Watch for the tipping point

Policymakers should consider deploying pre-emptive measures before the market reaches that point of unbalance.

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Last year, the US Commodity Futures Trading Commission (CFTC) proposed broad regulatory reforms aimed at reducing excessive speculation and protecting long term investors. The proposal was made in the wake of extremely volatile oil prices believed to be a result of unregulated trading positions held and excessive speculation made by a handful of big players such as systematic trend followers. These trend followers usually buy when prices are trending upwards and sell when prices are trending downwards.

One issue to the problem of excessive speculation was proposed last year by the CFTC. Their suggestion was to impose stricter limits on the size of open positions that traders are allowed to accumulate, when markets go through periods of extreme volatility.

Our research suggests that the proposal may not be effective.

In a recently released research report by the Singapore Management University, a type of simulation model known as agent-based models was used to study the ramifications of extreme price fluctuations and the lack of trading activity (or illiquidity) in a market environment that is increasingly dominated by speculators.

This type of innovative simulation model is particularly well suited to simulate commodity trading, due to its ability to incorporate production, consumption, storage, and physical constraints, and has shown to be able to produce results that are closer to the "normal" behavior of real-world commodity markets.

It is well known that the performance of these trend followers can be replicated, at least in theory, by using an option trading strategy known as lookback straddle. The lookback straddle strategy assumes the presence of unlimited liquidity in the market and no transaction costs; those are precisely the type of assumptions in traditional financial theory that are expected to fail.

In order for those trend followers to generate profits, their trades must be held by money-losing counterparties. It is unreasonable to assume an infinite supply of money-losing counterparties. A market with limited liquidity will reduce the trend followers' ability to generate profits.

Next, liquidity in the simulated market is methodically removed, by controlling the percentage of trend followers versus agents who resemble typical non-speculative investors. The latter make bids and offers based on random probability distributions that revert to certain long-term averages.

After the percentage of trend followers in the market reaches 80 per cent, a complete breakdown of trading is observed, with prices fluctuating from one extreme to another. Eighty per cent is not wholly unrealistic considering that in markets such as the convertible bond market, over 95 per cent of the outstanding issuing are held by speculators such as hedge funds and proprietary trading desks.

These simulations show no convincing evidence that imposing stricter position size limits as suggested by the CFTC during periods of extreme volatility will be effective in stabilizing market prices. On the contrary, doing so may also result in market chaos, when new trading limits are implemented in the midst of trading.

An alternative solution is direct/indirect intervention, such as through a market maker who may inject liquidity into the market by placing additional bids and offers. This technique is not inconsistent with the central bank activities during the recent financial crisis.

These simulations also show that injecting liquidity may yield more favorable results. When implementing such a solution, the market maker is prone to accumulate potentially large losses by buying in a one-sided falling market in which it may be the only buyer, or vice versa. Thus, no market maker is expected to voluntarily participate in any such "market rescue" efforts, without some form of government guarantee.

In summary, one key factor driving extreme price shocks is the relative proportion of speculative activities in the market, then enforcing changes to position size limits may not be a particularly effective policy tool in mitigating the breakdown of trading and therefore market prices. In fact, a direct policy solution is for a liquidity provider to step up whenever the market becomes dangerously unbalanced.

Furthermore, if extreme price shocks can be linked to liquidity, some of the recent research and policy analysis efforts that focus on predicting the next crisis by using primarily historical data may be wrong-headed. As long as the mix of market players is in flux, there is no reason to think that the next crisis will be driven by liquidity factors manifesting themselves under conditions comparable to those seen in the recent past.

Finally, the potential existence of a tipping point of market destabilization, as observed in these simulations, is a helpful reminder to policymakers that systematic risk may become extremely difficult to contain beyond that certain tipping point.

Policymakers may like to reconsider their role to be one of deploying pre-emptive measures before approaching the tipping point, rather than looking for suitable corrective measures once the point has already been breached.