

Two Points Jamie Dimon Could Have Made if JPMorgan Had Better Statistics

1. On October 15, 2014 the sort of price move which an entire day's trading would only produce a few times per decade occurred in less than 15 minutes in the US Treasury Market.
2. On January 15, 2015, after another 'flash crash', the loss in the Euro Swiss Franc trade was beyond anything even the most advanced statistical risk technology could realistically have anticipated.

Vanishing Liquidity

Jamie Dimon's recent letter to shareholders raised important points about changes in the liquidity of markets for US Treasuries and major currencies—precisely the sort of stable, liquid assets which flights to safety have depended on in past crises.

"Then on one day, October 15, 2014, Treasury securities moved 40 basis points, statistically 7 to 8 standard deviations – an unprecedented move – an event that is supposed to happen only once in every 3 billion years or so (the Treasury market has only been around for 200 years or so – of course, this should make you question statistics to begin with). Some currencies recently have had similar large moves."

Although he didn't mention the Euro Swiss Franc exchange rate explicitly, the January 15, 2015 move as the Swiss National Bank pulled the plug on its Euro exchange rate floor was spectacularly unprecedented by Dimon's unfortunate yardstick—over 38 standard deviations from the average.

Dimon did correctly observe that the statistics behind his quoted frequency of a 40 basis point move were questionable. Anyone who is using units of standard deviation to calculate the likelihood of a market event is using a normal distribution. It is easy to check that market price movements are not normally distributed—so only nonsense is likely to follow from such analysis.

Appropriate Statistics Tell the Real Story

Statistical methods appropriate to the very fat tailed daily fluctuations in the 10 Year US Treasury market show that a difference of 40 basis points between the day's high and low is something that should be expected once every two to three years (not once in 3 billion years).

Dimon's elementary statistics distracted attention from the real story of liquidity evaporating in a key market. *The sort of move which an entire day's trading would only produce a few times per decade occurred in less than 15 minutes.*¹

How about the 38 Standard Deviation Move in the Euro Swiss Franc Exchange Rate?

The daily fluctuations in the Euro Swiss Franc rate are also fat tailed. Omega Analysis' proprietary tail models produce reliable estimates of downside exposure in this market. But even if you could accurately estimate the size of a 1 day in 10 year loss the day before the Swiss National Bank action, you couldn't have been prepared for the consequences of the Bank's announcement on January 15th.²

According to ECB data, the end of day loss was 14.4%. Using the ECB's entire prior history of the Swiss Franc Euro exchange rate, with the benefit of the best statistical technology, that sort of move could be expected only about one day in 150 years.

This is a level of loss which could never have been adequately prepared for. A major currency market where the risk is simply unpredictable is, as Jamie Dimon might have pointed out, a worrying prospect for the future.

¹ See e.g. NANEX <http://www.nanex.net/aqck2/4681.html>

² Our estimate of a 1 day in 10 year Value at Risk was 4.6% and the average loss conditional on such a VaR breach was 7.9%. Those numbers are perfectly reasonable: in the 15 year history of the Euro, we have seen one move of almost 8% (in the opposite direction to the January 2015 event).

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