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# High-frequency trading and a financial transactions tax

## **Abstract**

High-frequency trading is the practice of using computerised algorithms to hold investment positions for very short periods of time, influence the market and profit from the distortions. Analysis of the practice reveals that it may threaten the stability of the market. For example, it contributed to the 6 May 2010 'flash crash'. This article considers how to limit high-frequency trading and minimise its negative effects, including the efficacy of levying a financial transactions tax on high-frequency trades or financial transactions generally. It also notes the possible application of insider trading laws to high-frequency trading.

## **Keywords**

high-frequency trading, HFT, algorithms, financial transactions tax, Tobin tax, flash crash, insider trading

# HIGH-FREQUENCY TRADING AND A FINANCIAL TRANSACTIONS TAX

JF CORKERY & KRISTEN ZORNADA<sup>1</sup>

High-frequency trading is the practice of using computerised algorithms to hold investment positions for very short periods of time, influence the market and profit from the distortions. Analysis of the practice reveals that it may threaten the stability of the market. For example, it contributed to the 6 May 2010 'flash crash'. This article considers how to limit high-frequency trading and minimise its negative effects, including the efficacy of levying a financial transactions tax on high-frequency trades or financial transactions generally. It also notes the possible application of insider trading laws to high-frequency trading.

## INTRODUCTION

British author Robert Harris tells a good story. His latest novel, *The Fear Index*,<sup>2</sup> concerns a fictional Geneva-based hedge fund and its role in a dramatic 24-hour market 'flash crash' event. The genius mathematician protagonist, Dr Alex Hoffmann, devises algorithms for his hedge fund's computer system, VIXAL-4, which trawls the web unearthing information on the markets. In milliseconds, the system exploits this information to make successful micro-trades. The almost instantaneous trades, with their lightning micro-wins, soon mount up and provide massive profits for the hedge fund. That is, until the power of the program plunges the market (and the life of Dr Hoffmann) into peril.

Although the plot of *The Fear Index* is fictitious, its premise is very real. In fact, on Thursday 6 May 2010, the market experienced just such an amazing 'flash crash' following a period of intense high-frequency trading with particular shares. The Dow Jones Industrial Average swooped down 9% or 1000 points and then jumped back up again in 15 minutes.<sup>3</sup> The market lost about \$1 trillion in that one swoop. It was an unprecedented intraday swing—the largest in the history of the Dow Jones. After months of investigation, a joint report by the Commodities Future Trading Commission ('CFTC') and the US Securities and Exchange Commission ('SEC') found that the fragmented and fragile market was sent into this sudden spiral by the sale of an unusually large number of E-Mini S&P 500 contracts, which exhausted available buyers.<sup>4</sup> High-frequency traders ('HFT') then begun aggressively selling, exacerbating the effect of the initial sale, and contributing to the sharp price declines that day.

The events of 6 May 2010 highlighted the potential repercussions of high-frequency trades, which challenge the traditional definition of market making and market stability. But what is it about high frequency trades that threaten financial markets as we know them? And how, if at all, should their influence be controlled?

## WHAT IS HIGH-FREQUENCY TRADING?

High-frequency trading is the use of computer algorithms to engage in very rapid acquisition of investment positions. These are only held briefly – from micro-seconds to hours – before being liquidated, a process that occurs thousands of times a day. At the end of a trading day, there is no net investment position. The process can be incredibly rapid. The speed at which positions are acquired and liquidated is crucial to the success of

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<sup>2</sup> See Robert Hughes, *The Fear Index* (Cornerstone Publishing, 2011).

<sup>3</sup> US Securities & Exchange Commission and US Commodity Futures Trading Commission, *Findings Regarding the Market Events of May 6, 2010: Report of the Staffs of the CFTC and the SEC to the Joint Advisory Committee on Emerging Regulatory Issues* (online) (30 September 2010), <http://www.sec.gov/news/studies/2010/marketevents-report.pdf>.

<sup>4</sup> Ibid.

the trade. High-frequency trading apparently accounts for up to 75% of all buying and selling of US equities,<sup>5</sup> and HFT constantly strain to trade even faster.

High-speed servers are linked to financial exchanges via fibre-optic cables as short as physically possible, as each extra mile slows the transaction by about eight microseconds.<sup>6</sup> Current technology allows trades to occur thousands of times per second. The fastest exchanges are executed in about 10 microseconds—the time required for a jet airplane to travel a quarter of a centimetre.<sup>7</sup> Rapid improvements in technology look to shorten that rate to millions of trades per second.

Given the huge gains that stand to be made, no expense is spared in investing in technology that can quicken trading time. This level of investment goes to the core of the hardware of the financial markets—the computers that process trades on the exchange. HFT pay NYSE Euronext, the conglomerate that includes the New York Stock Exchange, to house their high-frequency trading servers in the same building as their trade-processing computers.<sup>8</sup> Engineers add extra cable length to high-frequency trading servers that are closer to the input, to equalise the effect for those servers located further away. Even a few metres make a difference.

The same is occurring in the Australian Stock Exchange's ('ASX') Sydney data room. The difficulty arises because the ASX is no longer a regulator, but a business, and therefore is no longer willing or able to stop HFT. Indeed, the ASX actually profits from the revenue generated from renting out computer space in the data room to HFTs.<sup>9</sup>

It was just such computers engaging in high-frequency trades that buy and sell thousands of times per second that caused the 2010 'flash crash'. Despite an extensive investigation and efforts to prevent reoccurrences, many small crashes have taken place since. In early 2011, for example, the share price of an insurance company called Enstar Group Ltd fell from about US\$100 to \$0, and rose back up to \$100 in a few seconds.<sup>10</sup>

While those who stand to benefit from high-speed trading were quick to leap to its defence vis-à-vis the 2010 'flash crash',<sup>11</sup> few others understood it.<sup>12</sup> No one had any realistic suggestions for how to control it, either (except Luddite-style, by blowing up the computers, which is exactly what the doomed protagonist in Harris' novel did).

As Buchanan notes, it is the circumvention of the human element involved in these trades that makes them frightening: 'since we don't know what's causing these sudden shifts, we can't be sure that one as big as, or

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- <sup>5</sup> The *New York Times*, 'High-Frequency Trading', *The New York Times: Times Topics* (online), 26 September 2012, available online at: [http://topics.nytimes.com/topics/reference/timestopics/subjects/h/high\\_frequency\\_algorithmic\\_trading/index.html](http://topics.nytimes.com/topics/reference/timestopics/subjects/h/high_frequency_algorithmic_trading/index.html); Daniel Gross, "'Flash-Crash' Was a Warm-Up: Computerized Trading Threatens Global Financial System, Author Says", *The Daily Ticker* (online), 18 June 2012, <http://finance.yahoo.com/blogs/daily-ticker/flash-crash-warm-computerized-trading-threatens-global-financial-152033499.html>.
- <sup>6</sup> Jerry Adler, 'Raging Bulls – How Wall Street Got Addicted to Light-Speed Trading', *Wired Magazine* (online), 8 March 2012, [http://www.wired.com/business/2012/08/ff\\_wallstreet\\_trading/](http://www.wired.com/business/2012/08/ff_wallstreet_trading/).
- <sup>7</sup> Mark Buchanan, 'With High-Speed Trading, the Market Cannot Hold', *Bloomberg* (online), 5 October 2011, <http://www.bloomberg.com/news/2011-10-05/with-high-speed-trading-market-cannot-hold-commentary-by-mark-buchanan.html>.
- <sup>8</sup> Adler, above n 6.
- <sup>9</sup> Alan Kohler, 'High-Frequency Trading is Cuckoo', *Business Spectator* (online), 11 April 2012, <http://www.businessspectator.com.au/bs.nsf/Article/ASX-high-frequency-trading-HFT-markets-NYSE-pd20120411-T8S3V?opendocument&src=rss>.
- <sup>10</sup> Buchanan, above n 7.
- <sup>11</sup> See, eg, Simone Foxman, 'In Defense of High-Frequency Trading: Regulate It, Don't Destroy It', *Quartz* (online), 26 September 2012, <http://qz.com/7449/in-defense-of-high-frequency-trading/>; Bernard S Donefer, 'High-Speed Trading is Progress, Not Piracy', *Bloomberg* (online), 11 April 2012, <http://www.bloomberg.com/news/2012-04-10/high-speed-trading-is-progress-not-piracy.html>.
- <sup>12</sup> See Gino Vicci, 'Critics Weigh in on High-Frequency Trading on Flash Crash Anniversary', *Huffington Post* (online), 9 May 2012, [http://www.huffingtonpost.com/gino-vicci/high-frequency-trading\\_b\\_1504418.html](http://www.huffingtonpost.com/gino-vicci/high-frequency-trading_b_1504418.html).

even bigger than, the May 2010 event won't occur tomorrow, or next week'.<sup>13</sup> The trading is driven by computer experts ('quants') who program computers for massive statistical analysis. It sometimes takes computers only milliseconds to essentially 'sense' an opportunity, get in front of exploiting the opportunity before it is known to the rest of the market, and trade in and out on a stock. HFT:

make money in a vacuum, grabbing for pennies that appear and disappear like the virtual particles of quantum field theory. Their goal is to end each trading day 'flat' —out of the market, their profits safely in the bank. Depending on their model, they can do well winning as little as 55 percent of their trades. They are continuously testing prices, looking for patterns and trends or the chance to buy something in one place for \$1 and sell it somewhere else for \$1.01, or \$1.001. Sometimes they aren't even looking to make money on the trade itself. Under the 'maker-taker' model, some exchanges offer tiny incentive payments, or rebates, for posting a quote (to buy or sell a stock) that results in a trade. The exchange charges the other side in the trade, the taker, a slightly higher fee and collects the difference. So an algo can buy a stock, earn a rebate, then sell the stock and earn a rebate for that too.<sup>14</sup>

The contrast between algorithmic trading systems and human investors is stark. The former buy or sell based on rules linked to price levels and the timing of market movements. The latter's method of investing is to use bottom-up economic analysis of markets, rather than abstract mathematical theorems. Human investors make judgments based on perceptions. Without humans around, machines 'are left to eat each other up', and subsequent movement in the market is because 'there's no one else in there but the machines'.<sup>15</sup> The machines push and pull the share prices, regardless of the health or prospects of the underlying company. The company's value and financial prospects, so important to the investor, are irrelevant to the computer.<sup>16</sup> The computer is the 'nerdiest' of speculators.

In theory, high-speed trading makes the markets more liquid. It allows shares to be sold more easily and quickly at a price chosen by the seller, ie, the 'bid' to 'ask' spread is narrower. However, high-frequency trades have introduced too much liquidity to the markets. Swings are becoming far more frequent, with some shares on the US and Australian markets fluctuating by 5% or so in quick time. Swings that once took weeks or days now take a few minutes.<sup>17</sup> Good or bad news produces an almost instantaneous and exaggerated result on the market.

## CRITICISMS OF HIGH-FREQUENCY TRADING

The 2010 'flash crash' is merely the most obvious symptom of a market affected by a malaise brought on by high-frequency trading.<sup>18</sup> The more subtle concern is that the market not longer functions in accordance with its *raison d'être*. The stock market, as it was originally conceived, had the role of supplying or focusing investors' wealth to fund business growth and to allow investors to freely exchange their investments. Since nations began to trade, the stock market has engineered business growth. But the markets are now less able to attract and direct funds. Driven by massive computer power, the modern stock exchange risks alienating the true investor and losing its capacity of raising funds for companies. Companies are less willing to list on the stock markets—the number of initial public offerings has diminished, while regulation and the cost of share 'floats' has increased.<sup>19</sup>

Is this form of instantaneous trading wrecking the markets, so that we will no longer use them as a conduit for investment in businesses? There are strong critics who answer in the affirmative.<sup>20</sup> Unusually, these critics now

<sup>13</sup> Buchanan, above n 7.

<sup>14</sup> Adler, above n 6.

<sup>15</sup> Cynthia Lin, 'Price Swings Turbocharged as Robots Take Control of Trading', *Wall Street Journal* (online), 5 December 2011, <[http://online.wsj.com/article/SB1000142\\_4052970204012004577076410452994138.html](http://online.wsj.com/article/SB1000142_4052970204012004577076410452994138.html)>.

<sup>16</sup> Roger Lowenstein, 'A Speed Limit for the Stock Market', *The New York Times* (online), 1 October 2012, <[http://www.nytimes.com/2012/10/02/opinion/putting-the-brakes-on-high-frequency-trading.html?\\_r=0](http://www.nytimes.com/2012/10/02/opinion/putting-the-brakes-on-high-frequency-trading.html?_r=0)>.

<sup>17</sup> Ibid.

<sup>18</sup> Gross, above n 5.

<sup>19</sup> John Lessing, *Lectures in Takeover Law* (Centre for Commercial Law, Bond University, 2012) 5-7.

<sup>20</sup> See DM Levine, 'High Frequency Trading Critic Joseph Saluzzi: Markets Have Become Casinos', *Huffington Post* (online), 6 June 2012, <[http://www.huffingtonpost.com/2012/06/06/high-frequency-trading\\_n\\_1574703.html](http://www.huffingtonpost.com/2012/06/06/high-frequency-trading_n_1574703.html)>; Scott Patterson,

include insiders, who know well the foibles of the markets and normally know how to use them to their advantage. Jesse Eisinger of the *NYTimes*:

The insiders have a critique similar to that of the outsiders. The financial industry has strayed far from being an intermediary between companies that want to raise capital so they can sell people things they want. Instead, it is a machine to enrich itself, fleecing customers and widening income inequality. When it goes off the rails, it impoverishes the rest of us. When the crises come, as they inevitably do, banks hold the economy hostage, warning that they will shoot us in the head if we don't bail them out.<sup>21</sup>

The 2011 'Occupy Wall Street' movement criticised financiers for their relentless and computer-fuelled quest to enrich themselves, shake down their own customers and exacerbate inequality.<sup>22</sup> The movement alleges many ills in US business, including that the 'big banks' had caused most of the US's financial problems. Evidently, Wall Street and other stock markets are losing trust as investment facilitators. While it is asking much for Wall Street to reform itself, reform it must, or risk being seen as primarily predatory and even irrelevant.

### THE ANSWER—A SMALL FINANCIAL TRANSACTIONS TAX

Despite the frightening repercussions of high-speed trading, few seem willing or able to control it. It seems the horse has bolted: high-frequency trading accounts for up to 70% of the volume on US stock exchanges (including the NYSE),<sup>23</sup> although this figure is less for Australia.<sup>24</sup>

What is the solution? The answer to this modern problem may in fact be an old one: a Financial Transactions Tax ('FTT'). Such a tax, in the form of stamp duty, was first implemented at the London Stock Exchange in 1694. It regained popularity following the Great Depression, when John Maynard Keynes advocated the application of a FTT to dealings on Wall Street, arguing that excessive speculation by uninformed financial trades increased volatility.<sup>25</sup> Keynes' work would later influence the Nobel Prize-winning economist James Tobin, who proposed a specific currency transaction tax for stabilising currencies on a global scale (the 'Tobin tax').<sup>26</sup>

On 1 August 2012, at the initiative of former President Nicolas Sarkozy,<sup>27</sup> France implemented a Tobin tax on financial transactions.<sup>28</sup> The tax applies to high-frequency trading and 'naked' short sales of sovereign credit-default swaps. It is not particularly ambitious: the 0.2% tax is levied only on purchases of shares in companies

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'Mark Cuban: High Frequency Traders Are the Ultimate Hackers', *Wall Street Journal* (online), 26 June 2012, <<http://blogs.wsj.com/marketbeat/2012/06/26/mark-cuban-high-frequency-traders-are-the-ultimate-hackers/>>.

<sup>21</sup> Jesse Eisinger, 'On Wall Street, Some Insiders Express Quiet Outrage', *The New York Times* (online), 30 November 2011, <<http://dealbook.nytimes.com/2011/11/30/on-wall-street-some-insiders-express-quiet-outrage/>>.

<sup>22</sup> 70 Harvard students protested by walking out of one of Professor Mankiw's November 2011 introductory economics classes. They sent an open letter to their professor, complaining that his course 'espouses a specific — and limited — view of economics that we believe perpetuates problematic and inefficient systems of economic inequality in our society today': see Louis Lavelle, 'Harvard Students, Citing Economic Inequality, Stage Walkout', *Bloomberg Business Week* (online), 8 November 2011, <[http://mobile.businessweek.com/bschools/blogs/mba\\_admissions/archives/2011/11/harvard\\_students\\_citing\\_economic\\_inequality\\_stage\\_walkout.html](http://mobile.businessweek.com/bschools/blogs/mba_admissions/archives/2011/11/harvard_students_citing_economic_inequality_stage_walkout.html)>.

<sup>23</sup> Lowenstein, above n 16.

<sup>24</sup> Kohler, above n 9.

<sup>25</sup> Dr Stephen Spratt, *Stamp Out Poverty Report: A Sterling Solution* (September 2006) Stamp Out Poverty <[http://www.stampoutpoverty.org/wf\\_library\\_post/a-sterling-solution/](http://www.stampoutpoverty.org/wf_library_post/a-sterling-solution/)> 15.

<sup>26</sup> Andrew Walker, 'What is a Tobin Tax?', *BBC Business News* (online), 2 November 2011, <<http://www.bbc.co.uk/news/business-15555812>>.

<sup>27</sup> Ruperte Neate, 'France plans Tobin tax on financial transactions', *The Guardian* (online), 30 January 2012, <<http://www.guardian.co.uk/business/2012/jan/30/france-tobin-tax-nicolas-sarkozy>>.

<sup>28</sup> Helene Fouquet and Mark Deen, 'Sarkozy Says France Will Impose Transaction Tax in August', *Bloomberg* (online), 31 January 2012, <<http://www.bloomberg.com/news/2012-01-29/financial-transaction-tax-in-france-to-take-effect-in-august-sarkozy-says.html>>.

with a market capitalisation of over €1 billion.<sup>29</sup> However, its intention is clear: to smother speculators who have no intention of holding their investments by making most high-frequency trades seriously uneconomic.

The German Bundestag is considering a bill that is designed to control the 'excessive use' of trading systems by imposing fees and requiring traders to maintain a balance between their orders and their executed transactions. This would combat the unethical practice of 'quote stuffing', where traders rapidly enter and withdraw orders to manipulate and overburden the market.<sup>30</sup>

France—backed by Germany—is pushing for an EU-wide FFT.<sup>31</sup> There is wider support within the EU for the tax, but for it to be effective it must be adopted transnationally<sup>32</sup> or investors may be driven to jurisdictions without the tax. Indeed, Sweden repealed their 1980s Tobin tax on share trades and foreign-exchange dealing, because share trading simply went elsewhere.<sup>33</sup>

The UK claims any such tax would need to apply globally for it to be effective. But the UK apparently does not need a Tobin tax to dampen the effects of high-frequency trading, given it already levies a 0.5% stamp duty on purchases of shares (but not other financial transactions).<sup>34</sup>

High-frequency trading is not yet as prevalent in Australia as it is in the US and Europe. Australia also lacks some of the market loopholes that have allowed high-frequency trading to flourish elsewhere. First, the rebates offered by exchanges in the US to firms that provide liquidity do not exist in Australia, which reduces the incentive to trade purely for rebates. Second, the execution fees charged by Australian exchanges are based on orders, not just executed trades as in the US.<sup>35</sup> This discourages HFT from placing orders without any intent of filling them (in the hope that their almost-immediately-thereafter cancelled orders will distort the market to create inefficiencies from which they can profit).<sup>36</sup> Australian regulators are also looking into other strategies aimed at high-speed trading.<sup>37</sup>

Investment bank UBS, itself involved in high-frequency trading, has recommended that a small fee of 1.7 cents be charged on every message sent to market in order to control and regulate this practice. This would thwart some traders who 'flood the market with millions of messages to buy and sell stocks which rarely result in a trade, frustrating genuine investors'.<sup>38</sup>

<sup>29</sup> Arsene Taxand, *The French Financial Transaction Tax* (3 August 2012) Arsene Taxand <[http://www.arsene-taxand.eu/The-French-Financial-Transaction-Tax\\_a464.html](http://www.arsene-taxand.eu/The-French-Financial-Transaction-Tax_a464.html)>.

<sup>30</sup> *Wall Street Journal*, 'Germany to Tap Brakes on High-Speed Trading', *Financial News* (online), 3 October 2012, <<http://www.efinancialnews.com/story/2012-09-26/germany-to-tap-brakes-on-high-speed-trading>>.

<sup>31</sup> Reuters, 'Germany, France push for financial transactions tax in EU', *Reuters* (online), 28 September 2012, <<http://www.reuters.com/article/2012/09/28/us-germany-france-tax-idUSBRE88R0UZ20120928>>.

<sup>32</sup> Adrian Croft, 'Cameron vows to block EU-wide Tobin tax', *Reuters* (online), 8 January 2012, <[http://uk.reuters.com/article/2012/01/08/uk-britain-tax-idUKTRE80707D201\\_20108](http://uk.reuters.com/article/2012/01/08/uk-britain-tax-idUKTRE80707D201_20108)>.

<sup>33</sup> See Hannah Smith, 'Germany suggests alternative to Tobin tax', *Investment Week* (online), 27 January 2012, <<http://www.investmentweek.co.uk/investment-week/news/2141805/germany-suggests-alternative-tobin-tax>>; Marion G Wrobel, *Financial Transactions Taxes: The International Experience and the Lessons for Canada* (June 1996) <<http://publications.gc.ca/collections/Collection-R/LoPBdP/BP/bp419-e.htm>>.

<sup>34</sup> See Nicholas Watt, "'Tobin tax" would hit City of London with missile', says John Major', *The Guardian* (online), 18 November 2011, <<http://www.guardian.co.uk/business/2011/nov/18/tobin-tax-city-london-john-major>>; Adrian Croft, 'UK's Cameron, France's Hollande clash on Tobin tax', *Reuters* (online), 18 May 2012, <[http://www.reuters.com/article/2012/05/18/g8-summit-cameron-idUSL5E8GIHRK2\\_0120518](http://www.reuters.com/article/2012/05/18/g8-summit-cameron-idUSL5E8GIHRK2_0120518)>.

<sup>35</sup> Geoffrey Rogrow, 'ASX To Limit High-Frequency Trade By Pinching Profitability', *ASX Ltd* (online), 10 September 2012, <<http://www.4-traders.com/ASX-LTD-6491363/news/ASX-Ltd-ASX-to-Limit-High-Frequency-Trade-by-Pinching-Profitability-14701621/>>.

<sup>36</sup> *Ibid.*

<sup>37</sup> See *The Australian*, 'ASX Chief Elmer Funke Kupper calls for curbs on high-speed trading', *The Australian* (online), 3 October 2011, <<http://www.theaustralian.com.au/business/markets/asx-chief-elmer-funke-kupper-calls-for-curbs-on-high-speed-trading/story-e6frg916-1226472154566>>.

<sup>38</sup> Stephen Shore and George Liondis, 'Put brakes on super-fast trades: UBS', *Australian Financial Review* (online), 12 October 2012, <[http://www.afr.com/p/business/financial\\_services/put\\_brakes\\_on\\_super\\_fast\\_trades\\_ak76kumt0gGwUohMMk8ryO](http://www.afr.com/p/business/financial_services/put_brakes_on_super_fast_trades_ak76kumt0gGwUohMMk8ryO)>.



If an FTT could be implemented, it would curtail the destabilising influence of high-speed trades. While the exact form of the tax would have to be determined, a small tax on transactions (the quantum might be the French number—0.2%) would not seriously affect traditional investors, who buy and hold positions for longer than a single trading day. But for traders securing small gains, which result in huge gains when multiplied by the sheer volume of transactions occurring, the tax would make their ‘trading’ fatally unpleasant.

Some will argue that killing off high-frequency trades will diminish market liquidity.<sup>39</sup> But markets are beyond the point where this sort of liquidity is a weighty concern.<sup>40</sup> Markets must balance efficiency with resiliency. Current financial markets show an evident lack of resiliency, manifested in extreme volatility and ‘flash crashes’.<sup>41</sup> Further, concerns that traders would flee to jurisdictions that do not impose the tax ignore the fact that the UK’s 0.5% stamp duty has not sent investors scrambling off-shore. Similarly, it does not seem likely that investors would withdraw from the world’s largest markets, such as the NYSE, if the tax were imposed. Finally, the tax would generate revenue for governments already plagued by economic problems arguably attributable to the very groups the FTT intends to tax.

### INSIDER TRADING?

Computerised trading puts a premium on speed. The computerised trader who can place orders first can take advantage of tiny price differences among the many exchanges. This affects regular traders who, when they try to action a regular trade, find the listed price of the shares disappears from their screens and then reappears with a cent or three added to the price.

Indignant traders claim HFTs are getting to ‘see’ the buy and sell orders early and are jumping in microseconds before the regular traders.<sup>42</sup> They are, as we say, making their own luck. While a multitude of data is being transferred from exchange to exchange and then onto a trader’s computer, HFTs seek to access prices a split-second faster through direct feeds.<sup>43</sup> During a US Senate inquiry, one former HFT said he thought that computers being able to obtain and use prices a split second faster than other participants ‘reeks of non-public information’ – inside information?<sup>44</sup>

How are HFTs getting to ‘see’ this information earlier; and is this information, or part of this information, ‘inside information’ that ought not be exploited? Jerry Adler of *Wired* magazine:

It’s not just that humans are less and less involved in trading; it’s that they can’t be involved. ‘By the time the ordinary investor sees a quote, it’s like looking at a star that burned out 50,000 years ago,’ says Sal Arnuk ... By some estimates, 90 percent of quotes on the major exchanges are cancelled before execution. Many of them were never meant to be executed; they are there to test the market, to confuse or subvert competing algorithms, or to slow trading in a stock by clogging the system—a practice known as quote stuffing. It may even be a different stock, but one whose trades are handled on the same server. On the Internet, this is called a denial-of-service attack, and it’s a crime. Among quants, it’s considered at most bad manners.<sup>45</sup>

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<sup>39</sup> See, eg, Sam Bowman, ‘France’s Tobin tax will make a little but damage a lot’, *City AM* (online), 2 August 2012, <<http://www.cityam.com/forum/france-s-tobin-tax-will-make-little-damage-lot>>; Andrew Sawers, ‘Will New Financial Tax Be French Toast?’, *CFO.com* (online), 8 August 2012, <[http://www.cfo.com/article.cfm/14655218/c\\_2984354/?f=archives](http://www.cfo.com/article.cfm/14655218/c_2984354/?f=archives)>.

<sup>40</sup> See Lowenstein, above n 16.

<sup>41</sup> John Fullerton, ‘Taming the Casino’, *Capital Institute* (online), 10 February 2011, <<http://capitalinstitute.org/blog/taming-casino>>.

<sup>42</sup> See Geoffrey Rogow, ‘Colocation: the root of all high-frequency trading evil’, *Wall Street Journal Asia Edition* (online), 20 September 2012, <<http://blogs.wsj.com/marketbeat/2012/09/20/colocation-the-root-of-all-high-frequency-trading-evil/>>.

<sup>43</sup> Scott Patterson and Geoffrey Rogow, ‘What’s Behind High-Frequency Trading’, *Wall Street Journal* (online), 20 September 2012, <<http://online.wsj.com/article/SB124908601669298293.html>>.

<sup>44</sup> Rogow, above n 42.

<sup>45</sup> Adler, above n 6.

Why is this ‘quote stuffing’—entering and withdrawing orders and flooding the market with quotes—not market manipulation?<sup>46</sup> Market manipulation refers to transactions creating or maintaining an artificial price for shares. In the United States, market manipulation is censured under s 9(a)(2) of the *Securities Exchange Act 1934*. In Australia, s 1041A of the *Corporations Act 2001* (Cth) is the relevant provision: directly or indirectly ‘creating an artificial price for trading in financial products’ or ‘maintaining at a level that is artificial ... a price for trading in financial products’.

The purpose of insider trading legislation is to protect the integrity of the share markets, and reassure investors they will not be disadvantaged or unfairly treated if they venture into the market. It seeks to provide a level playing field, and to ensure that big and small investors are allowed equal treatment and equal opportunity to prosper. In this respect, insider trading legislation could appropriately apply to some aspects of high-frequency trading behaviour.<sup>47</sup>

## FIXING THE WORLD

In France, part of the revenue from the newly introduced FTT is earmarked for AIDS research,<sup>48</sup> while Bill Gates supports using the proceeds from an FTT to benefit the third world.<sup>49</sup> A relatively low global financial transactions tax, collected by the UN, could indeed help alleviate poverty: a larger one could perhaps even fix some of what ails the world.

There were suggestions, following the global financial crisis, that the financial sector worldwide should pay for its excesses—with a uniform tax being charged across the globe to counter future crises. That plan has been shelved. But there has been work on such an impost, with Nobel laureate Tobin himself fascinated by the prospect of a global financial transactions tax and its power for good works. He doubted it could work—because of the problems of actually levying the tax—but advances in technology will have allayed many of those concerns.

At his prescient best, Fidel Castro cited Tobin in a speech in South Africa. Castro inveighed against the despoiling of the environment and the exploitation of many nations for the benefit of the few. He may have been even more eloquent, if he had then experienced the destruction wrought by the global financial crisis brought on by the finance industry’s dud and dishonest mortgage lending.

May the tax suggested by Nobel Prize Laureate James Tobin be imposed in a reasonable and effective way on the current speculative operations accounting for trillions of US dollars every 24 hours; then the UN, which cannot go on depending on meager, inadequate, and belated donations and charities, will have one trillion dollars annually to save and develop the world. Given the seriousness and urgency of the existing problems, which have become a real hazard for the very real survival of our specie on the planet, that is what would actually be needed before it is too late.<sup>50</sup>

That was from 2001. Is it too difficult to see the more visionary world leaders and capitalists of our era—Sarkozy, Obama, both Clintons, Blair, Sheikh Mohammed, Thatcher, Tutu, Lagarde, Gates, Soros and Buffett—agreeing with the Communist revolutionary today? In matters of tax, global profit-shifting is under attack. Global taxes on carbon and on financial transactions, for the common good, will reach the agenda soon.

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<sup>46</sup> See Michael Smith, Bianca Hartge-Hazelman and Stephen Shore, ‘Crack down on high frequency trading: fund managers’, *Australian Financial Review* (online), 15 August 2012, <[http://afr.com/p/business/companies/crack\\_down\\_on\\_high\\_frequency\\_trading\\_CSA9PgK9WGOJp9sgngTF7K](http://afr.com/p/business/companies/crack_down_on_high_frequency_trading_CSA9PgK9WGOJp9sgngTF7K)>.

<sup>47</sup> Cf Carole Comerton-Forde, ‘Debunking myths about high-frequency trading’, *Sydney Morning Herald* (online), 1 October 2012, <<http://www.smh.com.au/business/debunking-myths-about-highfrequency-trading-20121001-26uwo.html>>.

<sup>48</sup> Sawers, above n 39.

<sup>49</sup> Lesley Wroughton, ‘Bill Gates backs financial transaction tax to aid poor’, *Reuters* (online), 23 September 2011, <<http://www.reuters.com/article/2011/09/23/us-g20-development-idUSTRE78M64Q20110923>>.

<sup>50</sup> Dr Fidel Castro Ruz, President of Cuba, ‘Key address’ (delivered at the World Conference against racism, racial discrimination, xenophobia and related intolerance, Durban, South Africa, 1 September 2001), <<http://www.un.org/WCAR/statements/0109cubaE.htm>>.

## CONCLUSION

In Robert Harris' *The Fear Index*, VIXAL-4 begins making completely inexplicable trades, seemingly predicts the future, and causes a 'flash crash'. In the novel, it is the elusive nature of the computer's actions that strike fear into the hearts of its creators. It is likewise so with today's algorithms, which make nanosecond trades that no mere mortal could and cause the value of companies to swing wildly, bemusing the most seasoned investors.

But it is not the lack of understanding of how high-frequency trades work that compels us to find a way to control them: it is that the practice undermines the very reason financial markets exist. The purpose of financial markets is not to provide a forum for gambling, but to allow for companies to fundraise and develop, and for society to allocate resources rationally and beneficially. HFT are not concerned with the efficient or beneficial allocation of resources. They are mechanical speculators who bloodlessly exploit opportunities that exist only for nanoseconds and, more sinisterly, which they help to create. If we allow market signals to be based on information that becomes out-dated in a nanosecond, we may 'end up with empty factories and useless investment'.<sup>51</sup>

Whereas as once the stock markets were not-for-profits owned by the traders and provided a trading service, today they are themselves publicly listed companies. Certainly, they are not going to stop HFT while the large, humming computers clustered in the corner of their trading floors—pathetically competing for geographical proximity to market—mean so much to them in rents and trading fees. No one quits voluntarily while winning so handsomely and, until now, so stealthily. It is the Australian legislature that should act—with a small tax that, unusually, may actually be popular.

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<sup>51</sup> See Lowenstein, above n 16.