Even the multi-day losses driven by the effect of oil prices on the resource-sensitive Canadian equity market were completely consistent with accurate assessments of current risk levels.

S&P/TSX Composite Index

Although the S&P/TSX Composite Index has not matched the explosive growth in US equities since the recovery began in 2009, it has been through a major boom. Booms are, eventually, always followed by corrections. For investors the critical questions are how big the correction will be and when it will happen.

Omega Analysis' Market Modes technology provides a partial answer to the first question. In January we published levels to which major equity indices will fall, at a minimum, when the current boom ends.[1]

The predicted declines range from substantial to severe–for example the S&P/TSX Composite Index is expected to fall at least to 12,289 –a loss of 20% from its September peak.

The S&P 500 Index is expected to fall at least to 1,234–more than 40% below its 2014 high to date.

That leaves the question of when the decline will begin. New risk technology both indicates that it will not happen until multi-day risk rises significantly above its current level, and puts the volatility of the past several weeks into context.

Risk Predictions and December's Daily Returns

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 recent collapse in oil prices was accompanied by larger than usual moves in the S&P/TSX Composite Index. There have been two breaches of the 1-day 99% VaR in the past two weeks–the first since June of 2013. Neither was more than 25 basis points beyond the VaR level. The rebound on 17 December was a minor ES breach for short sellers–10 basis points beyond the previous day's ES level and a 1 in 330 day event according to our tail model. So there has been nothing remarkable (except possibly for the news coverage) about day to day movements in the broad Canadian equity market.

Multi-Day Risk Measurement

Recent advances have allowed Omega Analysis to extend to returns for 5 and 10 day periods the same out of sample predictive power which Omega Metrics VaR and ES provide for daily returns.

Our technology shows that there have been VaR breaches at the 99% level in the 5 and 10-day returns in the S&P/TSX Composite Index since the beginning of December. None of these were close to being ES breaches. Even the multi-day losses driven by the effect of oil prices on the resource-sensitive Canadian equity market were completely consistent with accurate assessments of current risk levels.

The oil price movements themselves were somewhat more dramatic. These are the subject of a separate note.

[1] Market Cycles, Risk Measurement and Early Warning of Asset Price Bubbles, W. F. Shadwick, Fields Institute Quantitative Finance Seminar, 29 Jan 2014. http://www.fields.utoronto.ca/programs/cim/13-14/finance_seminar/Shadwick.pdf

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