# Cause and effect

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As an avid consumer of media, I am always amazed at the attempt to attribute a specific cause when negative market volatility hits. As an example, the most recent sell-off is attributed to rising short-term interest rates and their impact on the 10-year Treasury yield. The 10-year ended September at 3.06% and spiked to 3.26% on October 9, 2018. Over this timeframe the S&P 500 Index was down 2% from the September close. The VIX Index, a common measure of volatility, rose from 12.12 to 14.82 and spiked to 24.98 on October 11, 2018. Rising interest rates may have prompted some asset allocators to reallocate after the third quarter ended, but I doubt that they were the direct cause of the VIX spike and rapid market downdraft.

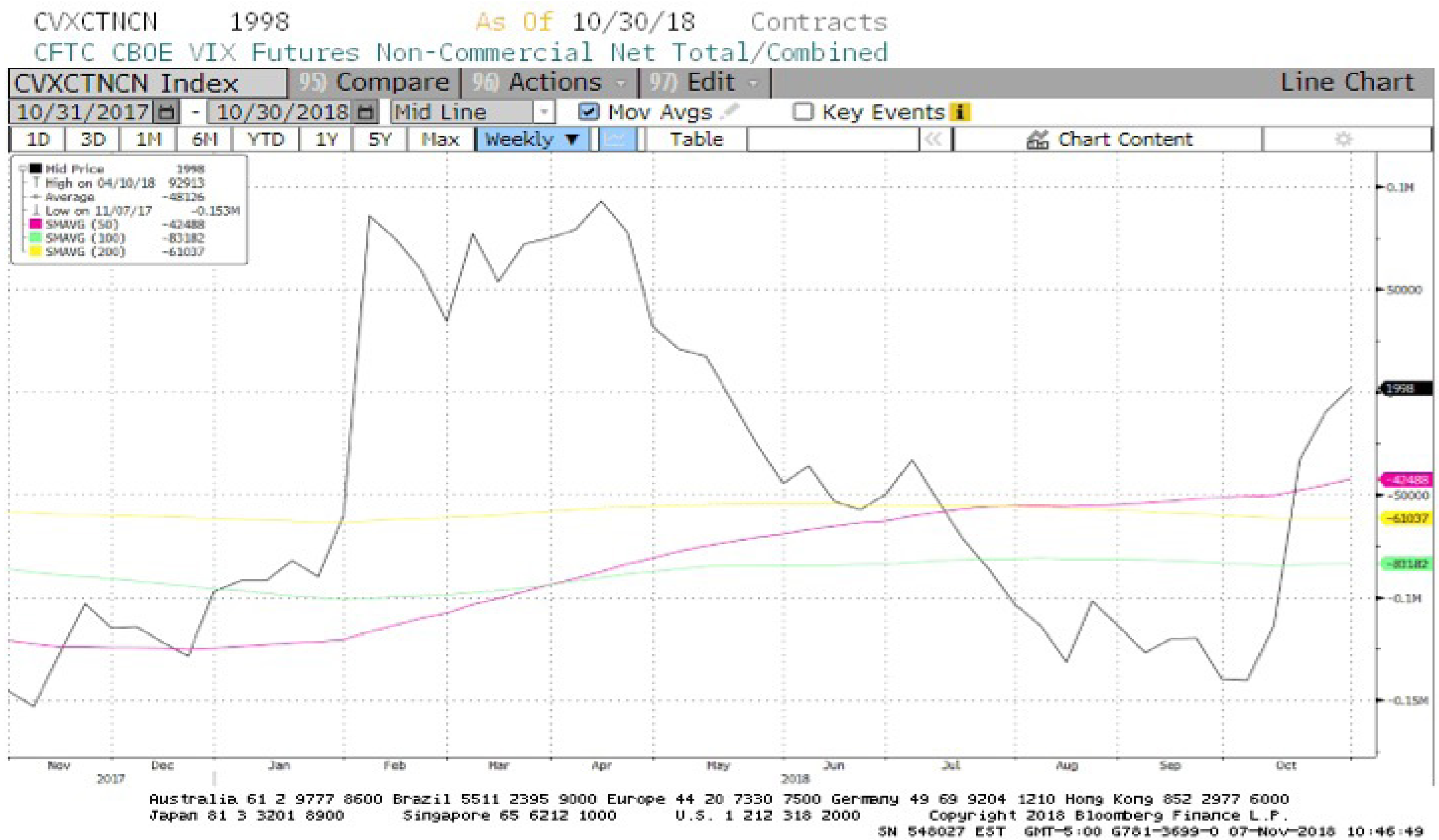
I wrote two commentaries earlier this year, "What the h*** happened on February 5" Part 1 and Part 2, about the impact of volatility targeting investment strategies on the VIX Index and on the stock market. At the end of January, after the market had set new highs, VIX began to lift. Again, new highs for the broad market were set on September 20, 2018. In both cases, new highs likely triggered profit taking, which lifted volatility.

**VIX Index**

Source: Bloomberg Finance L.P. As at October 22, 2018

Volatility has quietly become a tradable asset class and, after volatility began to lift, the asset class positioning became critical. In my earlier articles I discussed a popular options strategy for periods with a positively sloped options curve (backwardation): it involves selling out month options short for the time premium and closing the positions as they approached expiration. Commodity traders have used this strategy for generations to manufacture profits. In a pinch, they can access the physical oil or grain if they must deliver on a contract. There is no physical VIX to deliver: shorts must be covered by buying in the open market. The following chart shows the net positioning of VIX contracts leading into February and October. VIX was structurally short leading into both events and short covering was rapid in February and has now been completed in October. Non-commercials are now net long VIX.

**VIX Futures**

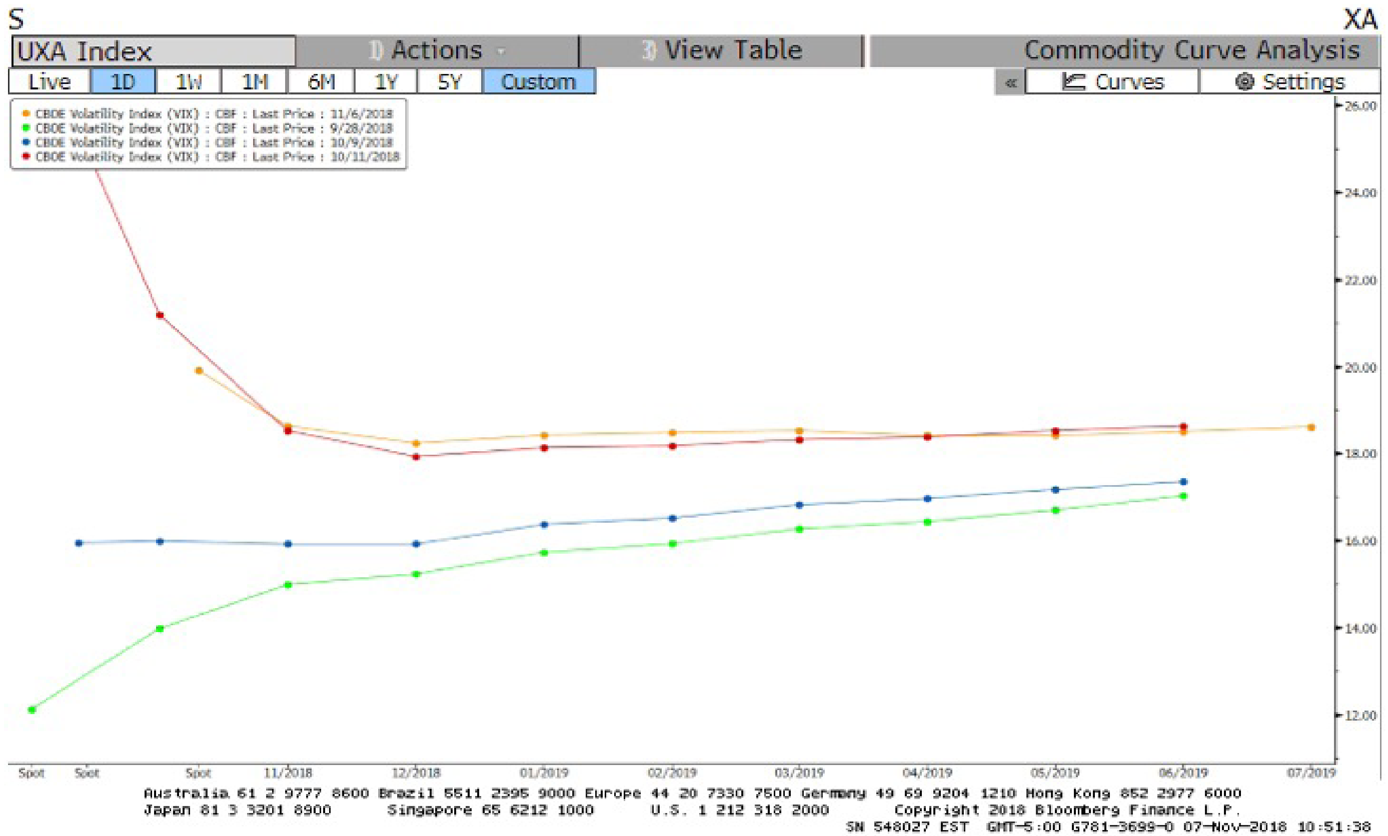



Source: Bloomberg Finance L.P. As at October 30, 2018

It is important to note that for non-commercial speculators to be net short, another entity must be holding the other side of the trade: they are net long. This is likely the broker/dealer community. They would not typically hold the position unhedged. Using the stock market as a proxy for volatility, they likely use options to try to eliminate the risk of the position they are holding. Being long volatility, you want to be short a proxy for volatility: options on the S&P 500. You short a put and short a call in a straddle position with gains/losses offsetting as the market moves. Unfortunately, this is not a perfect hedge and large market moves can knock your hedge offside. Maybe the moves in February were due to activity in the derivatives markets; hedges that had gone offside. No doubt, it was the same in October. But the net short position is closed: it is now natural buyers and sellers likely dominating market moves. I used the next chart almost two years ago to point out that earnings typically do not start to decline until the Federal Reserve has completed its tightening cycle. We are not yet there. The down arrows on the chart point out that the first cut in the Fed Funds Rate is coincident with S&P 500 earnings rolling over. The severity of the earnings decline is dependent on how tight financial conditions get. I do not anticipate that we will have a repeat of 2008-2009. So, do you sell before the tightening is over? If investors have performance anxiety today, going to cash won't help, but taking the opportunity to upgrade investment quality could provide some comfort in a down market.

In my February analysis, I published a chart showing the VIX curve moving rapidly from backwardation to contango. VIX speculators who were short, were being bought in on margin calls. The same outcome has occurred in October. The following chart shows the VIX curve at various points of time over the past three weeks. At the end of September, blue curve at bottom the slope was normal, the short VIX trade was working. By October 9 the curve had flattened and into October 11 it exploded into inversion where it remains today.

**VIX Index Comparisons**




Source: Bloomberg L.P.; CI Investments

As of July 6, 2018

This would be an event of interest in the backwater of capital markets, save for the explosive growth of volatility-targeting strategies in recent years. Trying to get data on the market exposure to these strategies is difficult. In searching the internet, I came across the October 2017 International Monetary Fund (IMF) Global Financial Stability Report , which indicated that there is $835 billion in assets under management in strategies that explicitly use volatility targeting to manage their risk asset exposure.

Additionally, there are an unknown number of managers who use volatility targeting as a risk management tool. According to the IMF, the growth rate in volatility-targeting assets has been spectacular. The first chart in the image below, shows the hypothetical leverage in a 60:40 portfolio targeting 12% volatility. The hypothetical portfolio was over two times levered as the market peaked in 2014 and sold down to the basic portfolio during the 2015-2016 correction (blue line, right scale). By late 2017 it was back to over 2x leverage.

**Figure 1.21. Leveraged and Volatility – Targeting Strategies**

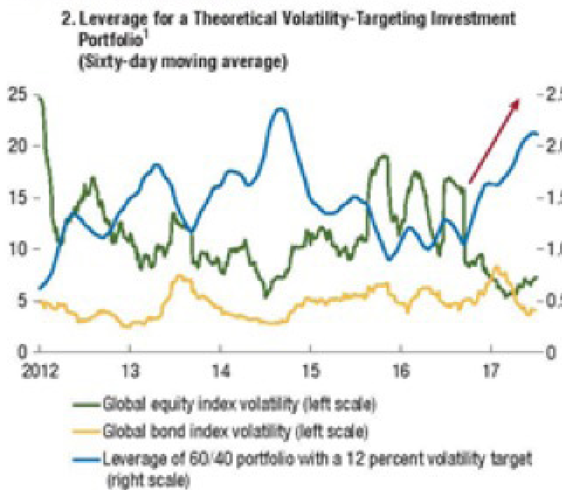
**Figure 1.21. Leveraged and Volatility-Targeting Strategies**

**1. The Growth of Volatility-Targeting Investors**

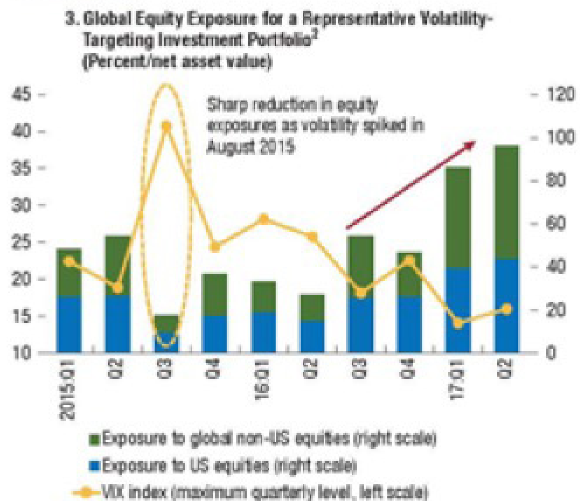
| Investment Strategy | Volatility Target (percent) | Flexibility to Deviate from Volatility Target | AUM Mid-2017 | Growth in AUM Past Three Years (percent) |
|---|---|---|---|---|
| Variable Annuities | 8–12 | Low | $440 billion | 69 |
| CTA/Systematic Trading | 15 | Medium | $220 billion | 19 |
| Risk Parity Funds | 10–15 | Medium–high | $150–$175 billion | ... |

Sources: Annuity Insights; Barclays Capital; BarclayHedge; and IMF staff calculations.

Lower volatility drives investors to increase financial leverage to meet their return and volatility targets ...




... leading to rising equity exposures that are prone to sell-offs during volatility spikes.




Sources: Bloomberg Finance L.P.; Federal Reserve; Investment Company Institute; and IMF staff calculations.
Note: AUM = assets under management; CTA = Commodity Trading Advisor; VIX = Chicago Board Options Exchange Volatility Index.
[1]The leverage calculation for a theoretical volatility-targeting investment strategy assumes a theoretical investment portfolio consisting of 60 percent global equities/40 percent bonds and an annual return volatility target of 12 percent. Leverage is defined as total investment exposure divided by the net asset value of the portfolio. The calculation uses a 60-day realized volatility moving window on the returns of equity and bond investments. The MSCI World Index is used as the proxy for equity investments; the Bloomberg Barclays Global Aggregate Total Return Value Unhedged index is used as the proxy for bond investments.
[2]The S&P 500 index exposure for a representative volatility-targeting investment strategy uses the AQR Risk Parity mutual fund as its proxy portfolio. The exposure data are obtained using Bloomberg's port function and reflect the percentage exposure of the fund's portfolio to equity index futures as a percentage of market value.

Source: IMF "Global Financial Stability Report October 2017: Is Growth at Risk?"

[1]https://www.imf.org/en/Publications/GFSR/Issues/2017/09/27/global-financial-stability-report-october-2017#Chapter%20One Figure 1.21 Leveraged and Volatility-Targeting Strategies

According to the IMF, the largest pool is Variable Annuities, which is $440 billion with volatility targets of 8-12%. These funds can be over 100% invested but are nowhere near as aggressive as the CTA and Risk Parity funds. The IMF indicates that they have low flexibility in meeting the target volatility; that was certainly true in February when they sold down rapidly as volatility spiked. As volatility spikes, they mechanically sell and as volatility falls, they mechanically repurchase. I included the following chart (it was published in the Financial Times) in my February article.

Source: Deutsche Bank As of February 22, 2018

I believe something similar happened in October, because selling by volatility-targeting annuities really is mechanical. The machines run the algorithms and the broker dealers know when the orders will be triggered and will stand aside. Day-to-day liquidity trading is okay, but acting as a liquidity provider in the face of mechanical selling is folly, they will let the markets find a new level. This is likely what triggered the initial downturn on October 10: mechanical selling triggered by a volatility signal.

The low average volatility of late September into early October would have had levered Risk-Parity and CTA portfolios at close to maximum leverage (second chart in the IMF example). The roughly $400 billion in CTA and Risk-Parity strategies typically use leverage that could result in as much as $475 billion in equity exposure. A cut in leverage from 2x to 1.5x would generate selling pressure of over $100 billion. According to the IMF study, they have some flexibility in deviating from the volatility target. They are a likely source for a supply of risk assets as this volatility spike unwinds. CTA portfolios tend to be trend following and they are absolutely willing to pile onto a downturn through adding short positions. Their favoured tool is futures on indices and they are also willing to pile back into a rising market. Keep an eye on the pre-opening futures markets.

As I said earlier, in my opinion the cause of the October correction was a volatility spike that triggered mechanical selling by volatility targeting portfolios. When the market is net short volatility, it will be prone to these random spikes in volatility as participants are forced to cover. The October episode did not have retail structured products in play; their margin calls in February resulted in liquidation events. The unwind of short VIX was more orderly in October. The fact that the VIX curve is still inverted and the S&P 500 has trading down through support levels, suggests that the corrective phase likely peaked leading into the U.S. mid-term elections. A retest of the recent lows is looking unlikely, we are in a seasonally strong part of the year and the election results are generally market friendly: markets like grid-lock in Washington.

What hasn't changed is the uptrend in short-term interest rates, relatively stable spreads between short-term rates and longer-term bonds, which is pushing their yields higher and a strong U.S. economy that should support continued upward pressure on short-term rates. A strong economy is showing up in strong earnings and revenue growth for U.S. companies. According to Bloomberg , trailing twelve-month earnings are $144.88, up 18% from year end 2017 and are expected to end 2018 at $163.54; revenues are $1.308 trillion, up almost 8%.

With the correction, valuations have dropped. The current Price Earnings ratio is 19.3x and based on the Bloomberg forecast for year-end, the S&P 500 at 2,650 is trading at 17.1x. Earnings growth coupled with a market decline has brought valuations for the broad market back to decent levels. The economy is still expanding. It is well known that the GDP growth rate in 2019 is set to slow as the 2018 fiscal stimulus wanes, but there is no reason to expect an imminent recession. Indeed, in the face of continued surprising economic growth and tightening financial conditions (primarily higher long-term interest rates and strong U.S. $), the bond market is now signaling that it expects 4 further tightenings of the Fed Funds Rate and then a pause.

Prior to the correction, the U.S. equity market was one of the very few in positive territory for the year. In October it joined other developed markets in a synchronized downturn. While the S&P 500 briefly entered correction territory, down by more than 10%, the average stock fared more poorly with large caps continuing to lead. The equal weighted S&P 500 was down over 12% to late October and the MSCI World Ex United States was down by over 19%. I do not know how long this correction will last, but I don't expect that it will be the start of a recessionary bear market.

The recovery from the October lows is at critical juncture. The S&P 500 has risen above the 200-day moving average and needs to hold above it for the corrective phase to be considered over. Again, the equal weighted S&P 500 is not as strong. This is a narrow market. If this rally fails to hold expect a retest of the October lows.

**SPX Index**

Source: Bloomberg Finance L.P. As of November 7, 2018

For those who are interested in technical support/resistance levels the S&P 500 gapped up from the 2752 level after the mid-term election. The 200-day moving average (MA) is at 2763; we are likely going to test the 2750-2760 range as a support level. Fundamental buyers have been active according to desk emails; buying at 16x forward earnings for the index. Below that for out of favour quality. First resistance is 2820 (100-day MA). This is just below the falling 50-day MA; 2830.

A lot of numbers and a really compressed set-up. A moving average is the average price paid for the security over the measurement period: half paid more, half paid less. Profit taking tends to slow down as you approach "support". More investors are made whole as you approach "resistance", selling to get out tends to pick up.

The Nasdaq 100 has a much more serious issue. At the end of May, the top ten names comprised 56% of the Index leaving the other 90 with 44%. Considering the PE for the top ten was 70x, the other 90 must have had quite the earnings to bring the overall index multiple down to 27x. To put this in context (in an admittedly apples to oranges comparison as I do not have NASDAQ 100 data for March 2000) the top 10 Nasdaq Composite stocks in March of 2000 were 36% of the composite at a PE of 52x.

The NDX (NASDAQ 100) stalled at the 200 and has fallen below. The volatility hasn't gone away yet. There is a large overlap between NDX & SPX. VIX is up a touch at 19.40-ish but is in no way spiking. Risk is rising that the market wants to retest the recent lows.

Credit conditions remain benign, the spread between the ICE BofA Merrill US Pay High Yield Index and the 10-year treasury peaked at 390 basis points (bps), 34 bps over the average spread for the past year. But the asset class is beginning to show its correlation with equities. The spread has widened by 57 bps since the peak of the S&P 500 on September 21, 2018. The widening spread was driven by heavy net redemptions of the two key high yield ETFs: JNK and HYG. Combined trailing twenty-day redemptions peaked on October 10, at $4.4 billion. Again, it was likely the CTAs and Risk-Parity funds driving the flows. The reason that spreads did not blow-out under heavy selling pressure was offsetting institutional buying of the underlying bonds. The high yield bond market is currently supply constrained. Companies are using liquidity in the loans market to issue paper with weak covenants.

In the real economy, the percentage of senior loan officers reporting tightening lending standards for large to medium commercial and industrial loans continues to fall. This series is a decent leading indicator of tightening credit conditions.

More importantly, the chart below shows lending conditions for small enterprises remain benign. In the 2015-2016 slowdown the survey was tightening; today, however, it is easing.

**Lending Conditions**

Source: Bloomberg Finance L.P. As at July 31, 2018

Conclusion? If you are carrying tactical cash buy the dips. If you went into this correction under your policy weight in equities, buy the dips. If you went into this correction above your policy weight in equities you might want to rebalance during this rally. Markets ultimately follow earnings, I expect them to continue to rise and that markets will ultimately resolve higher.

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