



*Lessons from the Volatility Shock of 2008*

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One of the notable features of 2008 was the ‘volatility shock’—the massive and rapid rise in market volatility. It is also notable that the high probability of a volatility shock was clearly signaled by the options markets<sup>1</sup> and by a range of experts<sup>2</sup> well ahead of time. Volatility had been running way below the long-term average for equities as well as being at about half of the long-term implied volatility on equities for several years. I wrote about this issue quite a bit in 2007 and I was struck by the fact that the risk of a volatility shock was not discussed more until it happened. VIX, which measures implied volatility on S&P500 options near expiration, skyrocketed to historical highs in 2008. Volatility on all asset classes tends to be correlated, and we saw massive rises in volatility on essentially all asset classes. The coupling in volatility across asset classes was another concept that got little attention leading up to 2008, but it is a consistent feature of financial markets.

Increases in volatility are costly to investors not just because they increase the “bumpiness” of returns, but because there is a negative correlation between returns on many asset classes and VIX. When VIX goes up, returns tend to go down (see article in Footnote 2). I documented this effect in August of 2007 and the statistics were striking. The returns on the S&P500 and the returns on VIX (percentage changes in VIX) were correlated at -67%. The returns on EFA and EEM were correlated to VIX at -43% and -52% respectively. These are high negative correlations and show the danger signal of a rise in VIX. Further, these high negative correlations are seen in a wide range of asset classes. The negative correlation between VIX and returns reflect increasing investor risk aversion. There is also a strong positive correlation between corporate default risk and implied volatility—something I wrote about on early 2008<sup>3</sup>--so the potential for a substantial rise in volatility also leads to the potential for a big increase in corporate defaults, as we have now seen.

In my article from August of 2007, I suggested that an effective way to deal with the risk of a volatility shock would be to create a portfolio out of individual stocks that had fairly small correlations to VIX and I provided a list of these stocks (see article in Footnote 2). The stocks proposed were the following:

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<sup>1</sup> <http://seekingalpha.com/article/27508-foreign-and-domestic-market-risk-outlook-from-february-2007>

<sup>2</sup> <http://seekingalpha.com/article/43453-portfolio-management-in-increasingly-volatile-markets>

<sup>3</sup> <http://seekingalpha.com/article/68135-using-default-risk-to-limit-downside-in-individual-stock-investing>

Company Name	Ticker	Correlation to VIX
Constellation Brands	STZ	-29%
AFLAC	AFL	-22%
General Electric	GE	-19%
Anheuser Busch	BUD	-18%
Bank of America	BAC	-16%
Consolidated Edison	ED	-12%
Johnson and Johnson	JNJ	-9%
Hormel	HRL	-1%
Pepsico	PEP	-1%
Wyeth Labs	WYE	0%
ConAgra Foods	CAG	1%
Public Service Enterprise Group	PEG	7%

*Correlation to VIX for select stocks (data through June 2007)*

While the returns on most of these stocks exhibited a negative correlation to VIX, these correlations were far smaller in magnitude than we observed for the major market indexes and for a range of sector indexes. Further, these stocks all exhibited low Beta and low R-squared, which means that the returns on these stocks were not well correlated to the broader market.

We now have 1.8 years of market history since June of 2007 (the end of the data used in the analysis) and we have lived through the massive dislocations of the volatility shock. The ‘great moderation’ theory looks like a bad joke. This period amply reinforced the notion of a negative correlation between return and volatility. It is instructive to look back at how the stocks proposed for managing a volatility shock performed. An equal-weighted allocation to the stocks from my article titled *Portfolio Management in Increasingly Risky Markets* generated an average annual return of -17.1% from July 2007 through March of 2009, assuming annual rebalancing. A portfolio that was allocated equally between the EAFE index (EFA) and the S&P500 (SPY) has provided an average annual return of -35%, with slightly higher volatility than the portfolio of individual stocks. Even though correlations between all asset classes increased as the markets declined, the portfolio of individual stocks specifically selected to limit correlation to VIX substantially out-performed the broader market.

When volatility was low in 2007, there were several clear strategies for managing the potential for a volatility shock. One approach, of course, was to buy put options on major portfolio holdings. The options market was already pricing in about a doubling in market volatility at the time, however, so these options were not cheap. In retrospect, of course, we can see that these options would have paid off handsomely, but that is not very relevant. During the volatility spike, a very profitable strategy was to sell call options<sup>4</sup>, and I wrote about this strategy in November of 2008. Another strategy is the one outlined above: select investments that have low correlations to VIX. While the sample portfolio of stocks shown above has lost considerable value, it has performed far better

<sup>4</sup> <http://seekingalpha.com/article/107756-profitng-from-risk-aversion>

than allocations to major indexes. A final option for dealing with rising volatility is the new ETN's that track VIX, like VXX and VXZ. These new investment options were not available when I wrote about this topic in 2007 and before—they were launched in early 2009<sup>5</sup>. These could provide an interesting way to manage potential for rising volatility when next we face a high potential for a volatility shock.

The greatest lesson from 2008 was simply that so few people, it seems, paid attention to the market signals that were provided by market volatility and implied volatility. Or, to be more specific, people assumed that low volatility was going to be a permanent feature of the landscape rather than simply part of the cycle. As Grantham noted, this led to a bubble in risk. With volatility low, investors took riskier and riskier bets—in essence betting that volatility would not return, even as the options markets clearly suggested that this would not be the case. This is a classic example of the “availability heuristic” that drives all bubbles: people simply assume that “it’s different this time” and that things will continue as they have in the recent past, discounting long-term historical evidence.

Today, while market volatility has dropped substantially from its highs of 2008, it is still high—more than double the long-term average for domestic equities. The implied volatility in long-dated options is quite close to the implied volatility in near-dated options<sup>6</sup>. With no trend in implied volatility over longer-dated options and with this level of implied volatility being so high, mean reversion suggests that volatility will drop over the next several years. This is a good sign for equities, in general. As volatility drops, the negative correlation between returns and volatility will benefit investors just as it hurt them during the volatility shock. There are substantial inconsistencies in the pricing of risk (as reflected in options prices) that can be exploited. I see management of portfolio volatility and correlations of portfolio returns to market volatility as key areas that investors and advisors can use to performance. Risk and return are the two sides of the investing “coin” and to ignore the information content in volatility is to miss a key ingredient for portfolio management.

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<sup>5</sup> <http://finance.yahoo.com/news/VIX-ETNs-Give-Investors-etfsa-14367176.html>

<sup>6</sup> <http://www.ivolatility.com/calc/?ticker=spy>

*Quantext Portfolio Planner* is a portfolio management tool. Extensive case studies, as well as access to a free extended trial, are available at <http://www.quantext.com>

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