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UPDATE: 'Toxicity' Metric May Help Avoid Another Flash Crash: Study

(Updates with comment from FINRA CEO in fifth paragraph.)

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NEW YORK (Dow Jones)--Regulators could help prevent another "flash crash" by following a metric that tracks how better informed traders behave during periods of high volume, according to a study from researchers at Cornell University and a major hedge fund.

The metric focuses on how much order flow is considered "toxic," or coming from traders with better information about the future direction of prices that prompts them to trade only on one side of the market. A measurement of "flow toxicity" could be a more effective warning sign for regulators to stave off future market crashes, the study's authors argue.

"Complementary to circuit breakers based on price action, they could have circuit breakers based on our metric," said Marcos Lopez de Prado, one of the authors of the study released last month and head of high frequency futures at hedge fund Tudor Investment Corp.

The study has already caught the attention of regulators as they look for ways to avoid another flash crash, especially given that Maureen O'Hara, one of the Cornell professors that co-authored the study, is a member of the Joint CFTC-SEC Advisory Committee on Emerging Regulatory Issues. The committee's first task after it was formed in mid-May was to review the market events of May 6, when stock prices fell dramatically before staging a rapid rebound, and make recommendations related to market structure issues that may have contributed to that day's volatility.

Richard Ketchum, chairman and chief executive of the Financial Industry Regulatory Authority, mentioned the study Friday during a meeting of the Joint CFTC-SEC Advisory Committee. Ketchum noted that a way for market participants to predict toxicity and hedge accordingly "could be really valuable." The question, he said, is "how do you create an environment where people can offload some of that toxicity risk?"

O'Hara, who is also chairman of the board of directors at Investment Technology Group and a member of the Financial Industry Regulatory Authority's Economic Advisory Board, has been married for 33 years to David Easley, the other Cornell professor who co-authored the study. The couple have long studied the idea of "flow toxicity." In 1996, they published their first paper on the topic.

Lopez de Prado had been following the professors' work for years, and decided to contact them after May 6 to explore the composition of order flow in the futures market leading up to and during the flash crash. Previously, O'Hara said, she and Easley had applied their research primarily to equities.

What the trio found was that the "flow toxicity" in the futures market reached heightened, surging levels in the days and the hours leading up to the flash crash. They believe that if their indicator existed on May 6 and thus could have been followed in the days and the hours leading to the historic crash that afternoon, it might have been limited or even prevented.

The metric, called Volume-Synchronized Probability of Informed Trading (VPIN), measures the fraction of volume-weighted trade that comes from informed traders who tend to trade on one side of the market, leading to unbalanced volume.

The study's authors argue that their VPIN metric works as an indicator of looming crashes because when order flows are becoming unbalanced, the potential for losses on the part of liquidity providers increases, making them more likely to leave the market and thus lead to a lack of liquidity.

The solution, Easley, Lopez de Prado, and O'Hara say in their report, could be to use their VPIN metric to measure risk as well as to manage it.

As a measurement of risk, the VPIN metric could help market participants "anticipate a rise in volatility and estimate the risk of a liquidity-induced crash," they say.

The authors also suggest it could be used "as a warning sign for market regulators, who may decide to slow down or stop market activity as flow toxicity reaches levels comparable to those witnessed on May 6th."

In managing risk, an exchange-traded future based on the VPIN metric could be created, making a "visible reading of flow toxicity," which liquidity providers could use to hedge risk, the report's authors suggest.

BACK TO TOP

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(Kristina Peterson contributed to this article.)

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