

Study finds evidence that stock prices can be predicted within a short window of time

February 4 2014, by Tom Snee

A new study from the University of Iowa shows evidence that stock price movements are, in fact, predictable during short windows.

The study by researchers in the Tippie College of Business suggests that price movements can be predicted with a better than 50-50 accuracy for anywhere up to one minute after the [stock](#) leaves the confines of its bid-ask spread. Probabilities continue to be significant until about five minutes after it leaves the spread. By 30 minutes, the predictability window has closed.

The researchers—Nick Street, professor of [management sciences](#), and doctoral student Michael Rechenthin—say the work questions the generally held belief that stock [prices](#) cannot be predicted. While factors like news or financial reports can move stock prices, the thinking holds, nothing inherent in a price's trend line can be used to predict where the price goes next.

"This study is the first step in showing that there is predictability, and that once a price escapes the confines of the bid-ask spread, it's showing a trend," says Rechenthin, a former Chicago Stock Exchange floor trader whose dissertation looks at building models for predicting future stock price direction. "In other words, it's more than just a coin flip where the price goes."

The study examined price movements of a single stock—the S&P 500 exchange traded stock fund (SPY)—during 2005. The stock holds all

500 Standard and Poor's stocks and is considered representative of the overall U.S. market. It's also one of the most heavily traded equities on the market, with an average of more than 90,000 transactions a day during the study period, so it provides a wealth of study data.

Their analysis found no predictability of the stock's price within the bid-ask spread—that is, the space between the price that buyers are willing to pay for a stock (the bid) and the price sellers are willing to sell it for (the ask)—as the market tries to set the value of an asset. The key to their study is what happens once traders did set a value and the price escaped that spread. Once it did escape, the study tracked the stock's price at 1, 3, 5, 10, and 20 seconds, and 1, 5, and 30 minutes.

The study found the [stock price](#) typically broke the spread after five to ten seconds, and the [predictability](#) of its subsequent movements depended on the pattern of its most recent trades. For instance, if the stock's two most recent trades were an uptick followed by a downtick, there was a 52 percent probability the trend reversed itself within five seconds. Within 20 seconds, it had a 43 percent probability of reversal.

Rechenthin says these trends are driven only by previous trade prices because other factors that drive price—news or financial statements—cannot be incorporated into a price in such a short window.

While a 52 percent probability may not seem like much of a better probability than 50 percent, Street points out that in the ocean of data that is stock trading, it is a notable increase, and something that can be exploited. The next step is to develop a working model that takes advantage of these probabilities for more efficient trading.

More information: The study, "Using conditional probability to identify trends in intra-day high-frequency equity pricing," was published recently in the journal *Physica A*.

www.sciencedirect.com/science/.../ii/S0378437113007140

Provided by University of Iowa

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