

# Complementing the VIX

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Alternative Ways to Gauge Option Risk



The Cboe's VIX Index is without a doubt the most referenced metric when it comes to characterizing the general state of market volatility making it the go-to measurement for market volatility.

However, the VIX as a predictor of future market movement has suffered in recent years, and many incorrectly interpret this as that it simply does not work anymore. While we disagree with the idea that the VIX is "broken," we do believe there are some limitations to what it can be used to measure or infer about overall market risk exposure.

Any options trader or portfolio manager will tell you it's best to have a few tools in the tool box to really ascertain risk. This blog will review some of the lesser known measurements of risk that, in conjunction with the VIX, can help paint a better, more complete depiction of what risk lies ahead, option risks, and whether pricing is high or low for a given structure.

## VIX – Cboe Volatility Index

The VIX is still a valuable tool for measuring investor sentiment in the overall market and despite its criticisms and controversies, still very popular. Its popularity stems from a simple and understandable rubric, and a catchy nickname: "the fear gauge." This has helped garner its "celebrity" status among any single stock name or equity index product. Yet, the VIX has gone through its own transformation over the years and has even been involved in its own celebrity-type controversy.

However, it does have its critics. Some have even gone as far to say the calculation is broken and no longer the accurate market predictor it once was. This may be due to a multitude of factors—systematic strategies such as risk parity, volatility targeting, machine learning, and exchange traded products—that have changed the investment landscape, especially with respect to volatility.

The VIX continues to measure what it was always designed to measure: supply and demand of S&P 500 (SPX) options. The VIX can be used as a barometer for how much portfolio protection is being purchased via SPX options, or how much fear there is in the market. Risk mitigation can be purchased for hedging downside market movements or upside movements for participating in market gains. If the VIX is low, then we are in what is known as a "soft market" for hedging portfolios and vice versa.

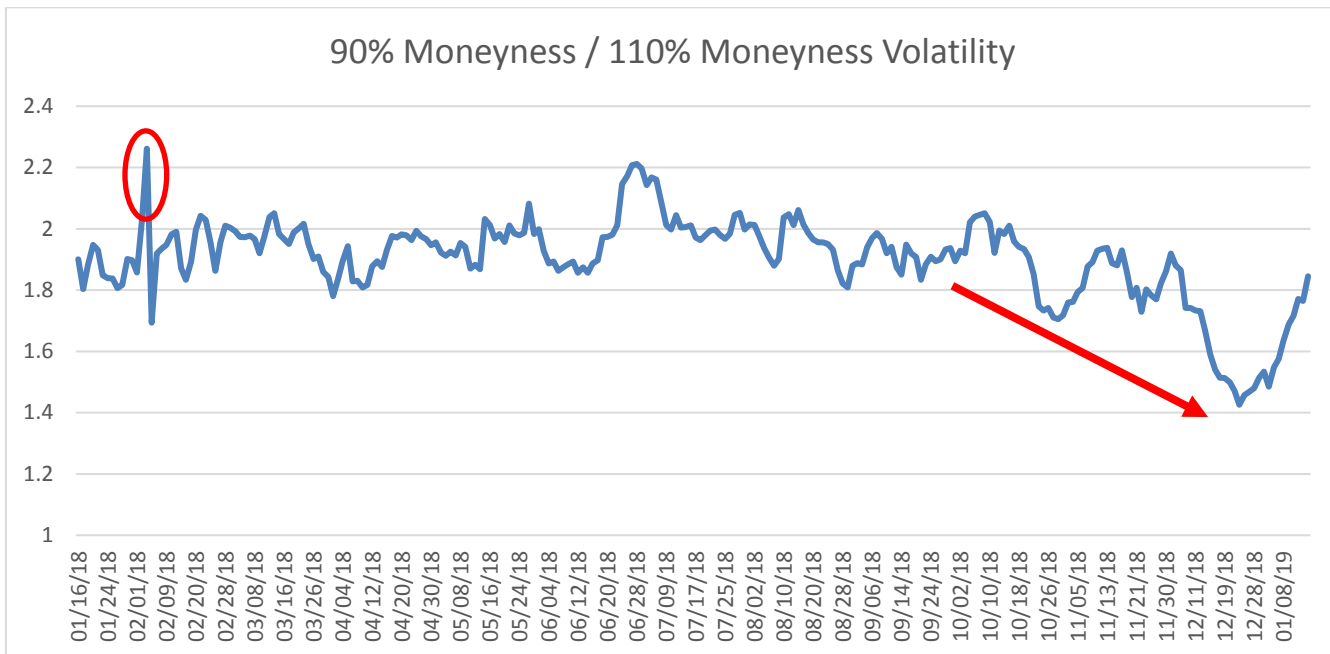
## VXO – Cboe S&P 100 Volatility Index, a.k.a "Old" VIX

This is where it all began. The VXO is the old VIX calculated on S&P 100 (OEX) options, rather than S&P 500 (SPX) options. At one point in time, it was the most active index option product before being usurped by the SPX.

The VXO calculation is slightly different than the current VIX: the VXO only takes a couple of strikes above and below the index price using a short and longer-term maturity to interpolate an option with 30 calendar days to expiry while the VIX uses a strip of options and adds an element of skew in the pricing mechanism. This essentially removes much of the range of volatility dispersion between downside and upside strikes and instead represents a more focused view of pure volatility by using strikes that are closer to being at-the-money. At the money options are viewed as "skewless." Therefore, their volatility will not be influenced by supply and demand forces that an options model attempts to predict up and down the strike spectrum.

If one does wish to measure the skewness of the strike distribution there are multiple ways to do so. The most popular is taking the difference between the 25 delta put and 25 delta call or the difference between the 90% moneyness strike against the 110% strike volatility with the same maturity. The goal of such skew measures is to approximate the flow of option supply and demand across the volatility curve.

In general, when markets move lower, volatility will increase, but skew decreases (skew can increase in the short-term for abnormal shocks). The basic order flow when the market is moving lower is to buy downside put spreads and sell upside call spreads as positions are being rolled down. These are known as skew “flattener” trades. In contrast, the basic order flow when the market is moving higher and volatility is declining is to sell downside put spreads and buy upside call spreads as positions are being rolled up. These are known as skew “steepener” trades. This provides a better understanding of the current pulse of the market.



Source: Bloomberg

The graph above shows a marked increase between the volatility of the 90% moneyness strike in relation to the 110% moneyness strike during the February volatility spike episode, which many now view as an isolated event. Once the market resumed its upward trajectory, skew remained elevated until the fourth quarter sell-off where you can see a skew collapse. Skew has now begun to pick up with the recent 8%+ post-Christmas rally.

### Cboe SKEW Index – Probability of Tail Risk

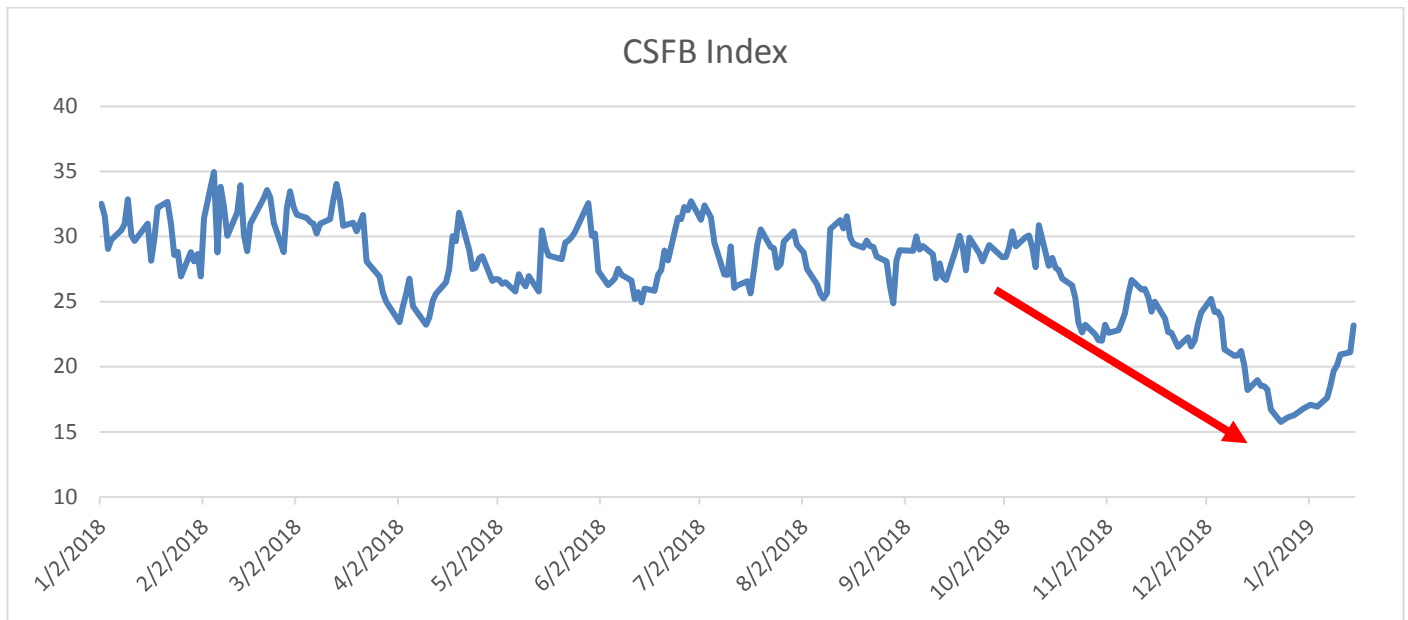
This index measures SPX tail risk or moves that are outside two standard deviations. It does not measure skew in the traditional sense that option traders and market makers are accustomed to but approaches it from a statistical perspective. When SKEW increases, it shows there is more demand for very out of the money options and better reflects the [markets perception of tail risk](#), or a large downside move.

This also shows how cheap or expensive hedging against a tail risk event might be. When the index is cheap, it might be a good time to look for inexpensive tail hedges.

### Credit Suisse Fear Barometer

This indicator measures investor sentiment by pricing 3-month zero-cost collars. It measures how much downside hedging costs. The collar begins by selling a 3-month 10% out of the money call and using the

proceeds to purchase an out of the money put with the same maturity. The distance between the underlying spot price and the out of the money put is used to calculate the index. The higher the reading, the higher the cost of downside hedging relative to out of the money calls. Unlike the moneyness methodology, the put strike is allowed to slide based on the premium collected for selling a 110% strike call.



Source: Bloomberg

The above chart does not really show an extreme spike during February but better depicts a decrease in the cost of downside hedging at the start of the 2nd quarter and also reinforces the skew properties during the 4th market sell-off and subsequent rally.

## Expanding the Toolbelt

A stock investor will use many tools when forecasting a stock price, such as earnings growth, market sentiment, and broad economic trends. A bond investor takes into account multiple factors, such as interest rates, credit risk, liquidity, and prepayment risk. Option investors are no different. Relying on a single factor like the VIX will paint a narrow picture of risk, potentially leaving option investors vulnerable to hazardous blind spots. These other metrics help paint a more complete picture of the options market.

This post focused on skew measurements, basic order flow, and the interaction between market movement and volatility. For future posts in this series, we'll dive into a few other measurements that can help an investor or portfolio manager determine their overall market exposure.

## About the Author:



**Chris Hausman, CMT®, Portfolio Manager, Managing Director-Risk**, focuses on risk assessment and management for the Defined Risk Strategy investments and positions. He monitors risk across all of Swan's portfolios and as a member of the Investment Management Committee contributes to strategic decision making as well as serving as an additional layer of oversight for the trading team.

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