

Research proposes a virtual speed bump for lightning-fast markets

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UBC Sauder's Markus Baldauf says a tiny tweak to how certain trades happen could make for more efficient stock markets, and it's already being adopted by major players.

The blink of an eye takes just a tenth of a second, but that's an eternity in today's [stock markets](#), where automated transactions are calculated in millionths of seconds.

Stock market traders have always relied on speed to gain [competitive advantage](#), but over the past 10 to 15 years, the development of high frequency trading technology has changed the game—to the point where investors can make fortunes by buying and selling in minuscule increments of time.

Some are concerned that this so-called "arbitrage strategy"—which involves simultaneously buying and selling to take advantage of minute differences between prices—could affect the health of the overall market.

But researchers at the UBC Sauder School of Business and at Kellogg School of Management are proposing a key fix: a virtual speed bump.

"Two things that we care about as traders are liquidity and the informativeness of prices. Liquidity happens when transaction costs are small—so if I buy something and sell it immediately afterwards, how much money do I lose? If that's a small amount, then that's a good market," explains UBC Sauder assistant professor Markus Baldauf, a co-author of the study.

"If that difference is big, then that market is illiquid and that's a bad thing," he says. "We also want prices to reflect reality, and the value of companies, because they are a barometer of how well the economy is doing."

To test the impacts of high frequency trading on these market measures, Baldauf applied a mathematical model that looked at liquidity as well as informativeness of prices—that is, how much information security

prices reflect about fundamentals.

Liquidity providers simultaneously offer to buy and sell a stock, which yields the bid-ask spread of the market. When setting their bids and offers, they balance the needs of traders to buy or sell, as well as their risk of being on the losing end of a trade.

Next, think about how traders respond to information that should cause prices to shift. Liquidity providers race to reprice their bids and offers. But at the same time, arbitrage traders race to hit the original quotes at the stale prices. This all happens in milliseconds.

To protect against the risk of losing those races, liquidity providers charge a larger spread between buyers and sellers. In other words, having the arbitrage traders in the race makes markets less liquid. It can also lead to less informative [prices](#).

The researchers proposed a way to reduce the impact of arbitrage traders: impose a short delay on the processing of their orders, which throws an extremely high-speed wrench into their [market](#)-skimming strategy, and still allows regular traders to make their moves. As Baldauf puts it, "The race is basically the outcome of a coin toss, but we want to tilt it slightly in favour of the liquidity provider."

Baldauf says that while some experts have proposed sweeping changes that could have a significant impact on markets, his team's proposed change is smaller and more surgical—so it would still achieve the same aims without incurring larger risks.

Already several exchanges have shown interest in the approach, among them the Cboe EDGA equities exchange, which earlier this year approached the U.S. Securities Exchange Commission about slowing [liquidity](#)-removing orders by as little as a few milliseconds.

"We often take trading rules and norms in markets as given, but really we can change them. It's up to [policy makers](#) and regulators to say, 'What are the rules of the game, and should we change them?'" says Baldauf, who adds that markets evolve just as languages do.

"We find that a small tweak to the existing system can create big changes, and that regular investors and institutional investors will be better off as a result."

More information: Markus Baldauf et al, High-Frequency Trading and Market Performance, *SSRN Electronic Journal* (2015). [DOI: 10.2139/ssrn.2674767](#)

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