

The need for less speed

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High-frequency trading may be about to slow down. Regular investors, looking for fundamental value, would be pleased

Most people think of Wall Street as the home of financial trading in the US, if not the world. But many important contracts – in particular futures and options – are traded in Chicago. Chicago is 1,000 miles away if you follow the wiggles of the railway lines, which is what communications cables have tended to do. And why not? It's much easier to negotiate permission to lay wires along the tracks, and a message can still get from New York to Chicago and back in 14.5 milliseconds – that's 70 round-trips a second.

But a 14.5 millisecond trip is just too slow for some. In the summer of 2010, a company called Spread Networks completed a fibre-optic cable connection, having secured rights of way along a more direct route: just 825 miles. According to Wired magazine last year, the result was a 13.1 millisecond return trip. Now, as my colleague Clive Cookson recently reported, over a dozen new networks using microwave transmitters promise to reduce the time for a return connection to nine or perhaps even 8.5 milliseconds. Usain Bolt's reaction time in the 2012 Olympic 100m final? 165 milliseconds.

"High-frequency trading" is a rich environment of algorithms, of predators and prey, all trying to make money by trading financial products at tremendous speed. But the basic proposition is simple to state. When the price of a share rises in New York, the price of related contracts will rise in Chicago just as soon as the news arrives. But if everyone else gets the news on the regular cable, and you're renting space on the faster cable, you can see into everyone else's future by (say) 0.7 milliseconds, plenty of time to buy soon-to-rise assets and then, less than a thousandth of a second later, to sell them again.

You don't have to be a socialist to find this kind of thing discomfiting. There are three concerns. The first is that scarce resources are being spent on high-speed connections that have no social value in what is at best a zero-sum game. The second is that high-frequency traders may be making money at the expense of fundamental investors. The third problem is that such trading appears to introduce systemic risks. The "flash crash" of May 2010 is still poorly understood, which should ring alarm bells – especially since the need for speed means most high-frequency algorithms are simple and therefore stupid.

What, then, should be done? Rather than trying to slow down the algorithms, why not slow down the market? Most financial exchange markets run continuously, effectively assuming that traders can react instantaneously, withdrawing out-of-date offers and replacing them with up-to-the-picosecond prices. It's this flawed premise – that all trades could be instantaneous – that means that no matter how fast the computers get, there will always be an incentive to go faster still.

A simple way for an exchange to improve matters would be to run an auction once a second, batching together all the offers to buy and sell that have been submitted during that second. Unsuccessful bids and asks would be published and would

remain on the books for the next auction, unless withdrawn. One auction a second ought to be enough for anyone; it would deliver a stream of well-behaved data to regulators – currently unable to figure out what is going on – and it is plenty of time for a computer to weigh its options.

Could this happen? Perhaps. Two teams of economists – Doyne Farmer and Spyros Skouras in Europe, and **Eric Budish, Peter Cramton and John Shim** in the US – are exploring the concept. Regular investors, looking for fundamental value, would be pleased. Even the exchanges themselves may have something to gain from improving the way their businesses work.

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