The 99% 5-day VaR and ES are over 16% and over 25% respectively. Investors in the oil markets need to be prepared for significant multi-day movements in either direction.

Oil Market Volatility

'Wild' swings in oil prices have been making headlines again. Against a background of fear about major global market corrections and speculation about the Chinese economy it is hardly surprising that increased volatility in a critical commodity is focussing attention. Whatever the trigger for recent oil price turmoil may have been, our tail models predicted that daily and multi-day moves of the size that occurred throughout August were all too likely.

Risk Predictions and Daily Returns in WTI

Omega Analysis' advances in statistical technology allow risk measurements of unprecedented accuracy in financial data series. 1-day Value at Risk (VaR) and Expected Shortfall (ES) measured from short samples of historic data have a high degree of predictive power out of sample. Over extended time periods, VaR breaches are in excellent agreement with the target frequency and ES breaches are consistent with the (time varying) tail model's predicted frequency. Because it is breached relatively rarely, ES can be used to size market exposures with a high degree of confidence.

The 1 in 100 day VaR and ES levels have continued to increase steadily since the beginning of the 2015, more than doubling by the end of June for both long and short positions. While the August 27th and 31st gains of 10.3% and 8.2% were VaR breaches for the short side neither came close to breaching the ES. So short positions sized by the Omega Metrics® ES level would have stayed within their risk budgets.

Multi-Day Risk Measurement

The single day moves don't tell the whole story. From August 17th to August 24th the WTI price dropped from 41.93 to 38.22–a 5-day loss of 8.9%. In the next five days the price rose to 49.20, a gain of 28.7%.

Much of the commentary focussed on these apparently shocking moves. But absent the context provided by accurate risk assessment, there is no way to gauge what differentiates extreme moves from the ones which must be regarded as routine.

Recent advances have allowed Omega Analysis to extend to returns for 5, 10, 15 and 20 day periods the same out of sample predictive power which Omega Metrics® VaR and ES provide for daily returns. These risk levels for WTI prices have been growing significantly for many months.

By August 17th, prior to any of the wilder swings, the 1 in 100 VaR level for a 5-day *gain* was 15.9% and the ES was 27.4%. A 5-day move that would breach that ES level was to be expected once every year and a half.

The oil price increase between August 24th and August 31st was a 5-day gain of 28.7%.[1]

The oil market is a very volatile place and risk levels have risen significantly. However unlikely the recent price swings may seem to an uninformed observer, through the lenses of accurate risk measurement, they were all too likely.

[1] On 17 August 2015 the 99% VaR and ES for 5-day losses were 16.0% and 23.3% respectively. The 5-day loss of 8.9% from 17 August to 24 August was not even a VaR breach.

Omega Analysis

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