

Volatility remains a threat

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By Robert Engle

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When the Chicago Board of Options Exchange Volatility Index (Vix) touched 80 per cent last autumn, financial markets were in for a rough ride. In its entire history (since January 1990) this indicator of volatility had never been higher. Its predecessor, based on the S&P 100, reached 150 per cent on the day of the stock market crash in October 1987 but exceeded 80 per cent for only the next seven days. Calculations from historical data show volatility in the 1929 crash reached more than 100 per cent but was as high as 80 per cent only once throughout the entire Great Depression. For much of the early 1930s, volatility hovered between 40 and 60 per cent and stayed well below 80 per cent until 1987. By any historical measure, the volatility in the autumn of 2008 was very high.

Now that the Vix is back to about 30 per cent, it feels like smooth sailing again. However, this is still high volatility relative to historical levels. Normal volatility is in the range of 15 per cent to 20 per cent and during the year before the Lehman bankruptcy, it was 23 per cent.

An understanding that the fundamental cause of volatility is new information will help assess when it might return to normal. Basically, asset prices change when there is new information, used by analysts and investors, to forecast future values and risks. Some of this information is the standard economic data used by traditional analysts; some may be measures of risk tolerance or other market indicators; and some could be false information. Some information comes from official sources and some comes from the observation of trade flows that can reveal private information. New information comes in clusters leading to the well-known observation of volatility clustering in financial markets. So a way to understand volatility is to ask "when is there likely to be lots of new information?"

To answer this question, a recent paper by Gonzalo Rangel and me examined 50 countries over time to see under what circumstances financial volatilities were high*. We found that five macroeconomic features were associated with high volatility. These were: 1) high inflation; 2) low growth rate of output; 3) high volatility of the short-term interest rate; 4) high volatility of the growth of GDP; and 5) high volatility of the inflation rate. We conclude that high financial volatility is associated with both bad as well as highly variable macroeconomic times.

In light of the incredibly bad and uncertain macroeconomic outlook in the autumn of 2008, the high financial market volatility was not surprising.

At the time it was not clear whether we were heading into a 1930s style depression, a Japanese style lost decade, or a minor recession while the housing market recovered. It was not clear whether the banks as well as some insurance companies and the entire US car industry would have to be nationalised.

Would the Fed and the Treasury be able to borrow enough to support the massive obligations they were assuming? Would the prosperity of the global economy disintegrate as trade crumbled? These were the unanswered questions.

Data on VLAB, the Volatility Laboratory at NYU Stern, shows that this pattern of financial volatility was common across asset classes, sectors and countries. In fact, correlations between sectors and across countries rose dramatically in September 2008.

Today, the macroeconomic uncertainty has been reduced. Many of the dire scenarios have become far less likely. While it no longer appears that we have a chance of repeating either the Great Depression or the Japanese lost decade, it also appears unlikely that this will be just a mild recession. Massive nationalisation of the banks is no longer viewed as inevitable. The fundamental causes of financial market volatility have improved and this is naturally leading to a reduction in the observed volatility.

Could volatility rise again? It can and almost inevitably will rise again, at least temporarily. Any surprising piece of bad news will increase volatility. For example, data from the VLAB show a rise in volatility in Mexico in response to the swine flu crisis. A new crisis in another sector or region of the US economy would surely increase volatility in the US. For instance, the inability of the Treasury to sell sufficient debt at reasonable rates or a recurrence of inflation would spark volatility. A new economic or military confrontation would increase volatility.

If the fundamental cause of financial volatility is macroeconomic instability, the low volatility of the global economy from mid 2003 to mid 2007 can be understood as a result of an unprecedented period of worldwide growth, particularly in large emerging markets. Even though economic worries abounded, based on persistent balance of payments and fiscal deficits and surpluses that we now call global imbalances, inflation was low and the macroeconomic forecasts were good and certain, at least for the short run. In fact, many analysts interpret these conditions as underlying causes of our current economic crisis because low volatilities, low interest rates and low inflation encouraged investors all over the world to take on excessive risks. The predictable rise in volatility caught most investors by surprise.

Volatility is not yet back to normal primarily because macroeconomic uncertainty is not yet resolved. When the end of the recession becomes more predictable and the recovery is in sight without excessive inflation fears, then volatility should finally return to its normal level just below 20 per cent.

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** Robert Engle and Jose Gonzalo Rangel, "The Spline GARCH Model for Low-Frequency Volatility and its Global Macroeconomic Causes", *Review of Financial Studies*, vol. 21, no. 3, May 2008, pp. 1187-1222*

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