The Economy and Markets:

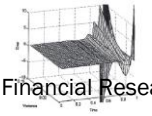
I have begun the past several newsletters with the statement that the stock market is exhibiting higher than typical riskiness. I begin that way again. There are several potential measures of market risk to which we may refer. The one that the academic literature suggests is best correlated with future long-term returns is the Shiller CAPE ratio (which is short for "cyclically adjusted price ratio"). It is currently at a relatively high level, and captures how "expensive" the market is, not necessarily how much it is currently fluctuating up and down. It stands at a level around 24.4. This is down slightly from our last newsletter (a result of the recent decline in stock prices), when its level was about 26.5. Still, it remains above its long-term average of about 16.6. The CAPE ratio is (roughly) a ratio of the current level of stock prices, divided by the average level of firm earnings over the last 10 years. When it is relatively high, as it is now, it means that the stock prices people are paying are relatively expensive for the company earnings that they are getting in return. The all-time high of the CAPE ratio is about 44.2, achieved in December of 1999. So, while the CAPE measure is clearly high enough to be of concern, there is no reason to believe that stock prices couldn't increase from this point in the short run. The literature simply suggests that with a CAPE ratio at its current level, stock returns over the next 5-7 years are likely to be lower than their historical average. Even over this longer time frame, the CAPE ratio is a relatively weak forecast instrument – but it appears to be the best one we have. Of course in the short run, nothing has been shown to reliably predict market returns.

Markets at a Glance (September 30, 2015)	
S&P 500	1,920.03
Dow Jones	16,284.70
10 yr. U.S. Treasury	2.04%
3mo U.S. Treasury	-0.01%
GDP Growth (last quarter)	3.9%
Unemployment Rate	5.1%

The S&P 500 market volatility index (or VIX) provides a measure of 30-day forward-looking riskiness in the market. This measure has increased from its level of 18.2 at the time of our last newsletter to roughly 24.5 as of the close of trading Sept 30. However, this measure spiked considerably higher earlier in the quarter, breaking 40 in late August. This is indicative of a great deal of price volatility in the market - which we have indeed seen in abundance this quarter. Our special topic for this newsletter (which can be found below) is market volatility, and what small investors can (and really, can't) do to ameliorate its effects.

Along with the increased volatility in the market, we have seen a notable decline in stock market prices this past quarter. At the time of our last newsletter (June 30), the S&P 500 was at a level of 2,063.12. It is now 6.9% lower, at 1,920.03. That is a notable drop, though hardly unprecedented, even in times of economic strength. And at the moment at least, the fundamental U.S. economy appears to be exhibiting strength.

The unemployment rate in the United States has fallen steadily for six years, from a recent high of 10% in October 2009, to 5.1% in the most recent quarter. There is some quibbling amongst economists about whether this number is fully representative of the employment situation in the country, as many individuals have left the workforce in the last several years (and thus are not counted) and many remain under-employed. These are important considerations. However, as you can see on the graph on the following page, the march toward lower unemployment has been prolonged and steady. From the perspective of employees, the economy is much brighter than it was a few years ago.



The inflation rate in the United States also appears very low. What matters is inflation looking forward, and the market-expected rate of inflation over the next 3 years is about 0.67% per year. This is strikingly low, and about half of the 1.37% that was expected for that interval back on June 30. Accordingly, the 10-year Treasury yield is currently 2.04%, a low level, and slightly lower than three months ago (not to mention that the 3 month yield is actually a very small *negative* number, an observation that is very rare indeed).

It is this relatively low inflation that led to the recent Fed decision *not* increase the federal funds rate during their most recent meeting. The source of low inflation at the moment is largely tied to falling commodity and import prices. These falling prices are indicative of weakness in international economies, particularly China. When the Fed keeps the federal funds rate low, as it is currently, it is increasing the amount of dollars in the economy, which tends to increase economic activity. The eventual cost of this policy is higher rates of inflation. When inflation starts to increase, the Fed is obliged to increase this rate to keep prices stable.

But weakness in economies abroad is currently having an offsetting effect on the Fed low-rate policy. If demand from, say, China, for oil (or copper, coal, etc…) is lower than it had been, then the price of oil is likely to decline. If China is experiencing an economic slowdown, then demand for many goods is less, and so the prices of many goods decline. And thus, inflation in the United States is low. Since it appears that a shock to the Chinese economy has had this effect, the Fed delayed its interest-rate increase a bit, given some respite from the rising prices its policy decisions would otherwise expect to have produced in this environment. However, it appears the mindset of the Fed is that this respite is likely to be temporary, and that a rate increase is still probable this year. Janet Yellen, chair of the Fed, made this statement during a recent University of Massachusetts-Amherst speech:

> *"It will likely be appropriate to raise the target range of the federal-funds rate sometime later this year and to continue boosting short-term rates at a gradual pace thereafter as the labor market improves further and inflation moves back to our 2% objective."*

Of course, she can't be held to this statement. But, this implies a rather strong vote of confidence in the economy from the chair of the Federal Reserve.

So then to what do we attribute the much-increased volatility in the market and the recent substantial market declines? One contributor to the answer to this question is that economic weakness in China has increased the uncertainty concerning profitability of the firms that participate in public U.S. stock markets. China has definitely experienced economic and financial weakness over the past six months. While their official GDP numbers continue to appear impressive (but less impressive than they have for a very long time), there is widespread doubt about their reliability. The Chinese stock market, as summarized by the Shanghai Stock Exchange Composite Index, last year at this time stood at a value of about 2,360. In June of this year it hit a peak of 5,166, and has since

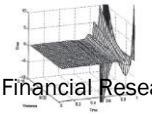
declined to about 3,052. This peak-to-present decline of more than 40% has badly stung many small investors in the Chinese market, as Chinese state-owned media outlets encouraged citizens to invest their money in the equities markets, simultaneously easing borrowing restrictions for equity market investment. Chinese investors tend to have a much greater savings cushion than their western counterparts, so this drop will likely have a lesser effect on their real economy than a similar decline would have in the United States – but it still could be significant.

Chinese authorities have attempted to prop up asset markets through a series of controversial steps (including the use of media outlets as mentioned above). They have devalued their currency a bit, making Chinese exports more valuable to foreign purchasers, for example. Note that this has the effects of making their goods cheaper, which lowers the U.S. inflation rate a bit. One particularly draconian measure taken by the Chinese government in their attempt to mitigate the decline is their decision to prohibit large shareholders from selling their positions. These measures may have a short-term beneficial effect on asset prices, but likely come at the cost of long-term faith in Chinese markets. Lloyd Blankfein, CEO of Goldman Sachs, in a recent interview with the *Wall Street Journal* referred to the Chinese attempts at market intervention as "sloppy," and added "they don't have a lot of experience in this market stuff."

So how important is this turbulence to the U.S. economy? Well, in the short run market reactions to these events have been strong. Between August 17 and August 25 this year, the Dow Jones Industrial Average dropped almost 1,900 points (just under 11%) from 17,545 to 15,666, largely precipitated by a drop in the Chinese market. Many of the biggest U.S. firms have significant exposure to China, because of the potential of that economy to continue to grow. So, a decline in expected revenue from China can affect multinational conglomerates to a potentially significant degree. For example, Caterpillar (CAT) and Apple, Inc (AAPL) generate 19.8% and 23.6% of their revenue from the Asia/Pacific region, respectively. For Ford (F), this measure is about 7.5% (though Asia/Pacific constitutes about 23% of its total sales).

But a decline in the Chinese economy, if it persists, would likely affect these large conglomerates more than the U.S. economy overall. Annual U.S. GDP is about $17.5 trillion, and the U.S. exports goods and services worth about $1.6 trillion annually. About 9.8% of U.S. exports are consumed by China. These statistics combined suggest that Chinese consumption of U.S. goods and services comprises about 1% of GDP (very roughly – this is a quick calculation to get a sense of the order of magnitude of the problem). A decline in Chinese consumption appears unlikely to have a large direct effect on U.S. GDP (note that U.S. GDP increased by an annualized rate of 3.9% last quarter).

This distinction – the effect of Chinese economic disruption (again, *if* it persists) on the profitability of large U.S. firms compared to the health of the domestic U.S. economy, has important financial planning implications. The profitability of large U.S. firms has an effect on all of us because we tend to have a sizable share of our wealth invested in large, multinational companies. When their profitability declines, their stock prices decline. Consistent with the VIX and CAPE readings, this risk appears to be heightened recently. But the domestic U.S. economy is the source of most labor force



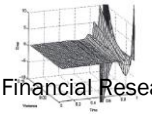
job security, and doesn't appear to have significant exposure to Chinese economic fluctuations. The labor market seems quite stable, at least for the moment. There is a lot of hand-wringing over the U.S. trade deficit with China; we buy a lot more of their stuff than they buy of ours. Perhaps this is the silver lining – if the Chinese economy slows, we're not really selling a lot less stuff overall.

Quarterly Special Topic: Market Volatility

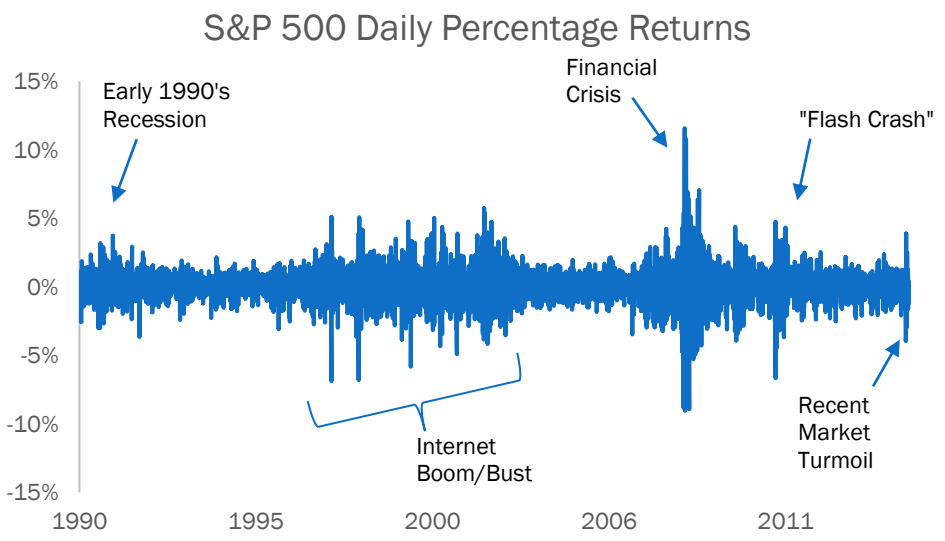
This quarter, the markets have been much more volatile than at any time since 2010. For example, oil prices have swung, just in the last quarter, from a high of 56.96 (on July 1, the opening day of the quarter) to a low of 38.24 on August 24th. The commonly referenced Dow Jones industrial average hit a high of 18,120.25 on July 16th, while the low for the quarter was down 13.5% from that mark on August 25th, at 15,666.44. Such large short-term movements have been uncommon in recent years, and have prompted some concern, particularly among retail investors. Investors naturally get spooked when they see the Dow Jones average fall 588 points in a day, which it did on Aug. 24th – especially when the intra-day movements were even more dire. For the quarter, the Dow Jones average is down about 8.2%, while the S&P 500 – a more reliable barometer of the broad U.S. market, is down about 6.9%.

For today's special topic, I'd like to discuss market volatility, its history, and its implications for small investors. There are obvious implications – when the stock market drops 4% in a day, everyone goes to bed that night that much poorer. However, there are subtler ramifications as well. It turns out, for example, that many of the systems that keep the stock market functioning smoothly break down a bit when stock prices jump around so much. Some of these break-downs are recent phenomena. High-frequency traders, which we have discussed in a past newsletter, write algorithms to try to trade before others have the opportunity to do so. When stock prices move abruptly, this can sometimes cause the algorithms to behave in unpredictable ways. These algorithm-induced gyrations can have significant implications for small investors. Volatility we see in market prices are inextricably tied to the notion of "liquidity" – the availability of a counterparty when an investor wants to trade. And as we will see, when markets are lacking in liquidity, small investors tend to bear the brunt of the negative ramifications.

There are several different types of volatility that are relevant for investors. The type we'll concern ourselves with today is "market" volatility – the kind of volatility that is most visible, when the broad market moves together. For the vast majority of investors, this is the kind of volatility that is most dangerous, because there is little escaping it. Consider for example: on Aug 24th of this quarter: the S&P 500 (dominated by the largest U.S. stocks) dropped 3.94%. Within equities, there were perilously few places to hide. The Russell 2000 index (dominated by small U.S. stocks) dropped 3.90%. The German DAX index dropped 4.70%. Near the heart of the attributed source of the market problems (China), Hong Kong's Hang Seng index dropped 5.17%.



So how severe has the recent market volatility been? For a useful historical context, let's look at the returns to the S&P 500 over the last 25 years. Note that the figure to the right gives the daily percentage returns, not the price level that was illustrated earlier. When we view returns this way, we can see clearly the periods of high volatility in the market. Such periods, by definition, are characterized by large return movements. The violent swings of the financial crisis, for example, may be clearly seen in 2008 and 2009. Some of the large movements that took place during the internet boom are also clearly visible in the late 1990s and early 2000s. We can see the recent market volatility illustrated to the far right of the map. Taken in context, we can see that these recent movements are indeed severe, but far from unprecedented. Whether this recent tumult is a short-term blip or the beginning of a longer, more volitile period remains to be seen.



Historically, the best hedge against equity market volatility, for small investors, is to invest in bonds. But bond markets are more than a little tricky. Bonds are traded, relative to stocks, very infrequently. This means that if you are a small investor and want to buy a bond, the price you see when you look up the bond might be days or even weeks old. Such prices are referred to as "stale" quotes. The existence of these stale quotes gives a tremendous advantage to a bond dealer, who has a good bit more information (relative to a retail investor) about what the price "should" be. If you offer a price to purchase a bond that is higher than the correct bond prices, informed only by stale quotes, a professional trader will gladly take it. If the stale price is lower than the appropriate price, they will quote you a price more reflective of the market. Further, the research necessary to hold a well-diversified bond portfolio is prohibitive for most non-professional investors.

To get around the difficulty of *á la carte* bond investing, many retail investors go the route of investing in bond funds. As a typical rule, I am in favor of this, and often recommend such funds to clients. There is a wide variety of bond funds out there, and as readers of this newsletter are aware, I am a big proponent of investing in funds with the lowest expenses possible (subject of course to the funds being run by respectable investment houses). The least costly of these funds are usually "exchange traded funds" meant to mimic a bond index, and have proven effective at this. However, there is at least some concern that, during times of market turmoil, bond funds too can be subject to "jolts" in price because of the illiquidity in the bonds that they are trying to mimic. A fund can't be

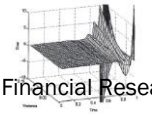
more liquid than the assets that underlie it. During times of smooth market trading, this is not an issue. But during times of market stress, it can be a big problem.

For example, on August 24th, there was a temporary disruption in several important equity exchange traded funds. As I mentioned above, most exchange traded funds (abbreviated ETFs) try to mimic the returns to an index in an inexpensive way. Equity ETFs are essentially just companies that own stocks. For example, the largest ETF in the world is the SPDR S&P 500 ETF (ticker symbol SPY) with a market capitalization of around $165 billion. It holds stocks so that its value is as close as possible to 1/10 the value of the S&P 500. If the S&P 500 is up 1.1% in a given day, SPY aims to be up 1.1% that day as well. ETFs such as SPY trade throughout the day, and rely on smooth trading of their shares to be accurately priced. Traders know SPY holds the stocks that make up the S&P 500, and so if the value of SPY differs from the sum of the value of the individual stocks that make up the S&P 500, then professional traders step in and buy or sell shares of SPY until that difference goes away, profiting from the small arbitrage opportunity.

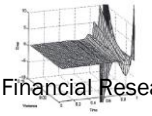
On Aug. 24, this mechanism for the smooth updating of the ETF price compared to shares of the underlying index stocks failed for several large ETFs. The SPDR S&P Dividend ETF (ticker SDY, market capitalization $12 billion), for example, plunged 33 percent that day – and then went back up where it belonged less than a half hour later. Powershares QQQ ETF (market capitalization $36 billion) , which mimics the Nasdaq index , dropped 17% and then spiked back up where it belonged. Although the market dropped that day, neither the underlying shares of SDY nor those of QQQ dropped nearly as much as the ETFs themselves did. By the end of the day, these anomalous valuations had been worked out. A retail investor that was trading that day could have been truly fleeced. Some obviously were.

What happened? Well, it isn't clear. What *appears* to have happened is that liquidity "dried up" in the most intense part of the trading day (in this case, at the open of trading) and high frequency traders were able to profit from this. Some investors (typically small retail investors), trying to protect themselves, had standing "stop-loss" orders. These are orders to sell if the price of the ETF drops to some very low level. High frequency trading algorithms in a fraction of a second appear to have gobbled up the few trades that people were willing to make, until they got to these stop-loss orders, and when there was no one left to trade but these standing orders, they were executed. Shortly thereafter, prices returned to their normal levels. A similar disruption took place in 2010, and later came to be known as the "Flash Crash."

So what is a retail investor to do with all this information? In my opinion, a retail investor should do his or her best not to trade on these days of elevated volatility. This can require a bit of discipline. We have pointed out often in this newsletter than it is impossible to predict the direction of short term price movements. While it appears possible to forecast market returns (with a great deal of error in the forecast) at the 5 -10 year horizon through the use of the CAPE ratio, no such reliable technology appears available for short term movements. Because of this, the buy-and-hold strategy with regular rebalancing – perhaps to include adjustments allowing for movements over a longer time horizon – appears to work best for retail investors. If it is impossible to predict what returns will be tomorrow, recognition of this fact reduces the urgency of the need to trade today.



It may not seem fair that professional traders have better market access and are able to take advantage of slower-moving retail investors on volatile days. It seems this way because that is the state of affairs – it isn't a level playing field. But even though it isn't completely level, the stock markets still appear to be the best wealth-building mechanism available to investors, especially as part of a broader investment portfolio. By simply not trading on these very volatile days, retail investors can minimize their exposure to the unfair conditions while still participating in the investment process efficiently.



About Us

Madison Financial Research, LLC (MFR) is a registered Investment Adviser.[1] 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 Professor and Wachovia Securities Faculty Fellow 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 financial 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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