

“Skews”

A while ago we read a very interesting paper published in the journal *Quantitative Finance* by Lempérière, Deremble, Nguyen, Seager, Potters and Bouchard (2016) “*Risk premia: asymmetric tail risks and excess returns*”.

The paper revealed that risk premia across a broad range of asset classes including equities, are proportional to skew risk rather than volatility risk as supposed by CAPM.

We discuss the subject of skew in more detail this month for the *Optional View* from Altana Wealth.

What is skew, where does skew come from and why do we like skew?

For the mathematically inclined, skew is the third moment of returns (loosely speaking, the average of cubed returns). Hmmm.

The first moment is the simple average or “mean” return, and the second moment is variance (average of squared returns). In option pricing, volatility is the square root of variance. Enough maths.

Lempérière *et al*, demonstrate that for investment analysis estimation of skew is, if anything, more important than volatility. However skew usually gets rather less attention. Let’s make amends.

One reason why skew gets less attention than it deserves could be because the normal distribution has zero skew, being symmetrical. Another reason could be that skew is very difficult to forecast accurately, due to its sensitivity to outliers (which occur frequently in finance, of course).

Nevertheless professional investors understand that most investments have *negative skew* (ie. “fat tails”).

And considerable expense goes towards hedging tail risk, though possibly not always for the right reason. After all, for every buyer of a hedge there has to be a seller. Someone out there is always willing to take the tail risk at a price. So who’s right?

Numerous studies have shown that individuals seek positive skew in life, even when the expected return is clearly negative (lotteries and casinos for example). This seems to be human nature.

But Lempérière *et al* highlight that a well-diversified portfolio of negatively skewed beta strategies, including alternatives, would have been far superior to long-only equity historically.

Skew in financial markets can essentially occur for two reasons. Firstly, risk bearing investments can lose value very quickly due to unforeseeable events. Sudden loss is the essence of skew, conceptually. Investors (and insurers) need to be adequately compensated for taking tail risk.

Sellers of equity puts act as investment insurers. However, the implied volatility risk premium provides fair compensation over time - implied volatility is persistently higher than realised volatility. This is not an anomaly or a structural supply/demand imbalance. It is fair reward for the negative skew being taken by equity put sellers.

Short volatility strategies should be a component of well-diversified risk bearing portfolios.

For equities, selling puts to create long exposure should outperform the market because both the equity risk premium and the implied volatility risk premium can be collected.

The situation is more complicated for sellers of equity call options. Short exposure to equity enjoys positive skew. This should not deliver a positive return over the long run.

However all option sellers receive compensation for exposure to volatility risk, which is strongly negatively skewed, and for exposure to the option payoff itself which is negatively skewed by construction.

Call selling can deliver positive returns, even in up-trending equity markets. A critical determinant of profitability is strike price relative to trend. The further out-of-the-money we strike the calls the more chance we have of making money on average, but the less we can make from each option.

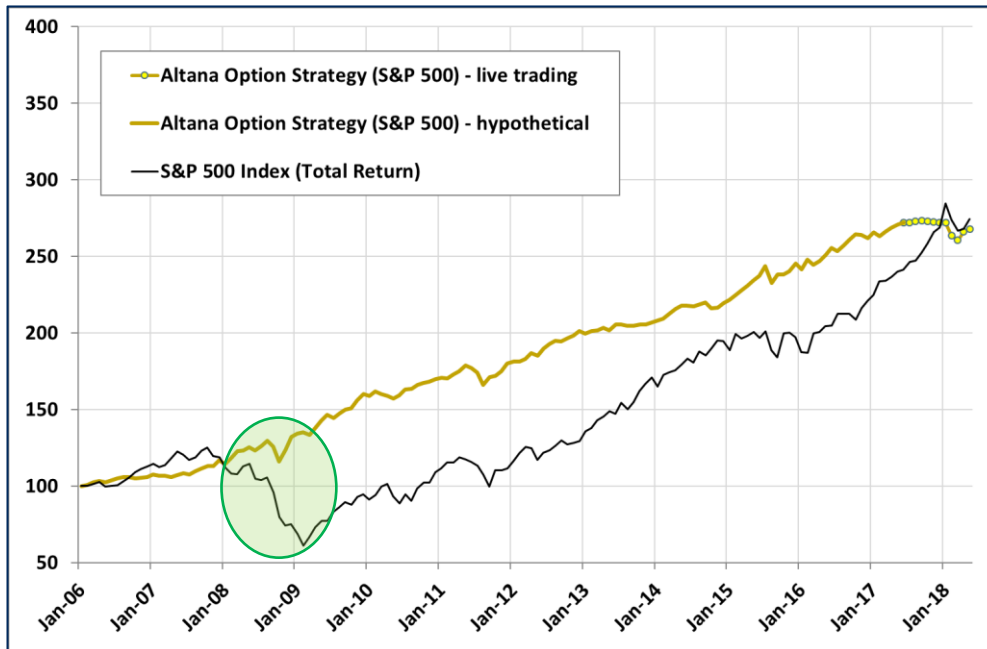
Returns from selling calls are negatively correlated with returns from selling puts. If both return streams are positive over the long run, it’s an asset allocator’s dream.

But the return streams from selling calls and puts have very different skew profiles. To create high quality returns we can combine them using risk parity weightings on their respective skew profiles.

Altana Wealth specialises in selling call and put options together (“straddles”).

We aim to harvest attractive risk premia (negative skew) by selling volatility, while generating absolute returns through dynamic timing (alpha).

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Selling straddles on the S&P 500 during the credit crisis 2008/09 significantly outperformed long-only equity.

Back-tests indicate that even simple short straddle strategies delivered positive gross returns in 2008 vs. a loss of 37% from long-only equity.

This feature of option selling should be attractive to long-term investors, such as pension funds and insurers.

During the 2008/2009 credit crisis, one might have expected equity option sellers to have been slaughtered. However, short straddle strategies strongly outperformed long-only equity, as circled in the chart above. Positive returns were possible for 2008/09 from equity straddle selling strategies.

The rapid “self-healing” property of straddle selling should be attractive for investors seeking to mitigate equity bear markets.

The second main source of skew is internal crowding and herd behaviour. Extreme crowding can make markets self-feeding.

This was seen on 5th February 2018, when the VIX spiked dramatically intra-day, wiping out the entire value of certain inverse-VIX ETFs. The spike occurred because too many (unsophisticated) investors were exposed at the same time. ETFs had to blindly liquidate VIX futures.

On 5th February volume in VIX futures built quickly during the day as forced buyers caused an extreme, but nevertheless relatively smooth, price move to 33.2 at the close (almost the exact high). When volume dropped after the close, the VIX future again became choppy and unpredictable.

Skew driven by extreme crowding can be beneficial for smart traders. Herd driven moves are always accompanied by heavy volume. When markets become self-feeding, the more the market moves the more it’s likely to move. The key signal is heavy volume with a smooth intraday trend.

Positive skew can be captured by monitoring volume in real-time and trading ahead of the crowd. This represents an alpha opportunity, rather than a risk premium. We read* that Goldman Sachs for example made \$200 million during the VIX squeeze.

** source: Bloomberg View, 04/06/18*

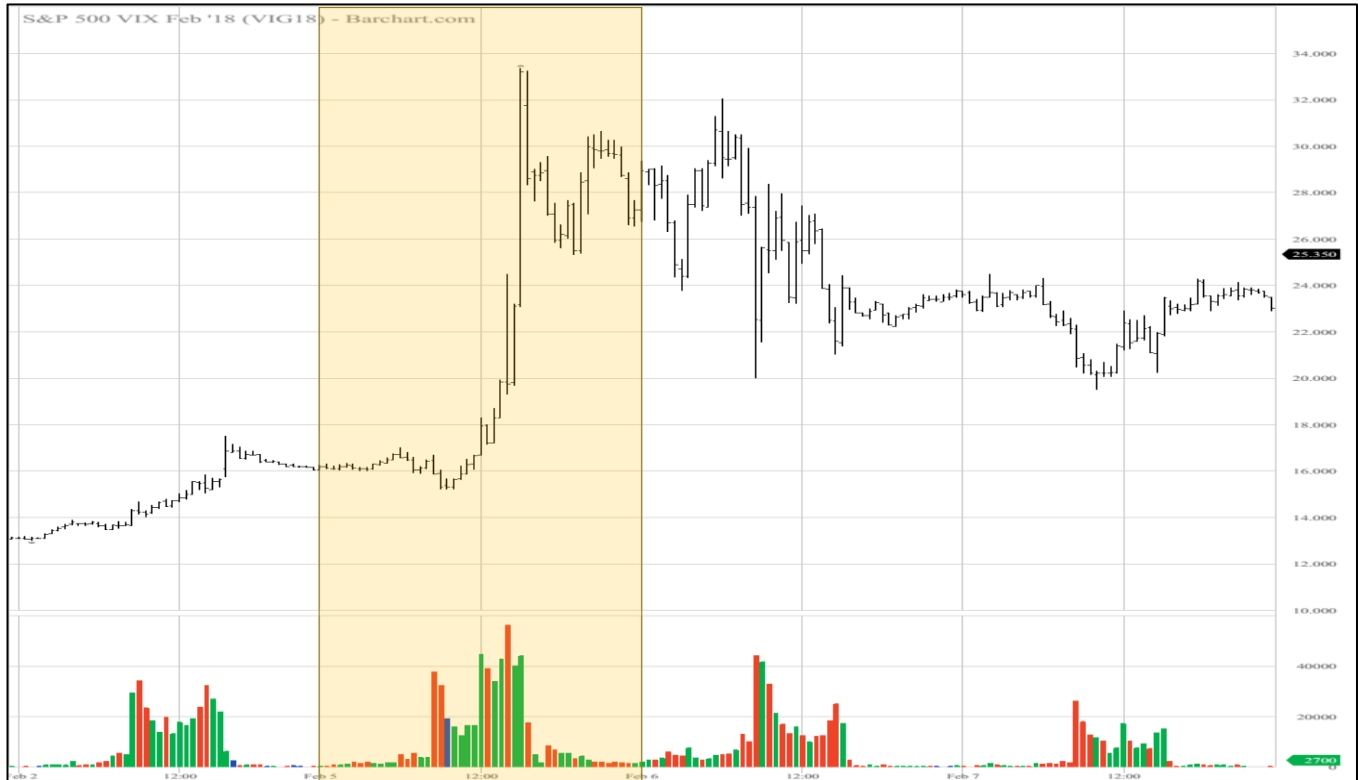
In summary, option sellers are compensated for skew risk. Short volatility strategies should be a component of well-diversified risk bearing portfolios.

Our aim is to combine positive long term returns from selling calls and selling puts, to create absolute return streams.

Straddle selling can have attractive “self-healing” properties that mitigate equity bear markets.

With smart trading, negative skew can even be turned positive.

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This chart shows four days of price and volume action (Fri 2nd Feb to Wed 7th Feb), for the Feb-18 VIX futures contract. The chart is based on 30 minute time bars. The red/green bars at the bottom of the chart represent trading volume during 30 minute time slots (red bar = price fall, green bar = price rise).

Futures volumes were somewhat elevated compared with normal on Fri 2nd Feb, and prices rose steadily throughout the day. Volume was heavy at the full 8:30am (Chicago time) stock market opening on Mon 5th Feb, although the VIX future initially sold off from 16 to 15.5. Volume then picked up very sharply from midday on 5th Feb. The VIX future jumped from 16 to 18 and then spiked above 20 by 2pm. It surged to 23 at 2:30pm and finally capitulated to close at 33.2 at 3pm.

Altana Wealth manages option selling strategies on equity indices with approximately \$300m notional aum. Please contact us for further information.

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