength of the labor market. According to Fed chair Janet Yellen, "Federal Reserve research concludes that the unemployment rate is probably the best single indicator of current labor-market conditions." As you can see in the graph to the side, the unemployment rate in the United States has fallen to 5.5%, and has declined steadily since the Great Recession. This decline in the unemployment rate is no doubt behind the Fed's

[1] The risk of contagion from the Euro area is one possible factor that could disrupt the planned interest rate increases. I briefly discuss these risks emanating from the Greek crisis below.

growing belief that it can begin to raise rates closer to a "normal" level without harming the real economy.

At this point, I think any increase in rates will be welcomed by savers. The cost of the Fed intervention in the past several years (a remarkably effective intervention, I should add) has been borne by anyone who saves money in low-risk investments. The yields have been very low for a very long time. This has made it difficult for savers in several ways, though most obviously in the form of low bond and CD returns. It also has had the effect of lowering the payout of annuities to those who are interested in such things. Of important note, low rates also buoy stock prices, which is a large part of why so many individuals watch Fed behavior quite closely – an interest rate hike may have negative consequences for stocks. However, the expected increase in rates has been very well communicated by the Fed, so it seems unlikely that there will be a large reaction to the Fed announcement, whenever they do decide to proceed with the increase.

One potential source of risk that continues to bear watching comes from the European Union. At the time of this writing, it appears that the European Commission, The European Central Bank, the International Monetary Fund, and the country of Greece have been unable to reach an agreement for a bailout plan to assist Greece in repaying its massive debt. This is no small matter – there are deep divisions amongst those institutions and the countries that back them as to how these kinds of economic "rescues" should proceed – or even if they should proceed. In this case, a condition of the bailout of Greece by the European Commission is the implementation of austerity measures by the Greek government, meaning a considerable reduction in government spending in an attempt to keep the Greek debt under control. Greece has bristled at this requirement. The Greek Prime Minister Alexis Tsipras has called a July 5 referendum in which the Greek people will be asked to vote on whether to accept the bailout and the associated austerity measures. I have no idea what the Greek people will vote for on July 5. According to reports I've read, most Wall Street analysts seem to think that they will vote to accept the austerity measures and the bailout.



Behind all of this maneuvering is the possibility that Greece may leave the European monetary union. Most analysts believe they will not do this. I think there is a better than 50% chance that they eventually will. The reason I believe this is that I can't see any reasonable alternative. The EU seems unwilling to bail out Greece in such a way that they will lose the money offered in the bailout. But short of this, the structural problems in Greece seem so severe that there is no way they can meet their obligations. Because Greece is part of the Euro, they can't simply "print money" to cause inflation, and thus reduce the cost of paying down their debt that way – a process that would also increase the attractiveness of their exports. If they leave the Euro and revert to the Drachma, they

can go this route. The Wall Street analysts may have in mind a political solution that would keep Greece in the Euro area that I just don't see. Even just today (June 30) the Greek government has asked for a two year bailout from the European Stability Mechanism – which would bypass the full European Commission. But I also think they may simply have a status quo bias. I think Greece is more likely to leave the Euro than not, even if the exit is not in the short term. Whether this economic fire is put out or not, there is a structural problem. The political will to reform an inefficient economic system in Greece is not there. Even if it were there, the reform would be very difficult. And all the while, the monetary system of Greece is tied to a currency whose value is largely dictated by the German and French economies.

With the imposition of capital controls, and the closing of its banks this week in anticipation of the referendum, Greece is teetering on the brink of economic calamity. Greece announced June 30 that they will miss a 1.6 billion euro payment to the International Monetary fund due that day. Greece has now been teetering for so long - it was October of 2009 that the precarious state of Greek finances and the steps taken to mask that state were revealed - that it seems unlikely to me that its economic collapse would have long-term systemic economic repercussions beyond the European Union, despite some inevitable short-term volatility. Most creditors outside of Greece that have exposure to Greek debt at this point knew exactly what they were getting. As we saw on June 29 when the Dow Jones average lost 350 points, the U.S. equities markets are not immune to the happenings in Greece. And no doubt, some U.S. firms will have been too nonchalant in reducing their exposure to Greek risk. However, any fallout from Greece to the U.S. is likely to be considerably more muted than would have been the case when this crisis first surfaced in 2009.

Still, the economic collapse of even a small European country, and the human and economic toll such a collapse would inevitably exact, bears watching. And there is certainly no guarantee that things will move forward smoothly. I think that the European institutions in the last several years have made excellent strides in improving the stability of their monetary union. But it is still imperfect, and exposed to the political process of the constituent countries.

Quarterly Special Topic: The Risk-Return Tradeoff in Finance

In past newsletters, we have discussed in this Special Topic section some rather advanced themes, such as high frequency trading, fiduciary responsibility and the structure (or rather, lack thereof) of U.S. retirement policy. Today, we are going to review something much more fundamental, and surprisingly difficult to align between theory and practice: the tradeoff between risk and return in finance.

High risk equals high reward. The most novice investor understands this. For example, it was recently taught in my daughter's 5th grade class. But it is worth asking a few questions before taking the statement at face value. There are some patterns in stock return data that indicate that

empirically, the claim may not even hold. And on top of that, it is worth pointing out that most people (and I would wager, a lot of financial advisers) don't fully understand exactly what the statement actually means.

Specifically, the statement should really read: "High risk is associated with high expected return." Importantly, high risk does not imply high return. It implies a high return *on average*. Sometimes – conceivably even most of the time – investments with high risk end up yielding below average (or even catastrophically poor) returns. But if you average over the universe of all high-risk investments, those returns should be higher than the average over all low-risk investments. At least, this should be true over a long period of time. If this sounds like hardly a ringing endorsement of the relationship, that is absolutely right. High Risk – High Reward is simply a loose association that should theoretically be true. We'll take a look at some of the empirical results on the subject in a bit. But first, I want to talk a little bit about the theory that underlies this most fundamental relationship.

Imagine a group of people being offered the opportunity to play a simple one-shot game. I flip a fair coin. Regardless of the outcome, I keep your entry fee. If the coin comes up heads, you get nothing. If it comes up tails, you get $50,000. I only let you play once.

How much are you willing to pay to play this game? Your answer provides an estimate of what economists call *risk aversion*. Different people have different degrees of risk aversion. The lower your answer, the more risk averse you are. Basically, the lower your willingness to pay, the higher the expected return you require from the game in order to participate. The expected payoff from the game, assuming the coin is fair, is $25,000. (This comes from: 0.5*50,000+.5*0=25,000) If you were willing to pay $25,000 to play, you are said to be *risk neutral* – you require no compensation for bearing the risk. If you are only willing to pay something less than $25,000, then you are *risk averse*. Let's say that you are only willing to pay $22,000 to participate in this game. The *expected return* from the game is:

$$\frac{Expected\ Payoff - Cost}{Cost} = \frac{[.5(\$50{,}000) + .5(\$0)] - \$22{,}000}{\$22{,}000} = \frac{\$25{,}000 - \$22{,}000}{\$22{,}000} = 13.6\%$$

Here, the expected return of the game is 13.6%. Note the difference between the expected return and the actual return. The *actual* return in our example above would be either a) -100% if the coin comes up heads, or b) 127% if the coin comes up tails.

What makes our axiom "High risk equals high reward" true is that most investors, most of the time, are risk averse – they need to be compensated in order to be willing to bear risk, and so for a game like this they are willing to pay less than $25,000. The higher the risk, in general the higher the *expected return*. High risk does not necessarily equal high actual return (in the risky game above, there is a 50% chance of a -100% payoff), but high risk does imply a higher *expected*, or average return.

If you think of this game as an investment in the payoff of a stock, you can think of the price of the stock as the most recent value that someone is willing to pay to participate in the game. In the example above, the stock "price" would be $22,000. The next time someone steps up to play, they may only be willing to pay $21,500 to play. The "price" of the stock would fall to this value, and the expected return would be 19.04% (I've gone through too much math here, I'll leave this one to you if you are so inclined).

Our simple "game" above gives us a solid way to think about the values of assets in the market. Two of the biggest drivers of stock prices are the payoffs from stocks (present and future dividends), and the risk aversion of market participants. Markets have been increasing in value for six years now. Is this because market participants are gradually becoming more tolerant of risk? Is it because the earnings prospects of firms are increasing? Perhaps it is a little bit of both – or a lot of both.

This simple model of thinking of the stock market as a series of coin-flipping games yields an important insight. When people are less comfortable with risk (when they are more risk averse), prices of risky investments are lower, and their expected returns are higher – even if the distribution of payoffs is unchanged. So a firm's prospects might not have changed at all, but in an environment of fear of risk, its stock price may be considerably lower. This is an excellent context in which to understand a 19th century quote by Baron Rothschild, a member of the most prominent banking family in history: "Buy when there is blood in the streets." Anyone who bought into the existing U.S. stock market in 2009 can see their 17.3% annual return since, and understand the principle.

Interestingly, it is not immediately obvious that the tradeoff between higher expected return and higher risk should always be the case. For example, the entire city of Las Vegas has been built on the notion that in at least some times and places, individuals are *risk loving* – they are willing to pay to take risk. In these cases, the expected returns are negative.

This observation leads us to some of the more interesting empirical evidence seen from the U.S. markets in recent academic papers.

For reasons well beyond the scope of a newsletter such as this, the best measure of risk of a firm is a function of the correlation of a stock with the performance of the market as a whole. In finance, we refer to this measure as the *beta* of a stock. If you look up a stock on virtually any online site, you will see beta displayed prominently. Beta captures what is called the *systematic risk* of a stock. The positive relation between the beta of a stock and expected return (so, high beta implies high expected return) is a central topic of most introductory investment classes. It is the closest thing we have to gospel in the heathen world of finance. It is the basis of a model called the CAPM, and the derivation of this relationship won its discoverers a Nobel prize.

Unfortunately, it might be empirically wrong.

Low beta stocks routinely outperform high beta stocks - so much so that our statistical estimates of the expected return for low beta stocks are usually higher than the expected return for high beta

stocks. To take but one example, consider the 2011 research by Baker, Bradley and Wurgler in the *Financial Analysts Journal*.[2] They state:

> *"Over 1968–2008, low-volatility and low-beta portfolios offered an enviable combination of high average returns and small drawdowns. This outcome runs counter to the fundamental principle that risk is compensated with higher expected return."*

This is the financial equivalent of claiming the emperor has no clothes.[3] Low risk stocks outperform high risk stocks on average? Why might this be? There are several plausible explanations. Baker et al above posit that mutual fund managers lose out to their benchmarks too frequently if they heavily invest in low-beta stocks. Other researchers believe that investors desire the high risk-high-reward profile of risky stocks, and so "neglect" low-beta stocks. This drives down the price of low-beta stocks, and thus increases their expected returns.

Other authors dismiss the empirical concern altogether. For example, Lundblad (2007) looks at data from 1836 to 2003, and finds the expected positive relationship between high expected return and high risk.[4] He argues that studies like the one above just don't use enough data.

So what is the conclusion of all of this? The logic of the "high risk implies high expected return" axiom is hard to impeach, as long as the average investor is risk averse. In my opinion, I tend to believe the theory of Henri Nyberg, from the University of Helsinki. Nyberg (2012) argues that during different times of the business cycle, people have different levels of risk aversion. In recessions, they tend to be risk averse, and so not willing to pay much for stocks. But as the recession recedes, they become more comfortable with risk, and so bid up asset prices. In boom times, they may well be risk loving. This tends to get in the way of estimates of the risk/reward tradeoff that a lot of researchers undertake. This probably means that Lundblad is right – we need huge amounts of data to uncover the true relationship.

But this is disconcerting for those of us just trying to save for retirement. Lundblad states:

> *"I demonstrate that even 100 years of data constitute a small sample that may easily lead to…a negative risk return tradeoff, contrary to the predictions of mainstream theory."*

Basically, this means: the risk-return relationship we have so much faith does indeed exist. But it is so unreliable, that 100 years of data might not be enough to actually uncover the relationship. This implies a great deal of uncertainty for those of us who realistically are able to accumulate assets for 30 or 40 years to help us fund our retirement.

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[2] Baker, M, Bradley, B, and J. Wurgler (2011) "Benchmarks as Limits to Arbitrage: Understanding the Low-Volatility Anomaly" *Financial Analysts Journal* 67: 40 – 54.

[3] Incidentally, this isn't some crackpot journal. The *Financial Analysts Journal* is the flagship research journal of the CFA Institute, and the authors of the article work at Harvard, Acadian Asset Management, and NYU, respectively.

[4] Lundblad, C. (2007) "The risk return tradeoff in the long run: 1836–2003." *Journal of Financial Economics* 85: 123 – 150.

So what is the takeaway from all of this? Most importantly, it is worth mentioning that most professionally-created portfolios begin with the assumption that the CAPM model (the model that gives us the positive relationship between beta and expected return) is true, and they compute expected returns and risks from there. So estimates of expected returns of portfolios should always be viewed with a great deal of skepticism. It is human nature to seek advice from those who "know" what the market is going to do. Those people don't exist. The best any of us can do is construct a portfolio that is reasonably well diversified and as low in cost as possible. Once this is done, a good financial adviser should be able to construct "stress tests" to illustrate what happens to a portfolio if financial theory doesn't hold in practice the way it is supposed to in a laboratory.

Well, no one said it was going to be easy.

About Us

Madison Financial Research, LLC (MFR) is a registered Investment Adviser.[5] Jason Fink provides all of the investment advising offered by MFR. Dr. Fink has a PhD in Economics from the University of Virginia, and is the Chandler/Universal Eminent Professor of Banking at James Madison University. He has over two decades of industry and academic experience, including previous positions at First Union Capital Markets, Fannie Mae, the University of Virginia and Florida State University.

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MFR exists to provide *unbiased* answers to any financial questions its clients might have, and any help that its clients might need. We are comfortable working with a wide range of clients. For example, we are happy to explain the process of constructing an inexpensive and effective portfolio to novice investors, and to walk them through this process. We want to help you become comfortable with and understand your investments - not leave you mystified by them.

In the finance industry, almost all the people an individual can go to for advice have something they are trying to sell. A bank tells you why you need a mortgage. A financial adviser tells you why you should buy an annuity. An insurance agent tells you why their insurance product is ideal for you.

We are designed differently. We have nothing to sell but our time, which we use to convey knowledge to you. Whatever financial questions you might have, we will work to provide a solution.

These questions can be simple –

"Is a particular mutual fund a good investment?"
"Can you help me get started in understanding online brokerages?"
"Is purchasing this particular annuity a good idea?"
"Is my financial adviser charging me a lot for what he or she is providing?"

They can be complicated –

"When can I retire, and how can I optimally construct my portfolio?"
"Can you provide an overall assessment of my portfolio, including insurance, 401 (k), and other major holdings? How can I improve my approach? Should I diversify internationally?

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