MIRACLE MILE ADVISORS

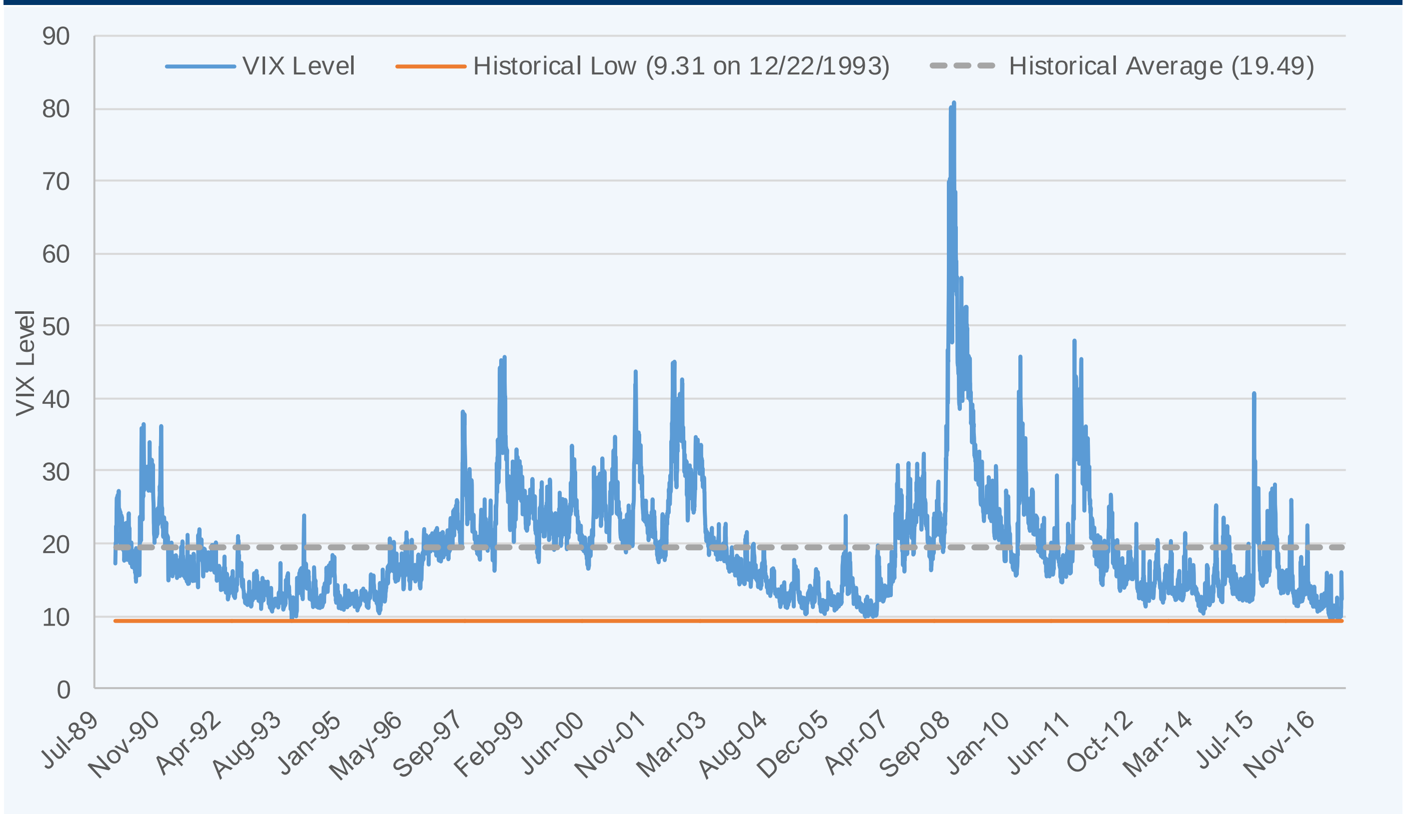
August 2017

Dude, Where's My Vol?

Why the Markets Have Been Docile in 2017 and What to Expect Ahead

Last November 8th, Donald Trump shocked the pollsters and the markets by capturing the US presidential election and completing an improbable run to the White House. The unexpected result sent the markets into a frenzy with S&P 500 futures plunging more than 5% overnight. It appeared as if the index was on course for the third major decline of the year, following an 11% correction in Q1 and a 6% sell-off after the surprising Brexit result in Q2. However, by the market open the following morning, US stocks had recovered all of their overnight losses. The promise of a pro-business administration kicked off an equity rally that has continued well into 2017. Since the election, US equity markets have hit all-time highs while volatility has fallen to historical lows. While the economic fundamentals that have driven volatility lower over the last few months remain in place, there are potential headline risks on the horizon. Therefore, investors should not be surprised if volatility returns, but they should understand how it affects their portfolio and how they can use it to their advantage.

Figure 1: Current Level of the VIX is Near Historic Lows



Volatility as a Measure of Risk

Volatility is a unique asset class because unlike stocks, bonds, and commodities, volatility has no intrinsic value. Volatility's long-term expected return is equal to the cost of attaining it, which equates to a long-term drag on portfolio performance. Over the short-term though, volatility can be a useful asset class because it generally has an inverse correlation to equity markets. When volatility is low, it is usually a bullish signal for equities and when volatility is high, equity prices are usually declining. Therefore, volatility can be a valuable hedging tool if an investor thinks equity price declines are imminent.

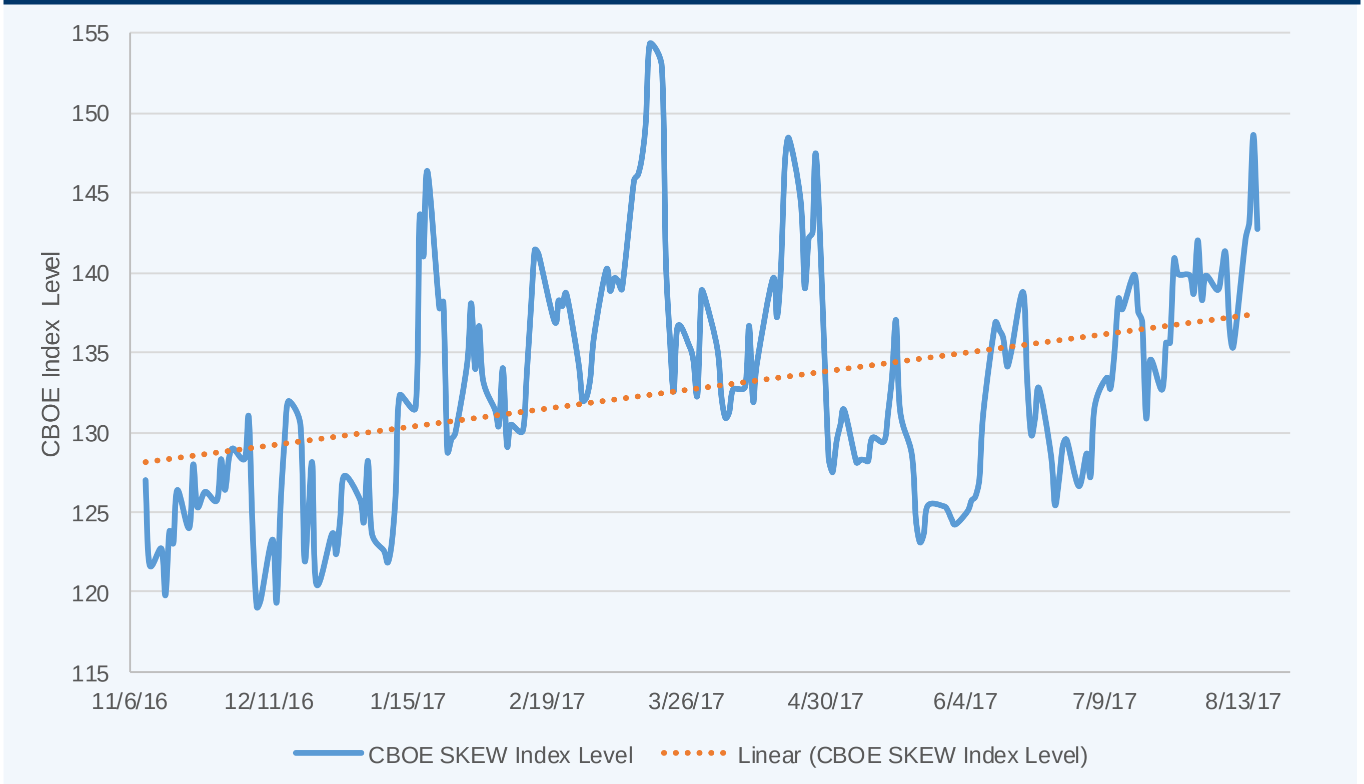
When investors and economists are discussing volatility they are usually referring to the Chicago Board of Options Exchange (CBOE) Volatility Index (VIX Index). The VIX Index was created by Duke Professor Robert Whaley to provide a measure of market volatility. The index is constructed of short-term S&P 500 options. The demand and pricing of these out of the money put and call options determines the price level of the VIX. For example, when investors are predicting equity declines, they can buy puts on the S&P 500, which equates to buying downside protection (put options increase in value when the underlying security decreases in value). If the demand for S&P 500 put options is increasing, then the price of the put options will increase, which in turn causes the VIX level to increase. If investors are optimistic about where the markets are heading there will be less demand for S&P 500 put options and therefore the price of the puts will fall causing a decline in the VIX.

The issue with the VIX's methodology is that options are forward looking, meaning that they do not represent current market conditions, but instead are what investors are pricing in for the future when the option reaches its expiration date. Therefore, there is no direct mathematical relationship between the actual volatility of the S&P 500 and the VIX.

An average VIX reading is considered 19, with levels above 19 signaling high implied volatility and levels below 19 reflecting low implied volatility. The highest closing level ever recorded was 80.9 on November 20th, 2008. The lowest closing level for the index was 9.3, which was recorded on December 22nd, 1993. This year, the VIX has approached its record low on multiple occasions. In fact, the VIX has closed below 10 only 23 times since its inception. 16 of those times have occurred in 2017, with the other previous instances occurring in 1993 (four times), 1994 (one time), 2006 (one time), and 2007 (one time). On an annual basis, the average closing level of the VIX has been the lowest since the index's inception in 1990.

While the VIX has been indicating low volatility, other risk measuring indexes are painting a different picture. The CBOE Skew Index, for instance, has spiked this year. The CBOE Skew Index measures the likelihood of an outlier return (defined as two or more standard deviations below the mean) occurring. Similar to the VIX, it is constructed using out of the money S&P 500 options. Typically, the index ranges between 100-150 with 100 indicating that an outlier return is unlikely and 150 indicating that an outlier return is more likely. Over the past two years, the index has been rising and has reached as high as 148 on August 16th.

Figure 2: CBOE Skew Index Has Risen Since Last Year's US Election



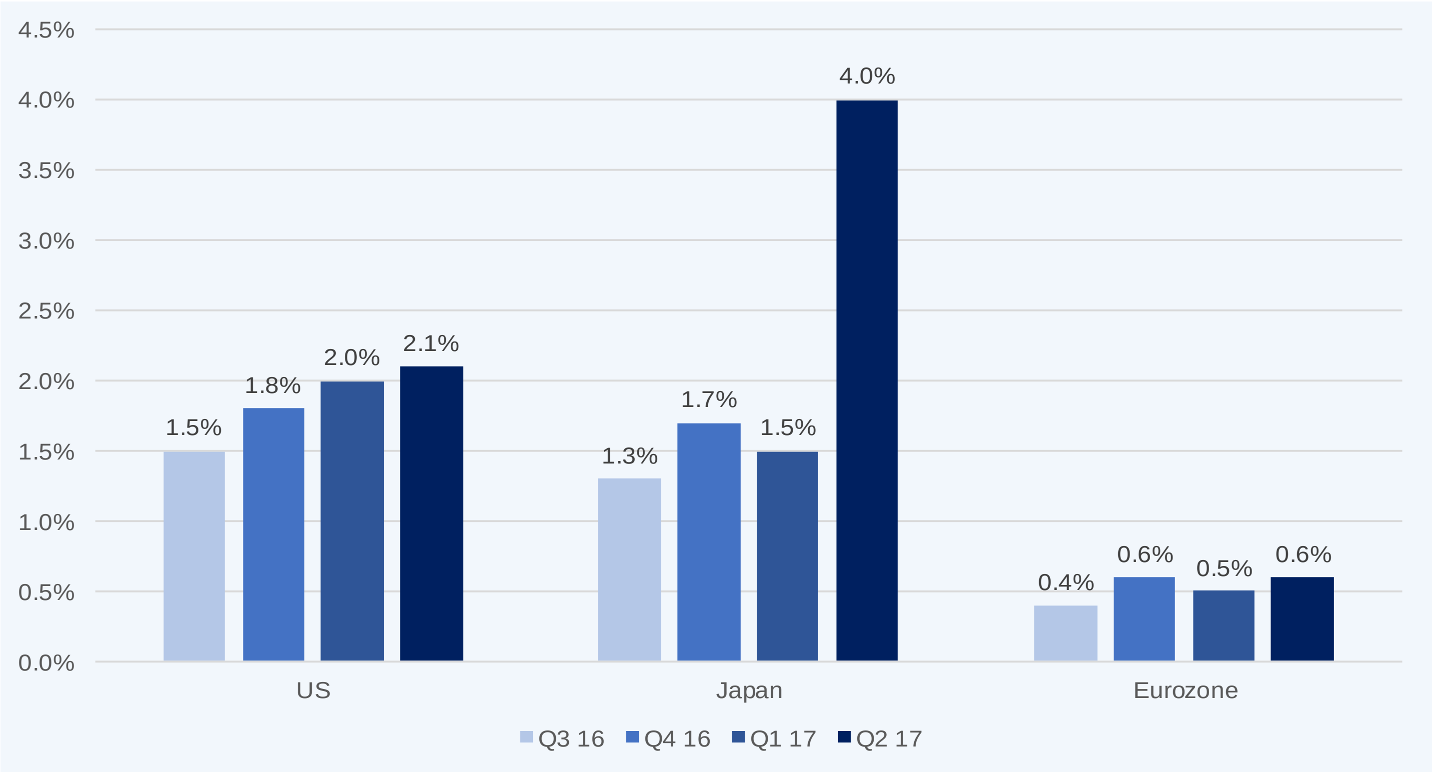
However, it should be noted that just like the VIX, the CBOE Skew Index is just a reflection of option pricing, and does not measure actual risk in the markets. Even though the CBOE Skew Index is suggesting that investors are willing to pay up for extreme downside protection this year, as a whole, the markets have been relatively docile in 2017. The largest peak to trough decline of the S&P 500 Index in 2017 has been only -2.8%, whereas typically, the index suffers at least one -10% peak to trough decline per year. So even though the political situation in Washington has been anything but stable (or productive), the markets have taken the political missteps in stride – mainly due to an improving global economy, strong earnings, and low interest rates.

A Goldilocks Environment for Equities Has Crushed Volatility

2017 has been smooth sailing for the equity markets with the average trading range of the S&P 500 being the tightest on record. The main reasons investors have been able to overlook the political turmoil in Washington is because the global economy is continuing to improve, corporate earnings are expanding, and central bank policy is still accommodative.

Global economy is gaining steam – For the first time in years, the global economy has seemed to have gained solid footing. While the US economy has avoided major crises since its debt downgrade in 2011, the same cannot be said for the rest of the world. Since 2008, Europe had been mired in credit crises, with Greece reaching the brink of default seemingly every summer. The region has also struggled with political uncertainty following the wave of populism that culminated with the UK voting to leave the European Union. Elsewhere, emerging market economies were roiled by recessions in Brazil and Russia, and the Chinese economy also experienced multiple growth scares as it continued to transition from a manufacturing economy to a service economy. In 2017, however, global growth has improved almost across the board.

Figure 3: Global GDP Growth has Improved over the Last 4 Quarters

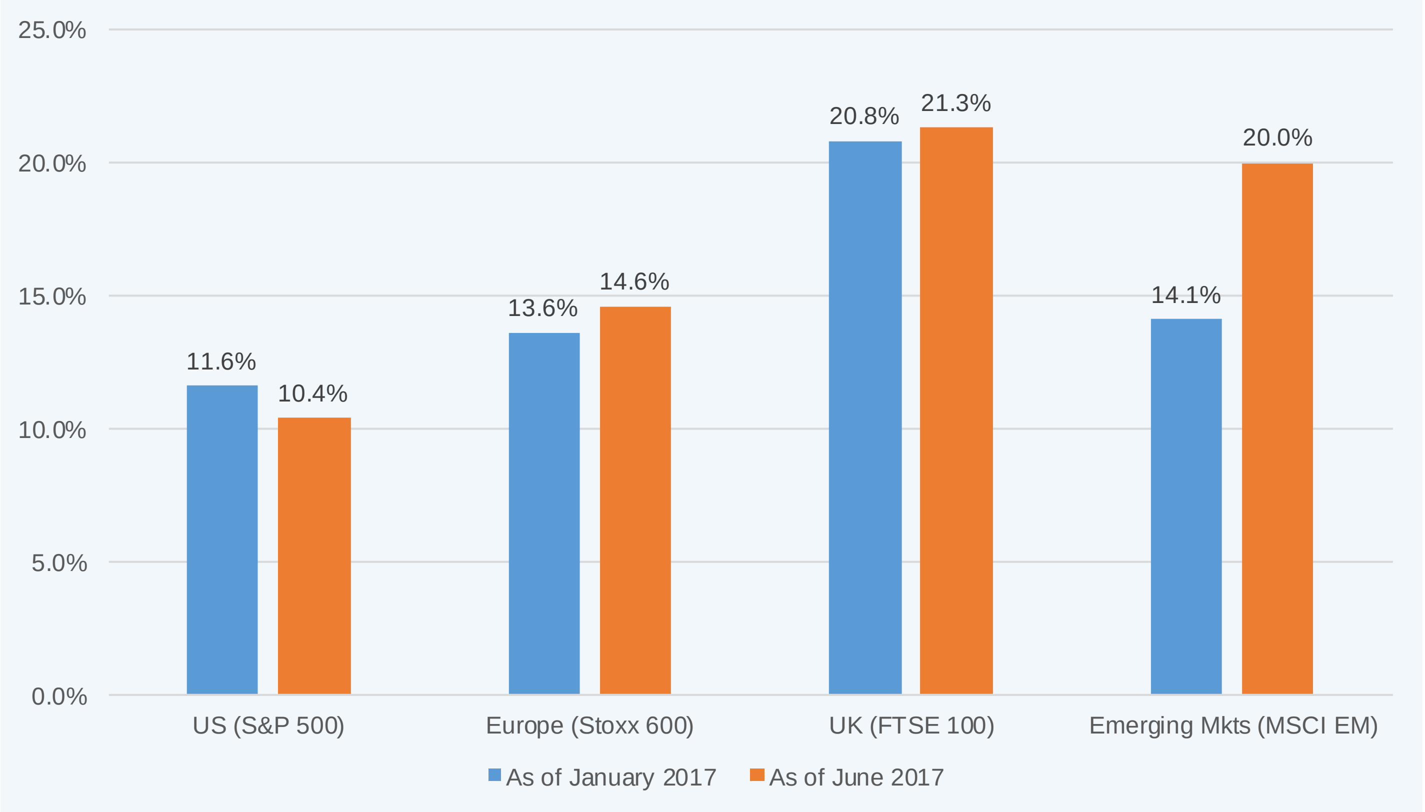


The International Monetary Fund (IMF) is projecting the world economy GDP to expand by 3.5%, improving upon 2016's rate of 3.1%. A large portion of this increase is expected to come from emerging market economies, which saw GDP expand by 4.5% in 2016, but are projected to grow by 4.8% in 2017 according to the IMF.

Corporate earnings are strong – Impressive corporate earnings are another contributing factor to the absence of volatility in 2017. In the second quarter, S&P 500 companies reported a blended earnings growth of +10.2%, which was the second consecutive quarter of double digit earnings growth. It is the first time that the S&P 500 companies experienced back to back quarters of double digit earnings growth since 2011. Additionally, while earnings growth has been relatively high, it has also been widespread across the economy. Q2 2017 was the first time since Q3 2014 that all 11 S&P 500 sectors reported an increase in earnings.

Outside the US, earnings have been even more impressive. In Q1 2017, stocks in the Stoxx 600 (European) Index posted their highest earning growth since Q3 2010. After struggling with low oil prices and stagnant global growth, corporate earnings are turning around in emerging markets as well, with the MSCI Emerging Market Index projected to have earnings growth of +20.0% in 2017.

Figure 4: 2017 Earnings Per Share Growth Estimates Have Increased



Strong corporate earnings are helping mute volatility because earnings are highly correlated with the performance of stocks. Since stocks are a forward looking instrument, companies with higher earnings and higher expected earnings will usually see the value of their stock price increase. As Figure 4 shows, not only have corporate earnings been impressive, but earning per share estimates have increased globally (except in the US) since the start of the year, suggesting further gains ahead.

Interest rates remain accommodative – After spiking post-election, interest rates have moderated in 2017, with the yield on the 10-year treasury currently at 2.20% after reaching as high as 2.60% in March. In addition to long-term interest rates declining, central banks around the global have not strayed from their accommodative policies in 2017. While the Fed has raised its short-term borrowing rate by 0.50% in 2017, the benchmark rate is still at 1.25%, well below its 30-year average of 3.40%. In Europe, Mario Draghi, the head of the European Central Bank, has hinted at winding down its quantitative easing program, but so far, no definitive plan has been announced. Low interest rates, a staple of the post-recession economic environment, are a positive for stocks because they allow companies to borrow with lower interest rate burdens which theoretically should stimulate investment and capital expenditures. Steep interest rate increases are also a negative particularly for emerging market stocks because emerging market companies typically have debt denominated in US dollars. In Q4 16, when interest rates spiked, the MSCI Emerging Market Index lost 4.2%. In 2017, interest rates have declined and the MSCI Emerging Market Index is +24.8% YTD.

Party Crashers: What Could Cause Volatility to Return?

Geopolitical concerns – An all-out war would certainly jolt the markets, but even just the bombastic rhetoric that we saw between President Trump and North Korean leader Kim Jong Un earlier this month can create a flight to safety. On August 10th, the VIX jumped +44.4% and set a new single day volume record for VIX futures while the S&P 500 fell -1.5%. It would have been a good one day return for an investor with volatility exposure, but the VIX plummeted -20.5% two days later and quickly returned to its low levels by the following week. Geopolitical events are difficult to predict but in general, game theory would suggest that both sides will eventually choose to deescalate tensions over launching a full scale attack.

Unexpectedly aggressive central bank policy – The Federal Reserve has done a laudable job of being very transparent in its actions. The central bank has now successfully raised rates three times in the past nine months with no major reaction in the markets largely because their actions have already been priced in. Looking forward, both the Fed and the markets are predicting one more interest rate hike in 2017 with the possibility of the central bank also unwinding its balance sheet. If the Fed all of a sudden takes a more aggressive path due to unforeseen inflation concerns, this could catch the markets off guard and substantially increase short-term volatility. At the time being though, there is little reason to believe that this will happen given the absence of runaway inflation or wage pressure.

High stock valuations – As US stocks keep hitting new all-time highs, there is growing concern that the market is overvalued. While US valuations are high, they are nowhere near where they were at the peak of the markets in 1999 and 2007. The current forward price to earnings (P/E) of the S&P 500 Index is 18.0x vs its 20-year average of 17.2x according to FactSet (a higher price to earnings means that an investor is paying a higher price for $1 of earnings). While US valuations are relatively full versus their historical averages, improving earnings can expand the multiples used for valuation metrics and give reason for equity prices to push higher. Furthermore, valuations in emerging markets and international equities are below their historical averages.

How to Use Volatility as an Asset Class

With volatility near historical lows, it is probable that over the coming weeks, months, or years we will experience a reversion to the mean. The problem for investors is predicting the timing of this potential reversion scenario. Volatility can remain low for extended periods of time, which is costly for investors who are maintaining constant exposure to volatility. Volatility tracking investments have high carry costs and over the long-term it has been shown that hedging volatility is actually a detractor from portfolio performance. While you cannot directly invest in the VIX, there are tools available for investors to gain exposure to volatility in their portfolio.

VIX futures and options – Similar to other indexes, investors can buy future contracts and options of the VIX. This requires knowledge of option pricing and futures do not always follow the index, with correlation usually ranging between 85%-95% to the index. Investors should also be aware that a VIX contract is pegged to the VIX, which is a forward-looking index. So when you buy a VIX future or option, on the settlement date it will be worth what the implied volatility is over the next 30 days, not what the volatility is on the day of settlement. In essence a VIX future or option contract is a derivative on a derivative. Furthermore, VIX options are European exercise which means you can't exercise them until the day they expire. One other quirk to VIX options is that they have cash settlement for in-the-money options.

VIX Exchange Traded Products (ETPs) – There are also exchange traded funds (ETFs) and exchange traded notes (ETNs) that track the VIX. Due to the term structure of options, these exchange traded products experience negative roll yields that can significantly affect long-term performance. The two largest funds are iPath S&P 500 VIX Short Term Futures ETN (VXX), which has $1.2B AUM and an expense ratio of 0.89%, and ProShares VIX Short Term Futures, which has $200M AUM and an expense of 0.43%. For volatility speculators, these products are popular because they are easy to trade and have almost a perfectly negative correlation to the S&P 500. However, holding these investments for longer periods can significantly deteriorate portfolio performance.

Figure 5: VIX Tracking ETPs Can Have High Carry Costs For Investors

Exchange Traded Product or Index	YTD Return	2016 Return	2015 Return
iPath S&P 500 VIX Short Term Futures ETN (VXX)	-47.9%	-68.3%	-36.2%
ProShares VIX Short Term Futures ETF (VIXY)	-48.0%	-68.1%	-36.5%
CBOE VIX Index (VIX)	-1.7%	-22.9%	-5.2%

As the table above shows, VIX ETPs can mimic the price movement of the VIX, but they have high carry costs which can lead to worse long-term performance. For example, in 2016 the VIX was down 22.9% but both VXX and VIXY were down over 60% for investors who held the products for the entire year.

Volatility Can Be Your Friend: Taking Advantage of the Dips

Compared to last year, when the S&P 500 declined 11% in February and another 6% in June, there has been little downward price movement in the S&P 500 in 2017. Given where volatility currently is, it is inevitable that we will experience a reversion to the mean in the coming months. Instead of fearing volatility, investors should take advantage when it returns. Short-term volatility is normal and can often be caused by headline risk instead of a change in underlying economic fundamentals. Investors should take advantage by buying on the dips and trusting that the long-term economic fundamentals are heading in the right direction. Using volatility exposure as a portfolio hedge can also be a successful short-term trading strategy if timed correctly. However, as research has shown, a true long-term investor, who isn't impacted by short-term volatility, has no reason to bear such a cost in their portfolio.

Figure 1: Current Level of the VIX is Near Historic Lows – Shows the price level of the CBOE Volatility (VIX) Index since 1/1/1990 to 8/15/2017. The grey dotted line denotes the average closing price of the VIX Index over the time period and the orange line denotes the lowest closing price of the VIX Index during the time period. Source – Yahoo Finance.

Figure 2: CBOE Skew Index Has Risen Since Last Year's US Election – Shows the price level of the CBOE Skew Index since 11/7/2016 to 8/15/2017. The orange line denotes the linear trend of the CBOE Skew Index over the time period. Source – Ycharts.

Figure 3: Global GDP Growth has Improved over the Last 4 Quarters – Shows annualized percent change in GDP growth for the US, Japan, and Eurozone from Q3 2016 to Q2 2017. Source – Ycharts.

Figure 4: 2017 Earnings Per Share Growth Estimates Have Increased – Shows the earnings per share growth estimates for the S&P 500, Stoxx 600 Index, FTSE 100 Index, and the MSCI EM Index as of 1/31/17 and 6/30/17. Source – JPMorgan

Figure 5: VIX Tracking ETFs Have High Carry Costs for Investors – Shows the 2015, 2016, and year-to-date return (1/1/17 to 8/18/2017) of iPath S&P 500 VIX Short Term Futures ETN, the ProShares VIX Short Term Futures ETF (VIXY) and the CBOE VIX Index (VIX). All returns are total returns net of underlying fund expenses. Source – Morningstar.com