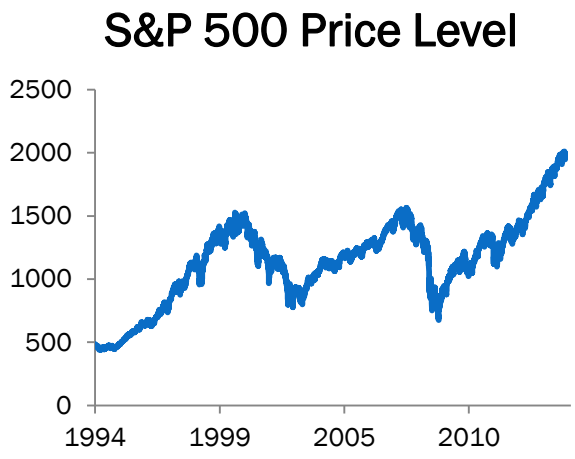
## The Economy and Markets:

The U.S. stock market continues to perform in a band that represents a relatively high level of risk. As of the close of trading on Oct. 1, the S&P 500 was at a level of 1,946.16, modestly lower than its 1,960.23 level at the time of our last newsletter. The Shiller "cyclically adjusted price ratio", the CAPE indicator we introduced in the last newsletter, is at about 26.30, again up modestly from our last report. This, along with a market volatility index (or VIX) of about 16.71, indicates that the market is riskier than three months ago. The peak of the VIX this year was a level of 21.44, in February. As we mentioned in our last newsletter, it is impossible to predict short-term market movements. The state of the market at the moment continues to suggest below average long-term performance. Considering the strikingly low returns available in the bond markets, this expected underperformance is not terribly surprising. The stock market doesn't need to be a particularly "good deal" to attract money away from the low-yielding bond market.

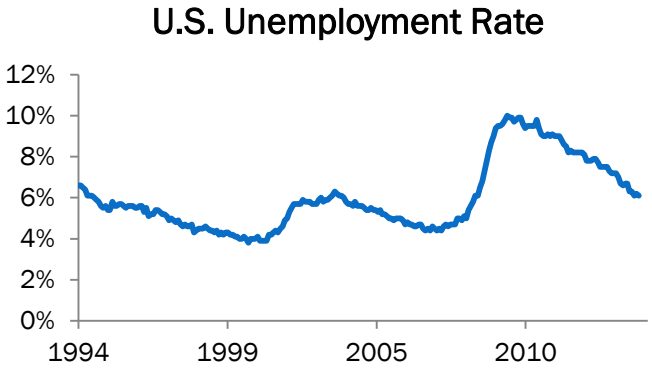
| Markets at a Glance (June 30, 2014) | |
|---|---|
| S&P 500 | 1946.16 |
| Dow Jones | 16,804.71 |
| 10 yr. U.S. Treasury | 2.39% |
| 3mo U.S. Treasury | 0.02% |
| GDP Growth (last quarter) | 4.2% |
| Unemployment Rate | 6.1% |

As of October 1, the 10-year U.S. Treasury yield is 2.39%. This continues to be a very low level, and slightly lower than three months ago. The Federal Reserve has engaged in unprecedented bond-buying over the last seven years in an attempt (a wildly successful attempt, in my view) to stave off the potential economic disaster that faced the country stemming from the financial crisis. This low level of interest rates, however, is harmful to savers and therefore a troubling development for those saving for retirement. Further, the length of the intervention – the better part of a decade – means that it has affected retirement savers for a length of time sufficient to throw even well-laid plans off track. Safe investments are rewarded with historically low yields, and as I mentioned above the stock market is likely to perform unimpressively over the long run as well. The environment continues to present as one in which investors are less likely to be rewarded in the long run than in the "typical" economic environment.




There is a lot of concern over the state of the real U.S. economy, but I do not agree with the most negative assessments. At the end of the third quarter of 2014, the real U.S. economy appears to be in decent shape. The current U.S. unemployment rate stands at 6.1%, this is still high, but has been declining for quite some time, and is lower than the 6.3% I reported to you three months ago, and much lower than the high of 10% in October of 2009. Despite the extended period of low interest rates, inflation appears to be tame. Market implied inflation for

the next 10 years averages around 1.96%, indicating the market does not expect a significant increase in inflation in the intermediate term.




With unemployment declining and inflation tame, the real economy looks to be on solid footing. This is already reflected in the relatively high prices in the stock market, however. It is always worth reminding yourself that the value of the stock market, roughly, is the present value of the future profits of the firms that make up the stock market. This is where the risk of the stock market is manifested. Right now, the economy is doing well and the market expects corporate profits to remain high. If something happens to change that expectation negatively, that change would be the driver of stock price declines. One area to watch for this risk is the international economic situation. Energy prices are particularly difficult to assess at the moment and obviously affected by international events. Certainly war in the Middle East will typically have an upward effect on oil prices, and this is usually bad economic news. However, political developments in the Middle East seem to have weakened the oligopolistic grip that OPEC has on energy prices, and this should have a downward effect on the price of oil. China has shown some economic weakness recently, as has the European Union (for example, their recent weak factory order data). It is quite possible that economic weakness abroad could negatively affect us here at home.

## Quarterly Special Topic:
## *Flash Boys* and High Frequency Trading

The special topic for this quarter is as much a book review as it is a discussion of financial markets. Last April, Michael Lewis published *Flash Boys*, a book about high frequency trading on Wall Street. This book has had a major impact, topping Amazon's nonfiction best-seller list, and even being attributed with prompting an FBI investigation into market manipulation. For those of you unfamiliar with Michael Lewis' work, he specializes in writing about Wall Street, but in an accessible way.

"High frequency trading," or HTF for short, is really just the use of computers to automate a firm's buying and selling in financial markets such as the stock market. There are many, many strategies that exist for practitioners of HFT. However, most of the strategies involve making use of automation in such a way as to trade very often - perhaps hundreds of times in a second. If this can be done enough times, a potentially large profit can be made with relatively low risk. There is some debate

among academics as to whether HFT is beneficial or harmful to investors.[1] There is also debate on the same subject by the private sector, but I don't put much weight on the public opinions of such market participants, as their livelihoods can depend on the outcome of the debate. This leads to more than a little bias in their views.

The fundamental behavior of HFT firms is really not new. "Market makers" on stock exchanges have, for decades, bought and sold shares for the purpose of helping the market function, and been compensated for doing this by the chance to earn low-risk profit. What the HFT traders are now doing is quite similar, but with an important new wrinkle, which gives rise to Mr. Lewis' concerns in *Flash Boys*. To understand the issues better, we need a better understanding of how stock markets work.

The New York Stock Exchange (NYSE) was founded in 1817. Though there were technological advances, such as the telephone and telegraph, the NYSE functioned in the early 2000's quite similarly to the way it functioned in the mid 1800's. Each stock on the exchange was traded by a single "market maker" whose job it was to buy and sell the stock, and to match investors who wanted to buy and sell with each other.

An example will make this description easier. Let's assume that the stock in question is Ford stock. A "market maker" will state a pair of prices. One is called the "bid" price, and it is the price the market maker is willing to pay for Ford stock. Let's say this value is $25.00. The second price the market maker quotes is called the "ask" price, which is the price the market maker is willing to sell Ford stock for. Let's say this value is $25.25 – it is always higher than the bid price. So if an investor comes to the market and wants to buy 100 shares of Ford stock, the market maker will sell the shares to him for $25.25. Five minutes later, a different investor wants to sell 100 shares of Ford stock, so the market maker buys those shares from him for $25.00. The profit the market maker earned for providing the service of buying and selling the stock is the difference between the bid and ask prices, and is referred to as the "spread". In this case, the market maker's profit is $0.25*100 = $25 (25 cents for the spread, times the 100 shares sold and then bought back). Ideally for the market maker, at the end of the day he has no ownership of the stock at all.

Whether the orders were brought by courier, telegraph, telephone, or computer, this is how the NYSE worked for about a century and a half. Stocks that didn't trade on NYSE, traded on the NASDAQ (which started in the early 1970s) and worked in a similar way, though it was purely electronic. Effectively, each market maker, for better or for worse, had a monopoly on making a market in the stock he oversaw.

However, with the advent of high frequency trading, firms send orders to purely electronic exchanges that do basically the same things that market makers used to do – buy and sell stocks. Continuing our Ford example above, an HFT firm may agree to buy Ford stock at $25.01 above, and sell it at $25.24. So a seller and buyer approaching the markets would transact with the HFT firm instead of the market maker, since they could get a better deal. As more and more HFT firms hooked up to the market, they would offer better and better prices, and through process of

[1] For an advanced primer on the state of high frequency trading, see the November 2013 issue of the *Journal of Financial Markets*.

competition reduce the "spread" in the market. If you look at the spread in Ford stock today, it is about a penny. Twenty years ago, that same spread was about twenty five cents. In this sense, HFT has helped make the stock markets a cheaper place to do business. In this way, their presence has improved stock markets.

However, in this process of joining the party, the high-tech crowd also created some competition not just for market makers, but for the exchanges themselves. NASDAQ started trading NYSE-listed stocks. BATS, a new exchange that started up in 2010, is a purely electronic exchange. Many others exist as well.

Without getting into the technical aspects of the change, in 2007 the Securities and Exchange Commission changed the playing field with a regulation called "Regulation National Market System". As part of this regulation, a broker was required to get the best possible price for his client. Under the system I described above, this was easy. The market maker provided the prices. They were the only prices, so they were clearly the best. The rule is seemingly innocuous – if there are more exchanges to trade in, why shouldn't an investor be assured by law of getting the best price possible?

The problem lies in the finding of the best price. For a broker to get the best price, he now has to check the prices at *all* exchanges. This is done through electronic signals. However, some enterprising HFT firms have found that if they can place their computers close enough to the exchanges (literally, they rent rooms in the same building as the exchanges to get close to them), they can get an advantage. They can detect that someone is trying to buy Ford shares, and race to the next exchange over the internet. If they can get to the other exchanges first, they can buy Ford stock, and then sell it at a higher price to the investor they know is coming. By law the investor must come, because their broker has to check all exchanges for the best possible price.

The price increase caused by the HFT firms here is tiny – fractions of a penny. HFT firms make their profit by doing this many, many times. But this "skimming" is directly at the expense of investors coming to the market. This is the HFT tactic that Michael Lewis objects to in his book. The policy question at hand is whether the benefit of the good things HFT firms do is better than the negatives they bring. On balance, the leaning of most academics seem to be that the good outweighs the bad. However, it is a young industry, and there is still much to be studied.

## About Us

Madison Financial Research, LLC (MFR) is a registered Investment Adviser.[2] 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.

## What is Madison Financial Research?

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?

We have the expertise to handle virtually any question, and the patience and teaching experience to provide understandable and actionable answers and guidance to novice investors. And outside of our time, *we have no products to sell* - our advice is unburdened by an alternate agenda.

As an investment adviser, we have a fiduciary responsibility to put our clients first. Investment brokers, insurance agents, mortgage lenders – none of these have such an obligation to you. We do, and we embrace it.

The financial world is complex. We can simplify it.

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