

## Curbing the Dangers of High-Frequency Trading

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On May 6, 2010, the Dow Jones Industrial average lost and re-gained over 1000 points within a space of minutes. The nearly immediate rebound, which distinguishes such a “flash crash” from a typical stock market crash, was previously unprecedented. High-frequency trading (HFT) is widely acknowledged to have contributed to the flash crash. HFT strategies are commonly thought to be correlated, and there is necessarily delay in checking the progress of these strategies; thus HFT could exacerbate price swings while not necessarily initiating them.

In addition to fostering this kind of instability, HFT has been criticized for other reasons. There are a number of tactics that HFT traders employ in order to hide their trading intentions from others, and to manipulate the behavior of “slow” traders. Because of the high fixed costs of HFT, it is not available to many market participants (although this may be changing, through contracting between smaller investors and owners of HFT infrastructure).

There are also a number of purported benefits of HFT, including efficient use of market information, better linkage between fragmented markets, and improved liquidity and lower bid-ask spreads for all traders. If policy is to constrain trading in general and HFT in particular, a goal to aim for would be to retain the benefits of HFT while eliminating or mitigating the problems. Mandating short, regular delays in trading would accomplish exactly this.

### **High-frequency trading and algorithmic trading**

It is important to note the distinction between HFT and algorithmic trading (AT). The latter is the use of electronic systems to place trading orders, including algorithms to decide some or all details of the orders. Such systems are often used to place orders without any human intervention. The distinguishing characteristic of HFT is that trading decisions are made and implemented more quickly than humans possibly could. Thus, HFT is by its nature a subset of AT, but it is certainly possible for trading to be algorithmic but not high-frequency.

The much discussed benefits of HFT are, in fact, largely benefits of AT. Perhaps the most socially valuable benefit, the efficient aggregation of information, relies on automated processing but not on the frequency of trades. At a more fundamental level, automated processing reduces the costs of trading by eliminating the need for human floor traders, again with no relation to trading frequency. The higher trading volumes engendered by HFT are not themselves evidence of improved liquidity; HFT traders at times supply liquidity to the market, but at other times demand and compete for liquidity. The technological facilitation of exchange does have a dramatic effect on liquidity, but AT captures this benefit without HFT. According to a recent article by Hendershott, Jones, and Menkveld in the *Journal of Finance*, the narrowing of bid-ask spreads commonly attributed to HFT is due to greater informational efficiency, and is not necessarily dependent upon the sheer volume of transactions.

Even accepting that HFT, as distinct from other kinds of AT, does create some additional market liquidity and some narrowing of bid-ask spreads, there is almost no social benefit created. The stock market is enormously beneficial insofar as it allows firms to raise capital easily; but the vast majority of stock trades involve previously existing shares and thus do not have a direct effect on the firm whose shares are being traded. There is of course some correspondence between a firm's real economic activity and the trading of its shares; for example, the share price affects whether a management buyout or hostile takeover is attractive. However, this correspondence is not affected to any significant degree by HFT: HFT activity just changes the prices slightly more quickly. The elimination of HFT would cause significant losses to those who currently profit by it, but these would primarily be transfers from other market participants, not net social losses. In addition, engaging in HFT is itself costly, because of the need for sophisticated equipment, and these costs would be eliminated. Finally, in the worst case, HFT introduces paralyzing and potentially catastrophic instability. Social welfare is thus greater in the complete absence of HFT.

### **A proposal and its implications**

An outright ban on HFT poses major difficulties. In addition to the political feasibility of such a ban, there is the issue of defining the frequency limit. More importantly, there may not be any practical way to prohibit it.

However, it is possible to preclude HFT while still obtaining the benefits of AT, simply by dividing the trading day into discrete time periods, i.e. imposing a delay between rounds during which orders are executed, effectively replacing the current system of continuous trading with a series of call auctions. The ideal length of the delay (perhaps a few minutes) would depend on the practicalities of the trading process. Andrew Haldane, the Bank of England's Executive Director for Financial Stability, refers to the imposition of such delays in trading as "resting rules." Orders could be placed at any time but would wait until the next round for potential execution; there would be no market clearing or price movement during the rest periods. As another practical matter, it might be desirable to coordinate trading breaks among platforms such as the NYSE and NASDAQ, although this would not be necessary for the breaks to serve their purpose. If similar rules were not adopted outside the U.S., some trading activity would likely move abroad, but this would not be a problem for the U.S. exchanges insofar as the trading that leaves is undesirable.

Resting rules would have the same effect as the trading curb known as a "circuit breaker," a temporary halt in trading that is mandated if the market reaches a threshold of volatility. Traders would have the ability to assess their positions between successive trades, eliminating the potential for a shock to the market to lead to a flash crash. Resting rules are effectively circuit breakers that are regularly implemented, regardless of the actual degree of volatility. One advantage of resting rules is their simplicity: there is no need to determine an appropriate volatility threshold, or to determine how different volatility thresholds would apply to various market segments or individual stocks, or to monitor the market in order to determine when a circuit breaker should be implemented.

Resting rules at once address a number of concerns, all of which have been raised by the U.S. Securities and Exchange Commission. They minimize the possibility of

executing stub quotes (very low bids or very high offers that are not intended to be executed); preclude flash trading (displaying orders for a fraction of a second, which can be a means of gathering information); and obviate the need for a minimum time-in-force rule (which would prevent orders from being cancelled soon after being issued).

In sum, the imposition of resting rules would allow the stock market to serve its purpose and would also lend stability to the market. I am certainly not the first or the only person to have this idea, but it is very difficult to find more than a passing mention of anything like it in any public forum, either within or outside academia (a working paper by Harris touches on the issue very briefly). There are sure to be political hurdles to such a bold step in the regulation of trading, as well as practical issues in the implementation of such a change. But given the strength of the argument in favor of mandating resting rules, it is at least deserving of consideration.

### **References and further reading**

Biais, B., and P. Woolley (2011), “High Frequency Trading,” working paper. (Includes thorough explanations of the costs and benefits of HFT.)

Haldane, A. (2011), “The Race to Zero,” speech at the International Economic Association 16th World Congress, < <http://www.bankofengland.co.uk/publications/speeches/2011/speech509.pdf>> (accessed December 14, 2011). (Brief discussion of resting rules on p. 18.)

Harris, L. (2011), “The Homogenization of US Equity Trading,” working paper.

Hendershott, T., C.M. Jones, and A.J. Mankveld (2011), “Does Algorithmic Trading Improve Liquidity?” *Journal of Finance* 66, 1-33. (Addresses some benefits of AT not specific to HFT.)