

Strategy to reduce short-term volatility to prevent large scale price shocks in foreign exchange

By Richard Olsen

The credit and equity markets have been rocked by exceptional events. The currency markets have seemingly been spared of a lot of grief, even though there have been large scale price moves of 20 and 30 percent, but not as detrimental as the events in the other markets. We argue that it is only a matter of time until similarly catastrophic events occur in the currency markets. We argue that central banks have to take a pro-active role in the foreign exchange markets to dampen volatility and prevent big price shocks in the currency market. We are not arguing for large scale interventions, but for an ongoing quantitative intervention strategy to provide market liquidity in the spot currency markets, whenever there is a short-term imbalance of demand and supply. Imbalances of demand and supply have an amplified impact: price spikes trigger margin calls, which lead to a cascade of margin calls setting in train massive price dislocations.

The central bank should buy and sell currency based on a quantitative algorithm that analyses market liquidity and determines the degree of imbalance of buying and selling interest at a tick by tick level. Whenever the imbalance exceeds a certain threshold, the program sells or buys currency. In response to the added supply and the renewed balance of buying and selling volume market makers stop the price skew and cap the price overshoot. As soon as a price reversal sets in, the program will close out the position that was opened during the price spike. By providing liquidity, the central bank dampens price volatility and prevents price spikes that would otherwise trigger a whole cascade of margin calls setting in train massive price dislocations.

Evidence of tick by tick market prices and trader transaction data reveals that short-term price action is the driving force of long term price trends. The mechanism is as follows: market participants, whether they are short- or long-term, are typically over confident opening positions that are too large for the actual risk. Minor price moves in the opposite direction give rise to a margin call forcing the traders to close out their positions. They have to close their positions, which will further accelerate the price move - if the exchange rate has been dropping, because there are too few buyers and more sellers, the dropping price will generate margin calls with market participants with long positions. The traders with long positions have to sell their long positions adding to the selling volume. The price thus drops even further triggering additional margin calls and liquidations of long positions. By providing liquidity at critical moments of imbalance the central bank can short circuit this process. The proposed strategy does not attempt to protect a

particular price level for exchange rate. It is directed towards preventing massive overshoots in the price evolution.

In the past, the foreign exchange markets have experienced a massive price overshoots due to a cascade of margin calls and liquidations. The 30 percent price rise of the CAD in 2007 is such an example. Last year, the foreign exchange markets were in a relatively good state with market liquidity being relatively abundant. In the recent months, this has changed. Based on our tick by tick data analysis we observe that market liquidity has declined by approximately 80 percent. The implication is two fold: first of all the impact of any imbalances between buying and selling volume is bigger giving rise to even larger price moves. Second and even more worrisome, the reversal effect of price overshoots fails to happen. In normal market conditions price overshoots are partially reversed, when buying and selling volume gets back into balance. The mechanism is as follows: during a cascading spiral the balance between market participants going long and short is disturbed. The massive equity losses drive one group out of the market tilting the balance towards the other group. It takes an extended period of time for the balance to recover. As this happens, the price partially recovers and moves away from its lows. The more liquid a market and the bigger the diversity of traders with varying time horizons, the stronger is the price reversal. Today, because liquidity has disappeared, price reversal will be muted. The consequence is dire. If today a massive price shock occurs, the new price level will establish itself without a reversal. From a fundamental point of view, if we compare prices across countries, the exchange rates are more or less in equilibrium. If a massive price shock occurs, the dislocation will result in sub optimal prices from a fundamental point of view with the risk that these inefficient price levels will take root. The real economy will then bear the cost by having to make the costly adjustments. In today's economic environment we can ill afford this from happening. The central bank

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