The Global Equity boom cannot continue forever.
Multi-day risk levels will rise significantly from their cycle minima before the current boom turns to bust.

Market Correction: When and How Big?

Even prior to the turbulence in equity markets last week, almost nobody could have expected the boom that began in 2009 to continue uninterrupted.

The critical questions were, and remain, 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 are severe–for example the S&P 500 Index is expected to fall to at least to 1,234–more than 38% below its September peak.

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 last week into context.

Risk Predictions and Last Week'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.

In major equity markets last week, there were two breaches of our 1-day 99% VaR levels, (in the CAC 40 and FTSE 100 Indices) but only one breach of ES. (The FTSE 100 lost 2.83% on its worst day. The previous day's ES prediction was 2.81%.)

In many trading and risk management applications, control of daily loss exposures must be supplemented by some means to manage longer term losses and drawdowns–which may be large even if no individual day's losses are unusual. Some major indices (for example, the S&P 500, the Dow Jones Industrial Average, the DAX 30) had large 5-day losses last week without a single day breaching the daily 99% VaR.

Naive rules for extending daily VaR and ES to multiple day periods are inadequate for predicting such losses and so provide no way to control them.

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 5-day losses recorded last week in the S&P 500 and Dow Jones Industrial Average and 10-day losses in the CAC 40 and DAX 30, among others, were VaR breaches at the 99% level but were far from being ES breaches. Given accurate estimates of 5-day and 10-day VaR and ES, what happened last week is revealed as a fairly routine occurrence.

All of the examples of equity market cycles in the past 100 years indicate that multi-day risk levels will rise significantly from their cycle minima before the current boom turns to bust. That has now begun in major European markets and, less markedly, in the US. Last week was certainly not the end, but it was, to borrow from Churchill, perhaps the end of the beginning.

[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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