

## Explainer: the good, the bad, and the ugly of algorithmic trading

By Marco Navone and Talis Putnins, The Conversation, 28 november 2016

5 Algorithms are taking a lot of flak from those in financial circles. They've been blamed for a recent flash crash in the British pound and the greatest fall in the Dow for decades. Government agencies are taking notice and are investigating ways to regulate algorithms. But the story is not simple, and telling the "good" algorithms from the "bad" isn't either.

### **The ins and outs of trading algorithms**

Taken in the widest sense, algorithms are responsible for the vast majority of activity on modern stock markets. There are many different types of algorithms at play, with different intentions and impacts.

10 Institutional investors such as super funds and insurance companies rely on execution algorithm to transact their orders. These slice up a large order into many small pieces, gradually and strategically submitting them to the market. The intention is to minimise transaction costs and to receive a good price.

15 Algorithms drove the human market makers out of business by being smarter and faster. Most market-making algorithms, however, don't have an obligation to maintain an orderly market. When the market gets shaky, algorithms can (and do) pull out, which is where the potential for "flash crashes" starts to appear – a sudden drop and then recovery of a  
20 securities market.

Further concerns about algorithmic trading are focused on another kind – proprietary trading algorithms. Hedge funds, investment banks and trading firms use these to profit from momentary price differentials, by trading on statistical patterns or exploiting speed advantages.

25 Rather than merely optimising a buy or sell decision of a human trader to minimise transaction costs, proprietary algorithms themselves are responsible for the choice of what to buy or sell, seeking to profit from their decisions. These algorithms have the potential to trigger flash crashes.

### **Fast vs. slow algorithms**

30 Many traditional portfolio managers use mathematical models to inform their trading. Nowadays such strategies are often implemented using

algorithms, drawing on large datasets. Although these algorithms are often faster than human portfolio managers, they are “slow” in comparison to other algorithmic traders.

35 In high-frequency algorithmic trading (HFT), speed is fundamental to the strategy. These algorithms operate at the microsecond scale, making decisions and racing each other to the market using an array of different strategies. Winning this race can be highly profitable – fast traders can exploit slower traders that are yet to receive, digest or act on new  
40 information.

Proponents of HFT argue that they increase efficiency and liquidity because market prices are faster to reflect new information and fast market makers are better at managing risks. Many institutional investors, on the other hand, argue that HFTs are predatory and parasitic in nature.  
45 According to these detractors, HFTs actually reduce the effective liquidity of the stock market and increase transaction costs, profiting at the expense of institutional investors.

**The effects of algorithms are complicated**

A recent study found considerable diversity across algorithmic traders.  
50 While some algorithms are harmful to institutional investors, causing higher transaction costs, others have the opposite effect.