



Centre for Banking & Finance Law  
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## Working Paper

**Is high frequency trading fair?  
The case of order anticipation**

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**ABSTRACT:**

This article analysis the fairness of high frequency trading, by focusing on one of the arguably most controversial high frequency trading strategies namely order anticipation. This article will argue that order anticipation, may be socially inefficient, however, generally speaking it is not unfair. (The qualifier 'generally speaking' is important because this article will also argue that co-location is unfair.) To make the point about the fairness of order anticipation, this article constructs a fairness framework, evaluating the effects of order anticipation and its implementation. As order anticipation is not unfair this article will recommend that the debate on HF trading should move away from fairness consideration and towards a more exclusive focus on efficiency. The only substantial policy recommendation this paper will make is that regulators should make a more explicit distinction between inside information which is information that relates to the issuer and information that relates to the demand and supply of a security.

# **Is high frequency trading fair?**

## **The case of order anticipation**

*Florian Gamper<sup>1</sup>*

*Draft Oct 2016*

### **Abstract**

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<sup>1</sup> National University of Singapore – Centre for Banking & Finance Law, Singapore. This article is still in an early draft form. In particular, it does not yet contain references for all the prepositions taken from the literature. It should not be cited for any purpose



## Table of Contents

<b>1. Introduction.....</b>	<b>4</b>
<b>2. Overview of order anticipation.....</b>	<b>7</b>
<b>3. Overview of regulatory initiatives .....</b>	<b>10</b>
<b>4. Overview of debate on fairness of order anticipation .....</b>	<b>12</b>
<b>5. Fairness analysis of order anticipation – framework of assessment .....</b>	<b>18</b>
<b>a. Framework of assessment – fairness in outcome .....</b>	<b>20</b>
<b>b. Framework of assessment – procedural fairness .....</b>	<b>24</b>
<b>6. Applying ‘fairness in outcome’ to order anticipation.....</b>	<b>25</b>
<b>a. Fairness in outcome if price impact is caused by liquidity effect .....</b>	<b>26</b>
<b>b. Fairness in outcome if price impact is caused by signaling.....</b>	<b>27</b>
<b>7. Procedural fairness .....</b>	<b>35</b>
<b>a. Procedural fairness – pinging .....</b>	<b>36</b>
<b>b. Procedural fairness – co-location .....</b>	<b>41</b>
<b>8. Policy implications .....</b>	<b>47</b>
<b>9. Conclusion .....</b>	<b>50</b>

## 1. Introduction

High frequency (HF) trading is controversial, not least because it was popularised by Michael Lewis in the book ‘Flash Boys’<sup>2</sup>. For some, HF traders are the villains – rigging markets, distorting prices, increasing volatility and using techniques that are tantamount to ‘stealing’<sup>3</sup>. If nothing else, HF trading attracts some of the best and brightest to an industry where their talents are wasted on activities with no (or very little) social utility.<sup>4</sup> For others, HF traders are the heroic small guys, using technical wizardry to revolutionise an industry (e.g. market making) that was previously dominated by large corporations. By doing so HF traders provide liquidity to the market, tighten spreads, which, in turn, lowers trading costs. Regulators, generally speaking, appear to take a conciliatory view.<sup>5</sup> Rather than outlawing HF trading all together, regulators are aiming to ensure that HF trading is done in a safe and fair manner.<sup>7</sup> A topic which sharply divides popular and regulatory opinion is bound to give rise to numerous academic articles, and so it is the case with HF trading. The majority of the debate centres around what impact HF trading has on the market. However, one important question has received less attention and that is the question of fairness of HF trading.<sup>8</sup> This

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<sup>2</sup> Michael Lewis, *Flash Boys*, W. W. Norton & Company; 1 edition, March 31, 2014

<sup>3</sup> Joseph E. Stiglitz, ‘Tapping the Brakes: Are Less Active Markets Safer and Better for the Economy?’ Presented at the Federal Reserve Bank of Atlanta 2014 Financial Markets Conference Tuning Financial Regulation for Stability and Efficiency Atlanta, Georgia, April 15, 2014 page 7 (<https://www.frbatlanta.org/-/media/Documents/news/conferences/2014/fmc/Stiglitz.pdf>) (accessed 5 Sep 2016)

<sup>4</sup> For instance, Charlie Munger, vice chairman of Berkshire Hathaway, has objected that high-frequency trading is “legalised front-running[,] . . . and it should never have been able to reach the size that it did.” [...] Similarly, New York Attorney-General Eric Schneiderman has warned that “[w]hen blinding speed is coupled with early access to data, it gives small groups of traders the power to manipulate market movements in their own favour before anyone else knows what’s happening.” in Merritt B. Fox, Lawrence R. Glosten and Gabriel V. Rauterberg, ‘THE NEW STOCK MARKET: SENSE AND NONSENSE’, *Duke Law Journal*, VOLUME 65 NOVEMBER 2015 NUMBER 2 page 226

<sup>5</sup> See for instance, ‘Debunking the Myths of High Frequency Trading’ [https://secure.fia.org/ptg-downloads/Debunking\\_the\\_Myths\\_of\\_HFT.pdf](https://secure.fia.org/ptg-downloads/Debunking_the_Myths_of_HFT.pdf) (accessed 5 Sep 2016)

<sup>7</sup> For instance, the recital for MiFID II states that “[m]any market participants now make use of algorithmic trading [...]. Risks arising from algorithmic trading should be regulated” (emphasis added). MiFID II

<sup>8</sup> There are, of course exceptions, with a number of articles specifically dealing with the question of fairness. Among other, see for instance, Steven R. McNamara, ‘The Law and Ethics of High-Frequency Trading’, March

article will fill this ‘gap’ by providing a comprehensive analysis the fairness one of HF trading’s most controversial strategies – order anticipation. The significance of analysing fairness in HF trading is threefold. First, the language used by some critics of HF trading (e.g. “enough to make your blood boil”<sup>9</sup>) suggests that in addition to efficiency considerations, individuals are concerned about the fairness of HF trading.<sup>10</sup> Second, commentators frequently make reference to the fairness of HF trading without adequately addressing the concept of fairness. Third, analysing fairness is an interesting question in its own rights.

Order anticipation is a particularly useful concept on which to conduct the analysis of fairness in HF trading because this strategy in particular seems to divide opinion.<sup>11</sup> Order anticipation is simply a strategy, HF traders use certain methods to anticipate when another trader will place a large order. By anticipating the large order, HF traders are able to profit from the expected price impact of that large order. What appears to bother some commentators is that through order anticipation, HF traders are able to appropriate profits, which would have otherwise have gone (and some would argue, ought to go) to fundamental traders. According to Stiglitz, HF traders ‘steal’ from other traders.<sup>12</sup> Other commentators go even further and claim that because HF traders do something which is morally wrong (e.g. stealing) which cannot be ‘compensated’ by suggesting that, overall, HF traders make the market more efficient i.e. order anticipation cannot be justified by appealing to efficiency.<sup>13</sup> If this charge is correct, then arguments suggesting that HF trading makes markets more

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2015, Minnesota Journal of Law, Science & Technology, Volume 17 | Issue 1 Article 2, Feb 2016  
or James J. Angel, Douglas McCabe, ‘Fairness in Financial Markets: The Case  
of High Frequency Trading’ J Bus Ethics (2013) 112:585–595

<sup>9</sup> Ted Kaufman, ‘Flash Boys’ should – and will – make your blood boil’, 12 April 2014,  
<http://www.delawareonline.com/story/opinion/columnists/ted-kaufman/2014/04/12/flash-boys-will-make-blood-boil/7616401/>

<sup>10</sup> As many things are inefficient, however, only few of them make ones blood boil.

<sup>11</sup> Some strategies, e.g. layering, are quite clearly problematic and illegal. Whereas, other strategies, e.g. passive market making, are quite clearly not. However, when it comes to order anticipation, there seem to be valid arguments on both sides of the debate.

<sup>12</sup> See Stiglitz supra at note 3

<sup>13</sup> See McNamara supra at note 8 page 33

competitive would lose some of its force. Furthermore, if the charge is correct it would cast doubt on the conciliatory approach towards HF traders currently favoured by regulators. In response to the charges against order anticipation, this article will argue that generally speaking order anticipation is not unfair. (The qualification ‘generally speaking’ is important because this article will also suggest that co-location is unfair.) Therefore, regulatory intervention based on fairness concern is probably unwarranted. Thus, the debate on HF trading should focus on other issues (e.g. market impact) rather than fairness. However, this article will make one small policy recommendation, and that is that there are *de-facto* two different regulatory regimes for inside information – one for information relating to the issuer and one for information relating to the demand and supply of a security. The recommendation is that regulators should make it explicit that there are two regimes to avoid confusion.

Before beginning the analysis it is worth highlighting two things. First, the method that will be used to establish the fairness of order anticipation. Questions on fairness are notoriously difficult to answer. One method is to start from a general theory of morality (e.g. utilitarianism, Kantian Ethics, Virtue Ethics, etc.) and then analyse particular practice within that theory. Another method is formulate a set of criteria, which appear plausible and intuitive, and use these criteria to analyse a particular situation. This article will use the latter. The reasons for choosing this approach are more fully explored in section 5. This article will put forward a set of criteria for fairness and then analyse order anticipation on the basis of these criteria. Frequently, this article will also make reference to the legal treatment of HF trading, especially with respect its regulatory treatment in the UK and to a lesser extent to US. However, the purpose of it is not so much to determine the legality of HF trading and order anticipation (although this is, of course, a very interesting question). The purpose of it is more to ascertain the relevant fairness issues.

The second things that needs to be clarified is why an analysis of HF trading and order anticipation is actually worthwhile. Especially, as it has been argued that HF trading is in quite rapid decline.<sup>15</sup> It may well be the case, that HF trading or at least the more controversial and aggressive HF trading strategies (like order anticipation) will disappear in the near future. Therefore, one may wonder what the point is in analysing its fairness. Two things can be said in response to this. First, although HF trading has declined on some measurements, it may be premature to claim that its complete disappearance is only a matter of time. Furthermore, regulators so far have resisted moves to eradicate HF trading, arguing that it if is done in a responsible manner it can be something useful. (See section 3 for more details on the regulatory initiatives). Second, and more importantly, the discussion about order anticipation is useful not so much because it is an education in HF trading, but because it provides a good case study on fairness in financial markets and highlights the difficulties the regulatory system has in dealing with pre-trade transparency and the price impact of large block trades.

## **2. Overview of order anticipation**

The Securities and Exchange Commission (SEC) describes order anticipation as a trading strategy that “involves any means to ascertain the existence of a large buyer (seller) that does not involve violation of a duty, misappropriation of information, or other misconduct”.<sup>16</sup> By using a definition of order anticipation that stipulates that order anticipation “does not involve violation of a duty, misappropriation of information, or other

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<sup>15</sup> According to research by Deutsche Bank, share of HF trading of total equity trading has declined from its peak of ca. 60% in the US (2009) and ca. 40% in Europe (2010) to ca. 50% and ca. 35% respectively in 2014. “Revenues in the US have slumped from about USD 7.2 bn in 2009 to USD 1.3 bn in 2014”. Deutsche Bank Research, Research Briefing, ‘ High Frequency Trading, Reaching the limits’, 24 May 2016

<sup>16</sup> Security and Exchange Commission, “Concept Release on Equity Market Structure”, Release No. 34-61358; File No. S7-02-10,

misconduct”<sup>17</sup>, this article does not attempt to preclude a discussion on the legality of order anticipation. It is merely a way to distinguish order anticipation from ‘traditional’ front-running (e.g. when a broker trades ahead of a client order in breach of duty to the client). It is also important to note, order anticipation is not exclusively an HF trading strategy, as order anticipation does not necessarily rely on low latency. Arguably, traders have been trying to detect large order of other traders for as long as public markets have existed and maybe even longer.<sup>18</sup> Nevertheless, it is reasonable to classify order anticipation as an HF trading strategy because HF traders have become very efficient at order anticipation in a manner that is strikingly different from order anticipation performed by non-HF traders.<sup>21</sup>

Although order anticipation is reasonably straightforward concept, an example may be helpful to illustrate the point further. Assume an institutional investor sends a large buy order to exchange X. If there are not enough shares offered on exchange X to fill the order, exchange X will send it the order to exchange Y. HF trader engaged in order anticipation may learn about the large incoming order, for instance through a co-location arrangement, in the time between it was sent from exchange X but before it reaches exchange Y. This gives the HF trader enough time to change her position. She may for instance rise the price of the security (if there is enough room in the order book) or withdraw her sell offer for the

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<sup>17</sup> Ibid

<sup>18</sup> For instance van Kervel and Menkveld write: “Back-running by intermediaries most likely plagued end users long before the rise of HFTs [...]. Intermediaries have existed for centuries. One could even argue that back-running was easier in human-intermediated markets because broker–dealers observed their client flow directly, since it had to pass through their hands. They were not allowed to trade on this information but enforcement was extremely difficult (traders could tip each other off)” (internal references omitted). In Vincent van Kervel and Albert J. Menkveld, ‘High-Frequency Trading around Large Institutional Orders’ 29 Jan 2016, SSRN [file:///C:/Users/lawfg/Downloads/SSRN-id2619686%20\(2\).pdf](file:///C:/Users/lawfg/Downloads/SSRN-id2619686%20(2).pdf) (accessed 9 Sep 2016)

<sup>21</sup> For instance, Fox et al. give the following account of order anticipation by HF traders:

“The investor breaks the desired quantity into several smaller, but still sizable, marketable orders, each going to a different exchange. Through its co-location facility, an HFT learns of the transaction at the exchange that is reached first by the investor’s orders. The HFT’s algorithm infers from this information that, quite possibly, similar sizable orders are en route [sic] to other exchanges as well. The algorithm instantly sends out signals to make advantageous adjustments in the HFT’s limit orders posted on these other exchanges, adjustments that are completed within the tiny interval before the institution’s orders reach these other exchanges” Merritt B. Fox, Lawrence R. Glosten, and Gabriel V. Rauterberger, “THE NEW STOCK MARKET: SENSE AND NONSENSE”, *Duke Law Journal*, volume 65, November 2015, number 2, page 202

security.<sup>22</sup> One of the critical questions for evaluating the fairness (as well as efficiency) of order anticipation is to understand why large buy orders are associated with rising prices. A review of the relevant literature offers a number of explanations. Two of these explanations are particularly important for the question of fairness. The first explanation is that large orders are a signal that the trader placing the large order has private information (this is the only explanation offered by Fox *et al.*). This explanation has a considerable pedigree in the literature<sup>23</sup>, however, the relevant literature also offers an alternative second explanation. For instance, “Stoll [...] Ho and Stoll [...] and O’Hara and Oldfield [...]”<sup>29</sup> argue that large orders have a liquidity effect and it is this effect that creates the price impact. Put very simply this is the effect of changing supply and demand of a security: large buy orders make a security scarcer and this relative scarcity is what drives the price increase. A possible reason why scarcity may increase price could be due to portfolio diversification requirements. By way of example, even if two securities offer the same risk-adjusted return, an investor may be willing to pay more for one security than the other because one security provides better fit (e.g. in terms of diversification or sector focus) for his portfolio. Another explanation could be that a large order simply ‘uses’ up all the low bids only leaving relatively higher priced bids. If the bids for a security are: \$100, \$101, \$102, \$103. A large order may buy up the shares offered at \$100, \$101 and \$102. Leaving only the trader who wants to sell at \$103. Thus, the price impact of large order is merely a reflection of the difference in valuation of the same security by different traders. Frey and Sandas conducted an interesting empirical study in which they

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<sup>22</sup> A good description of order anticipation is provided by Fox *et al.* supra at note 22. The reader unfamiliar with order anticipation may wish to consult their original article for more details

<sup>23</sup> See for instance, Albert S. Kyle, “Continuous Auctions and Insider Trading” *Econometrica*, Vol. 53, No. 6. (Nov., 1985), pp. 1315-1336. See also David EASLEY and Maureen O’HARA, “PRICE, TRADE SIZE, AND INFORMATION IN SECURITIES MARKETS” *Journal of Financial Economics* 19 (1987) 69-90. Korth-Holland, February 1987

<sup>29</sup> In Easley and O’Hara supra note 23 page 69

compared the price impact of iceberg orders<sup>32</sup> that were fully executed, with the price impact of iceberg orders that were not fully executed. They conclude as follows:

[O]bserved price impact of an iceberg order of a given size depends critically on the fraction of the iceberg order that is eventually executed. Together this evidence supports the liquidity based explanation.<sup>33</sup>

Although Frey and Sandas' study favours the liquidity explanation for the price impact, there does not seem to be a consensus in the literature which explanation is correct. It is also important to note that the two explanations (i.e. informed trader, and changes in liquidity) are not mutually exclusive. It could well be the case that both apply. However, it is important to recognise that there are at least two different explanations for the why large orders have a price impact.

### 3. Overview of regulatory initiatives

Regulators have not been oblivious to the challenges posed by HF trading. Besides all the negative publicity HF trading has been receiving, generally speaking, the regulatory strategy is to make HF trading safer, rather than outlawing all together. At the European level, the rewrite of the Markets in Financial Instruments Directive (commonly referred to as MiFID II)<sup>35</sup> contains specific provisions for HF trading.<sup>36</sup> *Inter alia*, MiFID II provides a legal definition of HF trading<sup>38</sup> and provides that “effective systems and risk controls suitable to

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<sup>32</sup> Stefan Frey and Patrik Sandas, “The Impact of Iceberg Orders in Limit Order Books”, AFA 2009 San Francisco Meetings Paper, 17 May 2009, SSRN ([file:///C:/Users/lawfg/Downloads/SSRN-id1108485%20\(1\).pdf](file:///C:/Users/lawfg/Downloads/SSRN-id1108485%20(1).pdf)) (accessed 9 September 2016)

<sup>33</sup> Ibid page 3

<sup>35</sup> For updates on see European Commission “Updated rules for markets in financial instruments: MiFID 2” [http://ec.europa.eu/finance/securities/isd/mifid2/index\\_en.htm](http://ec.europa.eu/finance/securities/isd/mifid2/index_en.htm) (accessed 9 September 2016)

<sup>36</sup> For a summary of the MiFID II implications for HF trading see for instance Danny Busch, “MiFID II: regulating high frequency trading, other forms of algorithmic trading and direct electronic market access” Law and Financial Markets Review Volume 10, 2016 - Issue 2

<sup>38</sup> Article 4(1)(40) MiFID II

the business it operates”<sup>39</sup> shall be in place. Algorithmic traders, of which HF traders are a subset, must also notify the relevant competent authority<sup>40</sup> and keep relevant records<sup>41</sup>. In addition, a HF trading firm “shall store [...] time sequenced records of all its placed orders”<sup>42</sup>. Also, algorithmic traders who engages a market making strategy must, *inter alia*, may not seize to make market on their volition.<sup>43</sup> MiFID II also contains requirements for trading venues to have “effective systems, procedures and arrangements”<sup>44</sup>. Furthermore, “[m]ember States shall require a regulated market to ensure that its rules on co-location services are transparent, fair and non-discriminatory.”<sup>46</sup> However, MiFID II does not contain a minimum resting period for securities holding, as it was demanded by some legislators.<sup>47</sup> In essence, rather than aiming to eradicate HF trading, MiFID II tries to make it safer by focusing on preventing flash crashes, preventing the withdrawal of liquidity by market makers in time of stress and ensuring the non-discriminatory nature of arrangements, such as co-location. There are also some other European initiatives. For instance, in 2015, the European Securities and Markets Authority (ESMA) published a review of automated trading.<sup>48</sup> The review emphasised that while there is no fundamental problem with this form of trading, there is need to ensure it is done fair and orderly. Also the EU Market Abuse Regulation (EU MAR)<sup>50</sup> contains provisions relevant for HF trading. EU MAR 12(2)(c) makes it clear that HF trading, which disrupts the market, makes it more difficult to identify

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<sup>39</sup> Article 17(1) MiFID II

<sup>40</sup> Article 17 (2) MiFID II

<sup>41</sup> Ibid

<sup>42</sup> Ibid

<sup>43</sup> MiFID II provides an obligation for market makers to “carry out this market making continuously during a specified proportion of the trading venue’s trading hours, except under exceptional circumstances” and enter into a binding agreement with the trading platform Article 17(3)(a) MiFID II

<sup>44</sup> Article 48(1) MiFID II

<sup>46</sup> Article 48(8) MiFID II

<sup>47</sup> Philip Stafford, “Europe agrees on high-speed trading regulation”, 2013 Financial Times, <http://www.ft.com/intl/cms/s/0/810ce436-3b28-11e3-87fa-00144feab7de.html#axzz4AxcKzdtF> (accessed 8 Jun 2016)

<sup>48</sup> ESMA, Automated Trading Guidelines, ESMA peer review among National Competent Authorities, 18 Mar 2015, ESMA/2015/592

<sup>50</sup> Market Abuse Regulation, REGULATION (EU) No 596/2014 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL

genuine orders, or creates a false signal about the demand / supply of a financial instrument amounts to market manipulation. EU MAR also changes the concept of trading information, which potentially has consequences for HF trading. This will be discussed in more detail in section 8 of this paper. In the UK, the FCA has also been studying HF trading, without any firm conclusion as yet.<sup>51</sup> In 2010 in the US, the SEC published Concept Release on Equity Market Structure, inviting comments on HF trading.<sup>52</sup> Further, in 2015 the SEC voted on requiring “computer-driven trading firms to register with the Financial Industry Regulatory Authority [FINRA]”<sup>53</sup>. Germany introduced a HF trading law in 2013.<sup>54</sup> Canada and Hong Kong have also both enacted laws to deal with electronic/ algorithmic trading.<sup>55</sup> Other legislation which is potentially very significant for HF trading are Financial Transacting Taxes (FTT).<sup>56</sup> Due to the high trading volume of HF trading, a levy (i.e. FTT) on individual transactions could spell the end for HF trading. Nonetheless, FTT notwithstanding, the overall trend of current (and proposed) regulation and legislation does not focus on eradicating HF trading, but instead focuses on making it safer and ensuring it is done in a fair manner.

#### **4. Overview of debate on fairness of order anticipation**

As mentioned in the introduction, most academic articles on HF trading are not primarily concerned with fairness. However, there are a few exceptions. The following is a quick

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<sup>51</sup> See for instance FCA <http://www.fca.org.uk/static/channel-page/insight/article-3-ultra-fast-trading.html>

<sup>52</sup> Securities and Exchange Commission, Concept Release on Equity Market Structure; Proposed Rule, 17 CFR Part 242

[Release No. 34-61358; File No. S7-02-10]

<sup>53</sup> Andrew Ackerman, “SEC Rules Would Boost Oversight of High-Frequency Firms”, The Wall Street Journal, <http://www.wsj.com/articles/sec-completes-startup-stock-sale-rules-1427303817>

<sup>54</sup> Supra note 1, page 19

<sup>55</sup> Ibid

<sup>56</sup> For a discussion of FTT and HFT see for instance, Jim Corkery, “High-frequency trading and a financial transactions tax” Revenue Law Journal, Volume 22 | Issue 1 Article 3, 12-1-2012

summary of the relevant arguments. The side holding that HF trading is unfair frequently tries to illustrate the unfairness through an analogy. For instance, Adrian writes:

Imagine a stockbroker with a serious craving for Cheerios. That broker checks the price for Cheerios on his phone and sees that they are on sale for \$2.49 at the nearest grocery store. He then places an order for one box of Cheerios and heads to the store to pick them up. When he gets there, the manager informs him that unfortunately someone had purchased all of the boxes of \$2.49 Cheerios before they were able to fill his order. Fortunately, however, that same person is happy to sell him a box for \$2.50.<sup>62</sup>

McNamara offers a similar argument, however he also adds that fairness of order anticipation cannot be defended merely by claiming that order anticipation makes the market more efficient.<sup>63</sup> He reasons that even if HF trading results in a net utility gain this does not establish the legitimacy of the practice. Essentially the argument of commentators like Adrian and McNamara seems to be that it is unfair to buy an item just before another person wants to buy and then sell it to that person at a higher price. However, this argument does not state why this is unfair. Stiglitz adds some clarity to this argument.<sup>64</sup> He argues that the reason order anticipation is unfair is that fundamental investors have spent resources on a socially productive activity (i.e. determining the fundamental value of a company). HF trading, on the other hand, is not socially productive, and the profits made by HF traders come at the expense of fundamental investors. Further, critics of HF trading point out that it creates a two-tiered system.<sup>66</sup> They argue that public markets are based on the premise that all traders should have

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<sup>62</sup> Jacob Adrian, *Informational Inequality: How High Frequency Traders Use Premier Access to Information to Prey on Institutional Investors*, 14 *Duke Law & Technology Review* 256-279 (2016), page 258-259

<sup>63</sup> Steven R. McNamara, "The Law and Ethics of High-Frequency Trading" [https://works.bepress.com/steven\\_mcnamara/3/](https://works.bepress.com/steven_mcnamara/3/) (accessed 16 Sep 2016) page 33

<sup>64</sup> See supra note 3

<sup>66</sup> See for instance Adrian supra note 57 pages 268 - 270

like treatment and should have access to the same information. HF trading violates the principle of treating all traders the same, as HF trading depends on arrangements like co-location. Co-location does not treat all traders the same because it allows certain traders to receive information before others.

On the converse, Angel and McCabe argue that HF trading is fair.<sup>67</sup> Their main arguments are as follows. Order anticipation is akin to ‘technical analysis’<sup>68</sup>, and that the cat-and-mouse game between institutional traders trying to hide large order and traders trying to discover large orders has been going on for a long time.<sup>70</sup> Further, order anticipation does provide a benefit to the market because it helps to “quickly incorporate all of the available information into a consensus estimate of the value of a financial instrument”.<sup>71</sup> With regards to co-location Angel and McCabe argue that it is not unfair because it is open to all investors. Furthermore, the advantages offered by co-location only provides an advantage for HF traders.<sup>72</sup> Therefore, it does not violate the principle of treating all traders the same because all traders could do it. Other commentators have pointed out that in other areas we do not seem to mind if someone gains an advantage by investing in technology. For instance, Korsmo writes as follows:

[I]t is worth noting the essential strangeness of the argument that trading capabilities available to the well-financed and technically capable are somehow intrinsically unfair. It is not entirely unlike complaining that Boeing and

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<sup>67</sup> Supra note 8

<sup>68</sup> Ibid. page 588

<sup>70</sup> Ibid. page 588- 589

<sup>71</sup> Ibid. page 588

<sup>72</sup> Ibid. page 593

Lockheed-Martin have an ‘unfair’ advantage vis-à-vis a garage-workshop tinkerer in bidding on aircraft contracts.<sup>73</sup>

Others have attempted to defend order anticipation by arguing that, contrary to public perception, ‘ordinary’ retail investors are made better off by it. For instance, Fox, *et al.* writes:

Deeper analysis, however, shows that a compelling case for the elimination of the practice cannot be made on this basis of perceived unfairness. As we have seen above, the practice actually appears to benefit ordinary people to the extent that they invest directly in the market as retail customers.<sup>74</sup>

There are serious problems with both sides of the argument. Let’s start with the defences for the fairness of order anticipation. Arguments, which attempt to defend a practice merely on the grounds that it has been practiced for a long time are somewhat weak. The argument that order anticipation makes the market more efficient does not resolve the charge that an action that makes the market more efficient can still be unfair. Fox *et al.* try to strengthen this argument by claiming that that order anticipation (or in their terminology ‘electronic front-running’) is not unfair because “ordinary people”<sup>75</sup> benefit from it. This is, of course, a perfectly plausible argument and undoubtedly many people have sympathies with the ‘little guy’. However, it is not immediately obvious that simply because ‘ordinary people’ benefit from an arrangement this means that it is not unfair. One could even go so far as to argue that the assessment of the fairness of a

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<sup>73</sup> Charles R Korsmo "High-Frequency Trading: A Regulatory Strategy" (2014). Faculty Publications. Paper 1684, page 566

<sup>74</sup> Fox *et al.* supra note 21, page 264

<sup>75</sup> *Ibid.*, page 232

situation should be agent independent (i.e. *prima facie* for the notion of fairness, it ought to be irrelevant if it involves a retail or professional investor). Fox *et al.* seem to use the terms ‘fairness’ to mean the same as to ‘benefit ordinary people’ and it is not clear if these two terms really mean the same thing. However, it might be the case (in fact, it is probably the case) that Fox *et al.* had a less technical meaning in mind when they used the term ‘fairness’. Rather than commenting on the general fairness of order anticipation, they may simply want to defend order anticipation against the accusation that it disadvantages retail investors.<sup>76</sup> However, even on a purely factual ground, the account given by Fox *et al.* has some shortcomings. Most ordinary people invest in the stock market through pension funds and mutual funds. Fox *et al.* argue that order anticipation “helps, not hurts, these funds and derivatively their ordinary investors”<sup>77</sup>. The problem with this account is that, according to Fox *et al.*, the only way that HF traders can distinguish between informed and uninformed traders is through the size of their orders, HF traders using an order’s size as an indicator for informed traders (i.e. the larger the order, the more informed the investor). Although Fox *et al.* are right to say that “by definition” index-based mutual funds and pension funds are uninformed traders, they fail to explain how this can be exploited by HF traders.<sup>78</sup> As index-based mutual funds and pension funds can trade in large blocks and simply because by definition they are uninformed traders, does not mean that they would not be front-run by HF traders. As most retail investors invest in the stock market through funds, it may well be that ordinary people lose out because of order anticipation. Thus, although Fox *et al.* give a very insightful account of HF trading, their account of the fairness of order anticipation is not wholly convincing.

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<sup>76</sup> For instance, commentators like Lewis seem to suggest that retail investors are harmed by HF trading. See Lewis, *supra* note 2

<sup>77</sup> *Ibid.* page 232

<sup>78</sup> *Ibid.* page 232

Similarly, the arguments claiming that order anticipation is unfair have some difficulties. Adrian seems to suggest that order anticipation is wrong because the person who initiates the trade pays more (in Adrian's example, the person wanting to buy Cheerios must pay a higher price). Although some people may be persuaded of the inherent unfairness illustrated by this argument, it is not entirely clear why it is unfair. The problem is that the type of hypothetical examples, like the ones given by Adrian, is that if one phrases the scenario differently one gets a different result.<sup>80</sup> An appeal to intuition requires careful analysis. Adrian also claims that that co-location cannot be defended on the grounds that it is open to anyone because "[t]hese very expensive marginal increases in speed are much more likely to benefit high-frequency traders, who have the ability to execute thousands of trades per day, more than average institutional investors"<sup>83</sup>. However, this argument does not work because traders who invest in co-location and relevant technologies do so to make money from it. Thus, assuming traders can borrow (or raise the capital in another way), then it is true that anyone can do it. This is not a particularly fanciful assumption. Many HF trading firms are significantly smaller than other financial institutions like investment banks (e.g. it institution like should not find it too difficult to raise the necessary capital to pay for co-location – although they may struggle to be successful HF traders for other reasons). Furthermore, if some traders cannot get financing to pay for HF technology then this the problem that needs to be addressed. Simply arguing that HF trading is unfair because investment is required, ignores the fact that people make investment in this technology in order to make money. Of course, this is not the end of the argument and in fact this article

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<sup>80</sup> For instance, Asness and Mendelson: "Well, sorry, but prices responding quickly—and traders not being able to buy or sell a ton without the market moving—is what is supposed to happen in a well-functioning market. It happens to us too. It may be that in the old days these managers were able to take advantage of whomever was on the other side of their trade, and that nowadays they find it far more difficult to gain that advantage. A more efficient market shouldn't be mistaken for an unfair one" In Clifford Asness and Michael Mendelson, "High-frequency hyperbole" Wall Street Journal April 1, 2014, in "Debunking the Myths of High Frequency Trading" FIA, PTG, [https://secure.fia.org/ptg-downloads/Debunking\\_the\\_Myths\\_of\\_HFT.pdf](https://secure.fia.org/ptg-downloads/Debunking_the_Myths_of_HFT.pdf) page 5 (accessed 19 Sep 2016)

<sup>83</sup> Supra note 57, page 270

will suggest in section 7.b that co-location is unfair. All this paragraph suggest that the argument put forward by Adrian does not work.

Conceptually, Stiglitz's argument is the strongest. Rather than simply offering an analogy to show that order anticipation is wrong, he offers specific reasons (i.e. fundamental investors find out information about the real economy and are therefore entitled to keep the profits from the market impact)<sup>84</sup>. However, the problem is that it is not clear whether this is an argument based on efficiency or fairness. Rewarding people who engage in productive activities seems to be efficient. However, if it is merely 'efficient', one could then argue that if it can be shown that order anticipation makes market more efficient then it is justified. Accepting that order anticipation is really just a problem of whether it makes the market more or less efficient, contradicts what McNamara tried to show, namely that apart from efficiency concerns, order anticipation also raises moral issues. Alternatively, one could argue that fundamental trader have a moral right not to have their profits 'stolen' by HF trader. However, to establish the moral claim further analysis is needed. Stiglitz's argument points in the right direction but something more is required to make it work. This will be accomplished in the next section.

## **5. Fairness analysis of order anticipation – framework of assessment**

Before analysis what criteria should be used to analyse order anticipation it is necessary to say a few words about the methodology that will be used. One way to tackle the question about fairness is to formulate some criteria on how to judge unfair situations (i.e. to create a framework for assessment). There are (at least) two ways how such a framework can be justified. First, one can explicitly try to derive it from a general theory of morality (e.g. utilitarianism, Kantian ethics, virtue ethics, etc.). Alternative, one could establish some

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<sup>84</sup> See Stiglitz supra at note

general criteria by appealing to intuition. This article will use the latter approach. The reason for this is the following. To make a selection of which of the different conceptions of morality is correct is outside of the scope of this article. The alternative would be to conduct the analysis for each of the different conceptions of morality. This approach is possible. However, the problem is that it would make the article exceedingly long and cumbersome. Establishing criteria and appealing to intuition is a good compromise. It is arguably the case that on some issues all (or most) established conception of morality agree. If these issues can be used to analyse the fairness of order anticipation then there is no need to conduct separate analysis. Also, even if not everyone agrees what the relevant criteria for assessing the fairness of order anticipation are, if the criteria are plausible and widely accepted then arguably there is merit in the analysis, even if not everyone agrees on the criteria. Of course, there is the problem that the selected criteria are not plausible and not widely accepted.

In deciding the criteria of assessment one must also be careful that they are able to provide an answer to question at hand. This seems like an obvious requirement (and it is). However, it may be worth emphasizing that a criterion is not useful if it yields the answers that order anticipation is fair but also yields the answer order anticipation is not fair. Thus, for instance a criterion like voluntarism (i.e. the transaction is fair if both parties have entered into it voluntarily) is not useful because transactions in a market with or without order anticipation are voluntary.<sup>85</sup> To simplify the analysis it is also a good strategy to sub-divide it into two different sub-questions. The first question is whether it is fair to anticipate order flow without considering how it is done. This will be referred to as a ‘fairness in outcome’. The second question is whether the way order anticipation is typically done is fair. This will be referred to as ‘procedural fairness’. (The reader is kindly invited to note that labels

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<sup>85</sup> The reason for this is, that order anticipation is an issue for trading micro-structure, and it is difficult to see how any such issues could ever be resolved by an appeal to voluntarism.

‘fairness in outcome’ and ‘procedural fairness’ are used for convenience only and are not intended to denote a connection to the corresponding philosophical concepts.)

**a. Framework of assessment – fairness in outcome**

One of the criterion to be used in the fairness framework can loosely be formulated as follows:

- i) If a person has made a deliberate effort to create profits (i.e. non-arbitrary profits), then she has *ceteris paribus* a superior claim to the profits than other persons. This is the case even if another person B made a deliberate effort to attain these profits from person A.
  
- ii) *Ceteris paribus* an arrangement or action (A) is fairer than another arrangement or action (B) if A more closely corresponds to the underlying principle of the regulatory regime for public equities.

All the criterion i) says is that in many circumstances people dislike arbitrary profits. This is probably quite a reasonable intuition. However, it is worth exploring a little bit further to show that the dislike for arbitrary profits is a common feature of many legal concepts. Kronman, for instance, argues that that with regards to contract law, the law provides more protection to deliberately acquired information than the casually acquired information, by giving the holder of the former a right not to disclose this information.<sup>86</sup> (This idea has also been applied to different areas of the law. Johnson, for instance, uses it to explain the doctrine

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<sup>86</sup> Anthony T. Kronman, Mistake, Disclosure, Information, and the Law of Contracts, *The Journal of Legal Studies*, Vol. 7, No. 1 (Jan., 1978), pp. 1-34

of *caveat emptor* within the context of real estate transactions.)<sup>88</sup> Restating this principle, one could say that a person has less right to profit from information that was acquired causally (i.e. by chance) than from information that was acquired deliberately (i.e. not by chance). This seems to be a straightforward application of the presumption against arbitrary profits. However, in a well thought out critique of Kronman, Trebilcock, points out that the distinction between deliberate and causally acquired information is not able to explain all the relevant cases.<sup>91</sup> For Trebilcock the key distinction is whether requiring disclosure will encourage or discourage acquisition or utilisation of information. He rightly points out that often this corresponds to the distinction between deliberate and causally acquired information, however, this is not always the case. However, Trebilcock's analysis does not actually contradict the claim made by this article against arbitrary profits for two reasons. First, Trebilcock is correct in pointing out that this needs to include acquisition as well as the use of information. Something that was acquired causally is something acquired by chance. Almost per definition one does not have control over what one acquires by chance. Therefore, acquiring disclosure of this information cannot influence how much of that information is acquired. If one extends this argument to the use as well as the acquisition of information Kronman and Trebilcock analysis yield very similar outcomes. The same is not true for information that was deliberately acquired. As there can be cases in which requiring disclosure of deliberately acquired information does not inhibit the acquisition or utilisation of the information. Be that as it may, information acquired by chance should not attract special protection from the law. Second, and perhaps more importantly, apart from efficiency concerns, there is the moral argument that profits which result from a deliberate effort should be respected more than arbitrary profits. This moral intuition seems to correspond to

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<sup>88</sup> Alex M Johnson, JR, "An Economic Analysis of the Duty to Disclose Information: Lessons Learned From the Caveat Emptor Doctrine", 45 San Diego L. Rev. 79 2008

<sup>91</sup> Michael J. Trebilcock, "The limits of freedom of contract", Harvard University Press, Cambridge Massachusetts and London, England 1993, page 102 – 127

empirical findings. For instance Kahneman, Knetsch and Thaler report 82% of respondents in a survey said that it was unfair or extremely for a store to raise the price of shovels by \$5 after a snowstorm.<sup>92</sup> Kahneman, Knetsch and Thaler draw two conclusions from this, namely that people often assess the fairness of transaction through a reference transaction and that it is unfair if a person arbitrary increases her profits above her entitlement under the reference transactions. Undoubtedly there are many circumstances apart from arbitrariness which make profiting from a snowstorm unfair. Nevertheless, the reported results support the idea that people view arbitrariness of profits is one factor that make profits unfair. A similar intuition can also be found in Locke's 'labour mixing argument'.<sup>94</sup> This is not to say that Locke's argument is correct,<sup>95</sup> however, there seems to be something intuitively appealing about the proposition that if person A has made a deliberate effort to create something, then person A has more right to profit from it than person B who made no such effort. We could add to this scenario that person B makes a deliberate effort to deprive person A of the profit. Here, intuitively one may feel that person A has a superior claim to person B. This is because person B did not create the benefit, and person B's efforts are directed towards the redistribution of the benefit, rather than its creation. If, on the other hand, person A receives a benefit purely by chance, then she seems to have a weaker claim to retain the benefit. Again it is worth emphasizing that this article does not claim that arbitrariness of profits is the only criterion for judging the fairness of profits, all that this article claims is that it is one criterion.

However, even if one agrees with this, one may wonder whether the distinction between arbitrary and not arbitrary profits is really just the distinctions between profits based

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<sup>92</sup> Daniel Kahneman, Jack L. Knetsch, Richard H. Thaler, Fairness as a Constraint on Profit Seeking: Entitlements in the Market, page 729

<sup>94</sup> Locke writes: "Whatsoever then he removes out of the state that nature hath provided, and left it in, he hath mixed his labour with, and joined to it something that is his own, and thereby makes it his property. It being by him removed from the common state nature hath placed it in, it hath by this labour something annexed to it" In John Locke, Second Treatise on Government, Ch 5, para 27,

<sup>95</sup> There are many good arguments pointing out flaws in the argument. See for instance, "Nozick Anarchy, State and Utopia" Basic Books (first published 1974)

on productive and unproductive activities. Therefore, one may argue that it is more sensible to regards profits as fair if they are based on productive activities and unfair profits on unproductive activities. However, such a move should be resisted. The main problem with this criterion is that it is very difficult to determine which activities are productive and which ones are not. This is so even in cases where it seems intuitively obvious that an activity is unproductive. For instance, in the past merchants were often accused of being unproductive. After all, they do not produce anything and simply profit from the difference between what the producers receive and what consumers pay.<sup>100</sup> As Hayek has pointed out (and countless real world examples suggest) it is extremely difficult to determine which activities are productive and which ones are not.<sup>101</sup> Further, one may wonder why it is actually necessary to determine whether an action is productive or not, as one could use the intentions of the parties instead i.e. person A who intends to be productive has a superior claim to profit from his/her activities than a person B who intends simply to make a profit and does not care whether his/her actions are productive. However, this criterion does not work because in the market place people should be allowed to keep profits derived from actions, which are based solely on their self-interest.<sup>102</sup>

The second fairness criterion that is often used is a comparison to the overriding objectives and principles of the regulations of public markets. The reason for this is – when a person decides to engage in trading in public markets, that person is submits to the special rules of that market. Therefore, it is fair for a market participant who submits to this regime to expect that other market participants will do the same. This seems obvious. Perhaps more controversially, this article submits that a market participant is not only entitled to assume

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<sup>100</sup> For a good review how the law dealt with unproductive contracts see for instance, see Lynn A. Stout “WHY THE LAW HATES SPECULATORS: REGULATION AND PRIVATE ORDERING IN THE MARKET FOR OTC DERIVATIVES”, *Duke Law Journal*, Vol. 48, p. 701, 1999

<sup>101</sup> F. A. Hayek 1945). "The Use of Knowledge in Society," *American Economic Review*, 35(4), pp

<sup>102</sup> As per Adam Smith “It is not from the benevolence of the butcher, the brewer, or the baker that we expect our dinner, but from their regard to their own interest” in Adam Smith, *Wealth of Nations*, Book 1, Chapter 2

that other market participants do not breach applicable laws and regulations, she is also entitled to assume that other market participants aim to comply with the relevant principles behind the regulation. A lot more could (and should) be said about the criteria of fairness in outcome. However, for the purpose of this article, this level of discussion will suffice. In summary, the following principle will be used to assess fairness in outcome of order anticipation.

### **b. Framework of assessment – procedural fairness**

The analysis of the procedural fairness is a lot simpler. Shefrin and Statman<sup>109</sup> put forward the following dimensions:

1. *Freedom from coercion.* Participants are not free to participate or not participate in a transaction.
2. *Freedom from misrepresentation.* Fraud is not involved.
3. *Equal information.* All participants have access to the same information, so there is no insider trading.
4. *Equal processing power.* There is no disparity in the ability of participants to process information.

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<sup>109</sup> Shefrin, Hersh, and Meir Statman, 1993, Ethics, Fairness and Efficiency in Financial Markets, Financial Analysts Journal 49:6, (Nov. -Dec., 1993), pp. 21-29, in Angel and McCabe, supra note 8 page 20

5. *Freedom from impulse.* Participants are protected from their own irrational impulses. For example, prohibitions on drugs or cooling off periods that allow someone to cancel transaction ex post.
6. *Efficient prices.* Prices reflect all the information available in the market.
7. *Equal bargaining power.* There is no gross disparity in the power relationships between the participants.

There might be some controversy about some of these criteria, however, they provide a good basis for the discussion.

## **6. Applying ‘fairness in outcome’ to order anticipation**

As mentioned above, Stiglitz suggests that order anticipation is wrong because the profit from the price impact should go to the fundamental investors.<sup>113</sup> It may be tempting to conclude that the fairness framework would agree with this assessment. After all, fundamental investors make a deliberate effort to create profits through the analysis of the fundamental value of the company, and HF traders aim to deprive them of these profits. Furthermore, one may feel that rewarding fundamental research is in line with the regulatory objective. Unfortunately, it is not that simple, as the conclusion depends on what explanation for the price impact is correct.

### **a. Fairness in outcome if price impact is caused by liquidity effect**

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<sup>113</sup> See Stiglitz supra at note 3

Let's analyse the scenario assuming that that liquidity effect is the correct explanation for the price impact. Assume a fundamental investor estimates the value of a security, compares it with the current market price and decides to buy a large block of the security because it appears to be undervalued. Assume further the fundamental investor is able to execute her trade without being front-run by HF traders and that her trade is large enough to move the price. The key point is that the fundamental investor spends resources on estimating the fundamental value of the security, not the price impact of her trade. This is true almost by definition i.e. fundamental traders are traders which base their traders on fundamental values of a security and not the price impact of a security. If the investor truly is a fundamental investor then she would have bought/sold the security (provided that it was undervalued/overvalued), regardless of the liquidity impact. This is not to say that the liquidity impact cannot be so large that a fundamental traders may not buy a security. However, the liquidity impact has nothing to do with the future cash flow of a security, it is merely a function of how many securities are being offered in the market (i.e. the depth of the market). The price impact is simply an add-on for the fundamental investor. Assume a fundamental investor who buys one million shares because he estimates the security to be undervalued. If the market is very deep, the acquisition may have no price impact at all. If the market is not deep, the price impact may be large. However, whether the market is deep or not is a random event outside the control of the fundamental investor. If the investor basis her trading decision purely on the price impact of her trade, then, she would probably cease to be regarded as a fundamental investor. The typical scenario is, of course, a trade based on fundamental valuation but structured in such a way as to minimize price impact. However, this does not fundamentally change the analysis. The profits from the price impact are not based on the estimate of the fundamental value of a security. Order anticipation is not akin to somebody breaking into a trader's office and stealing the plan of the future trades. This would

be a clear case of appropriating profits which should go to the fundamental traders. However, if the liquidity explanation for the price impact is correct, then order anticipation is nothing like that. All the profits based on the estimate of the fundamental value of the security go to the fundamental trader. One may object to this analysis by arguing that fundamental traders do make an effort to capture the liquidity impact (e.g. by structuring the trade in specific ways). However, this argument overlooks the fact that other traders also make an effort to find out about the liquidity impact of a trade. Furthermore, it is not clear if letting the fundamental investor keep the profits from the price impact is in line with the regulatory objective. One objective of having a public stock market is to allocate resources efficiently and presumably regulations should aid this objective. Researching the fundamental value of a security contributes towards the efficient allocation of resources. The optimal amount of research presumably occurs when the marginal costs of research equals the marginal benefit. Allowing fundamental investors to keep the gains from price impact, could lead to excessive research and too many resources being devoted to stock market investments. Essentially, if the liquidity explanation is correct for price impact, then to argue that only fundamental investors should be allowed to keep it, is to argue that they should be allowed to keep an arbitrary profit that they did not intentionally create and this would also lead to too much investment in fundamental resources.

**b. Fairness in outcome if price impact is caused by signalling**

If on the other hand, the explanation for price impact is that large traders are a signal for informed investors then the analysis is different. The fundamental investor can be presumed to have made a deliberate effort to become an informed investor, therefore, all the profits the investor makes, including profits from the price impact, are not arbitrary. If large trades are indeed a signal for an informed investor than order anticipation is similar to somebody

‘stealing’ somebody else’s fundamental research because the HF trader *de-facto* profits from the research done by the fundamental trader. However, probably a better analogy is to think of it like an antique seller and an art expert, who specialises in finding lost masters. The art expert spends resources on developing the ability to spot original old masters among cheap fakes. Applied to order anticipation, the art expert would be the fundamental investors and the art dealer a market maker. The art expert would go to an antique seller and buy a painting, which he knows is worth \$1m from the antique seller, who believes it to be worth \$100. In the analogy HF traders would be like antique sellers who has developed a method that allows her to distinguish art expert from ordinary members of the public. Most people would probably agree that the art expert is under no moral obligation to disclose to the antique seller that he believes a painting to be an old master rather than a cheap fake. Some people might even argue that the antique seller has every right to try to find out whether the person who wants to buy a painting is an ordinary member of the public or an art expert. This intuition would mean that morally there is nothing wrong with HF trading. However, others may have a different intuition. Thus, it reasoning from analogy has its limits in this scenario. The reason for this is that the analysis depends on the background to the transaction and the context it is set in. For instance, if the antique sellers might be able to tell with 100% certainty whether the customer is an art expert or not (this would mean that there is no incentive to discover old masters). In other areas there are presumptions and rules to regulate what needs to be disclosed before a trade (e.g. food items need to be labelled with nutritional information, cigarette manufactures need to inform customers that their product is harmful.) This is by no means restricted to consumer contracts. It is generally the case that parties to a contract, regardless whether it is a business or consumer contract, are entitled to

assume that the counterparty will adhere to the standards and customs to of their industry.<sup>115</sup> Therefore, it is worth exploring what the relevant background for securities transactions is. This means, in this case it is more appropriate to use the fairness criterion which requires transactions to be in line with the overriding principles of securities regulation, rather than the criterion which states that arbitrary profits should be avoided. Probably one of the most fundamental principles of public markets are that investors should be treated alike and that all investors should have access to the same information. The following paragraphs will suggest that current regulation violates this principle by providing special privileges to investors trading in large blocks. These privileges are justified on the grounds of public policy (specifically to make the market more efficient). Therefore, it would be inconsistent to claim that order anticipation by HF traders cannot be justified on efficiency grounds.

Order anticipation is a way to detect hidden liquidity. Hiding liquidity essentially means telling the market that the demand or supply of a security is different than it actually is and order anticipation is a way to detect hidden liquidity i.e. finding out what the true demand and supply of a security is. The relevant question is why traders have the right to hide liquidity in the first place? Take for instance, what is commonly referred to as ‘iceberg orders’ (sometimes ‘called sliced orders’), which can be described as follows:

An iceberg order is a type of order placed on a public exchange. The total amount of the order is divided into a visible portion, which is reported to other market participants, and a hidden portion, which is not. When the visible part of the order is fulfilled, a new part of the hidden portion of the same size becomes visible<sup>116</sup>

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<sup>115</sup> For instance, the *uberrima fides* requirement in insurance contracts applies to commercial and consumer insurance alike - *Carter v Boehm* (1766) 97 ER 1162, 1164

<sup>116</sup> See ft/lexicon <http://lexicon.ft.com/Term?term=iceberg-order> (accessed 21 Sep 2106)

The point of iceberg orders is to enable investors to trade large block of shares without moving the market against them. *De facto*, an iceberg order disguises its true demand and supply. In most markets disguising one's trading intentions is not a problem, however, it is a problem in public markets because they are based on the premise of full disclosure with regards to liquidity. In the UK section 118(5) Financial Services and Markets Act 2000 (FSMA) outlaws behaviours which "give, or are likely to give, a false or misleading impression as to the supply of, or demand for, or as to the price of, one or more qualifying investments". A natural reading of this section suggests that hiding liquidity, for instance through iceberg orders, could amount to market manipulation. The reason why iceberg orders (and similar devices) are not illegal is because regulators have granted a series of waivers. For instance, article 29 of the Markets in Financial Directive (MiFID), allows competent authorities to be able to waive the obligation for investment firms or market operators operating an MTF and the MiFID Implementing Regulation<sup>118</sup> provides for the relevant types of waivers: reference price waiver, negotiated trade waiver, order management facilities and large-in-scale transactions.<sup>119</sup> These waivers were adopted in UK by the FCA.<sup>120</sup> The way these waivers are justified is by reference to improved efficiency of the market. For instance, the FCA writes that "[w]e continue to believe that the waivers are important to ensure an appropriate balance between transparency and liquidity in equities markets".<sup>123</sup> Pre-trade transparency waivers are not the only way 'misleading' the market about one's trading intention is sanctioned by the regulator. For instance, another example, is MAR 1.6.7G which provides:

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<sup>118</sup> COMMISSION REGULATION (EC) No 1287/2006

<sup>119</sup> For more detail see ESMA 'Waivers from Pre-trade Transparency - CESR positions and ESMA opinions' [https://www.esma.europa.eu/sites/default/files/library/2011-241h\\_esma\\_opinions\\_cesr\\_positions\\_on\\_pre-trade\\_waivers\\_0.pdf](https://www.esma.europa.eu/sites/default/files/library/2011-241h_esma_opinions_cesr_positions_on_pre-trade_waivers_0.pdf)

<sup>120</sup> See for instance MAR 5.7.6 and following. The order management facilities waiver is the one which provides the relevant waiver for iceberg orders

<sup>123</sup> FCA, "Markets in Financial Instruments Directive II Implementation – Consultation Paper I" Dec 2015, page 21

It is unlikely that the behaviour of market or auction platform users when dealing at times and in sizes most beneficial to them (whether for the purpose of long term investment objectives, risk management or short term speculation) and seeking the maximum profit from their dealings will of itself amount to distortion. *Such behaviour, generally speaking, improves the liquidity and efficiency of markets or auction platforms.* (italics added)

Similarly to the pre-trade transparency waivers this special treatment is justified by reference to market efficiency. The point to note is the following: Public securities market are based on the idea that all traders should be treated equally and have access to the same information. Information includes information as to future order flow. Therefore, strictly speaking misleading the market as to the true liquidity would be illegal. However, rightly or wrongly, regulators believe that the market will be more efficient if traders are allowed to mislead the market (within limits) about their own trading intentions. The reason is that regulators believe that large institutions would find it more difficult to trade if they were not able to disguise their block trade and this is the used to justify a departure from regulatory standards to allow large institutions to take advantage of smaller trades.

To make this point slightly more colourful the following illustration may assist. Assume a market for gems in which a group of traders (high-skilled traders) is able to detect which gems are real and which ones are fake, and another group (low-skilled traders) who are unable to detect this. Naturally high-skilled traders have an incentive to lie about the nature of the gems they buy or sell. When selling to low-skilled traders, high-skilled traders have an incentive to say that the gems they sell are real when in fact they are fake, and when they buy from low-skilled traders they have an incentive to say they are fake when in fact they are real. The regulator of this market allows traders to lie about the quality of the gems. Assume further that a new group of traders emerge in the market (clever traders) who are

able to ascertain who is a high-skilled trader and when they lie. Clever traders have no interest in holding the gems for the long run and sell them quickly to other traders. By doing so clever traders reduce trading costs for everyone in the market but high-skilled traders lose out as they can no longer deceive the market about the quality of the gems. In response, high-skilled traders complain that clever traders behaving unfairly. High-skilled traders argue that only they have a right to know the quality of gems before they trade. All the while asserting that they should be allowed to continue to lie about the quality of the gems. Intuitively, one might feel that high-skilled traders do not have a strong case. This hypothetical example is hyperbole and it says nothing about the efficiency of the market or of each strategy. It is simply an illustration that there may be a misplaced charge of unfairness against order anticipation. If a charge of unfairness is levelled against order anticipation, it may be that a concurrent charge of unfairness should be levelled against other trading strategies that are inherently unfair but that are currently permitted by regulators. However, it may well be the case that other allegations against order anticipation are true (e.g. that it is inefficient). Nonetheless, the case for arguing against order anticipation purely on the grounds of unfairness seems to be weak. The point is simple – institutional investors claim the right to mislead the market. This is not just an abstract theoretical problem, this misleading can have some real negative consequences for investors on the other side of a large order. Imagine trader ‘A’ who buys a security from trader ‘B’ and the next day trader B floods the market with more of the same securities depressing the price of the security. Potentially this can have dramatic effects on trader A. This arrangement is justified because it is believed to make the market more efficient. Therefore, if another arrangement, like order anticipation, makes the market even more efficient then it too should be seen as a legitimate trading practice. To claim that one group of trades (i.e. large institutional traders) are allowed to appeal to efficiency to justify its trading practices but to deny the appeal to

efficiency to other groups of trader (i.e. HF traders) amounts to a breach of the principle that all traders should be treated the same.

There are a number of possible objections against the above reasoning. For instance, one could argue that whether iceberg are fair or not is irrelevant to whether order anticipation is fair. Putting it differently, one could argue that just because institutional investors unfairly take advantage of smaller investors does not mean that is fair to take advantage of institutional investors.<sup>124</sup> However, this argument is not correct. The principle that one unfairness does not justify another one is undoubtedly correct ('two wrongs don't make a right'), however, this is not the issue here. The point is to whether it is justified to hide one's trading intentions (and the flip side whether it is fair to ascertain other people's trading intentions). Large institutional investors justify their 'right' to hide their trading intentions by appealing to market efficiency. Therefore, HF traders must also be allowed to justify order anticipation through an appeal to efficiency. Of course, what HF traders cannot do is to use this argument to justify unrelated activities. However, order anticipation is simply the flip side of large investors hiding their intentions (i.e. there is no point employing sophisticated strategies to anticipate future order flow, if the future order flow is public knowledge).

Another objection is to deny that institutional investor need to appeal to efficiency to justify being allowed to disguise their orders. The argument is that the articulation of market manipulation in section 118(5) FSMA is wrong and if a proper formulation of market manipulation would be applied, there would be no need to grant waivers to allow investors to disguise their trading intention. This would mean that it is incorrect to say that disguising one's trading intention is the same as market manipulation. Fischel and Ross put forward an

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<sup>124</sup> The same way one cannot argue that just because I neglected to let somebody pass on a zebra crossing, you have a right to steal my wallet.

argument that could be used for these purposes.<sup>127</sup> He argues that it is impossible to have a proper test of market manipulation without considering the intentions of the trader. Based on this he suggests the following test for market manipulation:

- i) The trading is intended to move the prices in a certain direction;
- ii) The trader has no belief that the prices would move in this direction but for the trade; and
- iii) The resulting profit comes solely from the traders ability to move price and not from his possession of valuable information<sup>128</sup>

Fischel and Ross deliberately designed the test so that

traders with private information who disguise their trades with the effect that prices do not move in the correct direction, or even move in the wrong direction [...] are not engaged in manipulation because their ultimate profit is attributable to private information they process<sup>129</sup>

In essence, what Fischel and Ross is saying that there is an objective difference between market manipulation and disguising one's trading intent. If this is correct than fundamental investors have a stronger argument against order anticipation. However, Fischel and Ross' test does not work. According to Fischel and Ross, if a trader buys 1 share because she believes the stock is a good buy, and then buys 1 million shares to manipulate that stock, this would not be market manipulation because the profits are not *solely* due to market manipulation. Another problem is if the expectations of the traders are wrong. For instance, according to Fischel and Ross' test the following would be market manipulation: A trader

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<sup>127</sup> Daniel R. Fischel & David J. Ross, "Should the Law Prohibit 'Manipulation' in Financial Markets?," 105 Harvard Law Review 503 (1991)

<sup>128</sup> Ibid. page 510

<sup>129</sup> Ibid. page 510

buys a stock because he believes the stock is undervalued using an iceberg order. However, the trader's assessment of the stock was wrong and he makes no profit except from the fact that he was able to disguise his trading intent. (Admittedly, this shortcoming in Fischel and Ross' test could be fixed as follows: 'the trader *intends* to profit solely from ...').

Nonetheless, apart from these technical issues, Fischel and Ross' test simply misses the point. Fischel and Ross believes that a trade should not count as market manipulation if some of the profits can be attributed to private information. However, why should this be the case? An analogy may be helpful. A shop that sells a fake Rolex watch claiming it is real has committed fraud. Another shop that sells a box containing two Rolex watches, one fake, one real, claiming that both of them are real, has also committed fraud. Thus, a trader who makes money purely from manipulating the market should be considered equivalent to trader who makes money from manipulating the market as well as from private information.

There are probably many more objections, which should be considered, however it would take too long to consider all of them separately. However, on a purely intuitive basis it is worth remembering that uninformed investors play an important part in the market. For every trade that involves an informed trader, there needs to be trader on the other side, and very often this is a uniformed traders. Without uniformed traders there would be no (or very little) liquidity in the market. Nevertheless, regulators have decided that all the profits from price impact should go to large investors.

## **7. Procedural fairness**

This article analyses procedural fairness through analysis of various techniques and strategies used by HF traders to anticipate order flow. This will not be an exhaustive exercise, as it would be too extensive to analyse every HF trading technique, especially as only a minority

are used in order anticipation. Therefore, this article will limit the discussion to two techniques or arrangements, namely so called ‘pinging’ and ‘co-location’. The reason for discussing these techniques rather than others is because they are central to order anticipation and, arguably, the most controversial. (Other strategies like, passive market making, are quite clearly legal and others like “wash trades” or “painting the tape” are clearly illegal and unfair.)<sup>130</sup> However, when it comes to pinging and co-location it is not clear if there is unfairness involved or not.

#### **a. Procedural fairness – pinging**

Shorter and Miller describe ‘pinging’ as follows:

[Pinging] involves HF [trading] firms placing buy and sell offers in 100-share lots for every listed stock (the minimum order needed to get them to the front of the trading queue). They may then receive a ping or a series of pings, which means the order or orders have been executed. The pings alert the HF firm to the presence of a large buy side investor’s order. A HFT trader would then act to be the buy side order’s counterparty at the first exchange, which part of the order arrived at.<sup>133</sup>

Fisher *et al.* considers pinging in the UK context and conclude that different to strategies like layering, quote stuffing and momentum ignition, pinging is not are illegal market manipulation strategies pursuant to section 90 Criminal Justice Act 2003.<sup>134</sup> Fisher *et al.*’s

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<sup>130</sup> The FCA Handbook – Market conduct was changed on 26 Jul 2016 with the implementation of the Market Abuse Regulation. The FCA Handbook in fore immediately prior explicitly mentioned these strategies as a potentially illegal See FCA Handbook immediately before 26 Jul 2016 MAR 1.6.2 and MAR 1.6.2

<sup>133</sup> Gary Shorter and Rena S. Miller Congressional Research Service, “High-Frequency Trading: Background, Concerns, and Regulatory Developments” page 12,

<sup>134</sup> Jonathan Fisher, Anita Clifford, Freya Dinshaw & Nicholas Werle (2015)

reasons for arguing this are quite straightforward, being that “these strategies [i.e. pinging] do not rely on the creation of false or misleading impressions”<sup>135</sup>, therefore there is no market manipulation. From Fisher *et al.*’s perspective, pinging is simply a strategy to detect liquidity. On the other hand, Scopino has put forward some interesting arguments suggesting that “high-speed pinging and related tactics are quite possibly illegal in the markets for futures and derivatives, based on existing provisions of the [US] Commodity Exchange Act (CEA) [...] and CFTC Regulations”<sup>136</sup>. Scopino’s arguments are directed at the US futures and commodities market, therefore one would not necessarily expect that his and Fisher *et al.* agree, as the latter deals with English law. However, Scopino’s argument contain interesting observations applicable to other markets and jurisdictions. Scopino’s main argument is that:

Specifically, the CFTC could argue that the initial “ping” orders for trades are deceptive because the purpose of those initial trades is to locate a large trade and, once a large trade is discovered, to enable the HFT firm to engage in trading practices that raise or lower the price more than would have been the case in the absence of that HFT firm’s manipulative and deceptive device<sup>137</sup>

This argument is based on two ideas. First, pinging seems to be inherently deceptive because the HF trader’s motivation for the trade is not to acquire the share but to trick the counterparty into revealing information that she does not want to disclose. Second, and more importantly, to ping successfully HF traders need to send out large numbers of orders, the

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Criminal forms of high frequency trading on the financial markets, *Law and Financial Markets Review*, 9:2, 113-119

<sup>135</sup> Ibid. page 118

<sup>136</sup> Gregory Scopino, “The (Questionable) Legality of High-Speed “PINGING” and “FRONT RUNNING” in the Futures Markets”, *Connecticut Law Review*, Volume 47, February 2015, Number 3, page 616

<sup>137</sup> Ibid page 689

vast majority of which are cancelled. According to Scopino, the cases of *re Gelber Grp*<sup>138</sup>, and *re Bunge Global Mkts*<sup>139</sup> suggest that the CFTC holds the following view regarding pinging, namely that it is

(1) giving the perpetrators an unfair advantage in the form of information “that [is] unavailable to other traders” [...] and (2) spreading “false and misleading” [...] prices in the market.<sup>140</sup>

This is an interesting argument, however, it does not quite work. Regarding the first argument (i.e. that pinging provides “information ‘that [is] unavailable to other traders’”). It is hard to see why the information derived from pinging should not be treated the same way as research derived from public information. In order to anticipate large orders, the HF trader collects publicly available information and draws conclusions from it. Individual pings are nothing else apart from offers to sell or buy orders. There are also issues with Scopino’s second argument (i.e. that pinging spreads “false and misleading” market prices). The problem here is that it is not necessarily the case that pinging distorts the market. To make his argument Scopino discusses the *London Whale* case. In this case “JPMorgan Chase agreed to pay \$100 million in fines and admitted that some of its traders in London acted recklessly, trading credit default swaps [...]”. With regards to the *London Whale* the CFTC position is correct (i.e. if somebody’s trades are so reckless that they distort the market there ought to be consequences), and the UK’s FCA would probably take similar view.<sup>141</sup> For HF trading this means the following, if a HF trader pings to the point that she distorts the market, then there ought to be consequences. However, in the absence of market distortion there should not be

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<sup>138</sup> In re Gelber Grp., LLC, CFTC Docket No. 13-15, 2013 WL 525839, at \*3 (C.F.T.C. Feb. 8, 2013)

<sup>139</sup> In re Bunge Global Mkts., Inc., CFTC Docket No. 11-10, 2011 WL 1099346, at \*4 (C.F.T.C. Mar. 22, 2011)

<sup>140</sup> Scopino supra at note 133 at page 663

<sup>141</sup> Ibid pages 676 - 682

any consequences. The conclusion is simple if HF traders distort the market, regulators ought to intervene; if HF traders do not, then they do not incur any liability. Whether pinging distorts the market is a question of fact, which must be decided on a case by case basis. To show market distortion there must be a price effect. Scopino's argument would only work if every case of pinging would create a price effect. However, he does not present any evidence for this and it also seems unlikely. (As mentioned at the beginning of this section, pinging involves buying shares in 100-share lots. Buying/selling 100 shares is unlikely to have any price effect). On this basis, it is wrong to claim as a general proposition that pinging equates to market distortion.

Scopino takes this argument further, suggesting that mass-cancellation of HF traders' orders demonstrates, in and of itself, that pinging is illegal, namely that the orders are not genuine. He argues that:

*Granted, one might argue that an HFT firm does not intend to cancel its trades before execution, but when cancellation rates creep into the seventy to ninety-fifth percentile of orders for trades, and when trading strategies are employed that make a high number of cancellations inevitable, such statements lack credibility<sup>142</sup>*  
(italics added)

However, it does matter that a "HFT firm does not intend to cancel its trades before execution". For instance, spoofing and layering, involves entering bid/offer with the intention of cancelling it before execution. This is deceptive because the trader is *de facto* telling the market that there is a bid/offer when in fact there is none. However, there is no deception in the case of pinging because the trader does not intend to cancel the bid/ offer before

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<sup>142</sup> Ibid page 688

execution. When pinging, the trader enters a bids/offer and if they are filled, the trade will be executed. Nonetheless, Scopino is right when he argues that there is something slightly ‘fishy’ about pinging orders because the motivation behind the order is not to acquire the share(s) but to get information about liquidity. Presumably, what Scopino is trying to say is that pinging involves buying shares for an improper purpose. However, currently there is no requirement that shares can only be bought for a ‘proper purpose’. To appreciate this point, it is useful to contrast pinging with spoofing. Spoofing involves cancelling an order before execution. Spoofing is illegal because the regulator decided that the market is entitled to rely on bids/offers not being put in the market with the intention of being withdrawn. However, spoofing is not deceptive in itself, it only becomes deceptive if the background circumstances make it so (i.e. the regulator deciding that one is allowed to rely on bids/offers not being withdrawn). However, pinging is different from spoofing in one important aspect. Spoofing can only work if one side of the trade is misled (i.e. one side to the trade must be misled into believing that the demand/ supply of a security is different from what it actually is). Thus, spoofing violates the fairness requirement of *freedom from misrepresentation*. Arguably, pinging works without any side to the trade being misled. In pinging, one side buys and the other sells without misrepresentation. One may be tempted to argue that there is misrepresentation because, presumably, if one party had known that the trade was carried out for the purpose of pinging, then it would not have agreed to it. However, this argument is not quite correct. Both sides of the transaction agreed to the trade based on the information that was provided. The HF trader did not represent to the other side that he is not engaged in pinging and the other side agreed to be part of a trade that carried the risk that it was used for pinging.

## **b. Procedural fairnessf – co-location**

Probably even more controversial than pinging is co-location (as well as related arrangements like direct data feeds; NB issues raised by arrangements like direct data feeds are very similar to those raised by co-location. However, for simplicity this article will only discuss co-location). Further, it is important to note that this section will analyse the fairness of co-location only with regards to order anticipation. There may be also sorts of reasons, apart from order anticipation, that traders want to co-locate. However, these reasons will not be considered. Co-location is simply an arrangement to allow traders to put their servers on an exchange's premises. This shortens the travel distance of signals sent by the exchange, and allows HF traders to receive signals before other traders. For some, this seems to be a highly problematic set up as it appears to create a two tier system. This violates the fundamental principle that all investors should have the same access to information and the fairness principles 3) "*Equal information*" and 4) "*Equal processing power*". Some might even regard it as a plain case of insider trading. However, and maybe somewhat surprisingly, regulators have generally taken a conciliatory approach towards co-location. The FCA (as well as other regulators like the SEC)<sup>144</sup> do not object to co-location arrangements *per se*<sup>145</sup>. Also legislative proposals, rather than outlawing co-location seek to regulate it. For instance, rather than outlawing co-location, MiFID aims to regulate it by requiring that it should be done on "a non-discriminatory, fair and transparent basis"<sup>147</sup>.

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<sup>144</sup> See for instance, Self-Regulatory Organizations; New York Stock Exchange LLC; Notice of Filing and Immediate Effectiveness of Proposed Rule Change to Offer Partial Cabinets and Cabinet Upgrades as Part of its Co-location Services and to Amend its Price List to Reflect the New Services, or Noam Noked, HLS Forum on Corporate Governance and Financial Regulation, "Increased Scrutiny of High-Frequency Trading" <https://corpgov.law.harvard.edu/2014/05/23/increased-scrutiny-of-high-frequency-trading/> (accessed 22 Sep 2016)

<sup>145</sup> See for instance, FCA, Wholesale sector competition review 2014-15, Feb 2015, pages 48 – 49

<sup>147</sup> DIRECTIVE 2014/65/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 15 May 2014 on markets in financial instruments and amending Directive 2002/92/EC and Directive 2011/61/EU recital 62

However, there have been legal challenges to co-location and direct data feeds, which provide some useful insights into the fairness and legality of the arrangement. The US case of *City of Providence, Rhode Island v. BATS Global Markets*<sup>149</sup> is probably the most illuminating. *Inter alia*, the case involved the following:

[T]he Complaints [the City of Providence] plead two sets of claims: one set of claims under Section 10(b) of the Exchange Act and Rule 10b-5, which make it unlawful “[t]o use or employ, in connection with the purchase or sale of any security[,] . . . any manipulative or deceptive device or contrivance in contravention of . . . rules and regulations” promulgated by the SEC, 15 U.S.C. § 78j(b); and a second set of claims under Section 6(b) of the Exchange Act, which requires the Exchanges to adopt rules and regulations that, among other things, “prevent fraudulent and manipulative acts and practices” and to abide by those rules and regulations, 15 U.S.C. § 78f(b)<sup>150</sup>

The suit failed primarily because “manipulative-scheme claims can be based only on primary violations of the Exchange Act; there is no liability under the Exchange Act for aiding and abetting a manipulative scheme”<sup>152</sup>. However, the court went further and held that the claim under section 10(b) fails because co-location does not amount to ‘manipulation’ because a “manipulative act is [...] any act — as opposed to a statement — that has [...] an ‘artificial’ effect on the price of a security” and co-location does not create an artificial effect.<sup>153</sup> *City of*

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<sup>149</sup> *City of Providence, Rhode Island v. BATS Global Markets, Inc., et al.*, C.A. No. 1:14-02811

<sup>150</sup> *Ibid* page 24

<sup>152</sup> *Ibid* page 25

<sup>153</sup> *Ibid* page 26. The judge further states at page 27 that “The SDNY Plaintiffs, however, fail to explain how merely enabling a party to react more quickly to information can constitute a manipulative act, at least where the services at issue are publicly known and available to any customer willing to pay”.

*Providence* highlights the difficulties plaintiffs may face in suing HF traders or exchanges.

However, the court also concluded:

[C]ritics of HFT may be right in arguing that it serves no productive purpose and merely allows certain traders to exploit technological inefficiencies in the markets at the expense of other traders. They may also be right that there is a need for regulatory or other action from the SEC or entities such as the Exchanges and Barclays. Those, however, are debates and tasks for others.<sup>156</sup>

Nevertheless, *City of Providence* provides some useful pointers for the discussion of fairness, and makes it quite clear that it is hard to see co-location as market manipulation. This seems rather intuitive, as all that happens in co-location is that some traders receive information before other traders, which seems more akin to insider trading than to market manipulation. Therefore, it is probably best to analyse the fairness aspects of co-location by analysing its connection to insider trading rather than market manipulation.

In analysing co-location this article will make the assumption that it is actually possible to stop co-location. Commentators have pointed out that, even if not located in an exchange, co-location would continue to exist in some form.<sup>160</sup> For instance, if co-location in the exchange was not possible then HF traders may locate adjacent to the exchange (or to the closest permitted location to the exchange). However, this would be a question of how to manage co-location rather than whether it is fair or not. While there is some scepticism, there are proposals which suggest that stopping co-location is possible. For instance, Budish *et al.*

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<sup>156</sup> Ibid page 51

<sup>160</sup> See for instance, Ashurst, “#1 MiFID Briefing Series, The MiFID II Review, A detailed analysis for banks and investment firms”, April 2014 ([file:///C:/Users/lawfg/Downloads/34538743%20\(3\).pdf](file:///C:/Users/lawfg/Downloads/34538743%20(3).pdf)) (accessed 6 Oct 2016)

have advanced a proposal which has the potential to stop HF trading altogether.<sup>161</sup> Also the experience of IEX suggest that it might be possible to create a system without co-location.<sup>162</sup> A more complete treatment of the fairness of co-location would certainly need to cover the possibility that it may not be possible to eradicate co-location. Nevertheless, for the sake of brevity this article will omit this option. As mentioned in section 4 of this article, a common argument against co-location being ‘unfair because few can afford it’ fails because traders invest in co-location to make money from it (and as such could borrow to fund their operations). This is also the reason why applying the fairness criterion ‘*equality of information*’, is not as straightforward as it may appear. The best way to regard ‘*equality of information*’, is by arguing that all market participants should have equal possibility to acquire information, rather than all having the same information. (The latter would for instance mean that fairness would not only require all market participants to have access to the annual report of a company but for every market participants to have read the report). Nonetheless, ‘the few can afford it’ argument does point in the right direction. Applying the fairness framework may be helpful in determining where the problem lies. First, it can be argued that the exchange (or the owner of the co-location premises) receives an arbitrary profit; as being able to charge for co-location is a ‘by-product’ of bringing buyers and sellers of securities together at the exchange. However, the fact that a profit is arbitrary does not mean that one is not allowed to keep it. It only means that one has less of claim to it than if it was non-arbitrary. The problem with charging for co-location is not because only a few traders can afford it, it is that co-location is only ‘useful’ if it creates a two-tier system. If every trader would invest in co-location facilities then co-location could no longer be used for order anticipation. The key advantage of co-location is that it provides faster *relative* speed

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<sup>161</sup> Eric Budish, Peter Cramton, and John Shim, “The High-Frequency Trading Arms Race: Frequent Batch Auctions as a Market Design Response” *The Quarterly Journal of Economics* (2015) 130 (4): 1547-1621. July 23, 2015

<sup>162</sup> See <https://www.iextrading.com/> (accessed 06 Oct 2016)

not *absolute* speed. This is where the problem lies and this is why the analogy made by Korsmo (i.e. that investing in co-location is similar to investing in technology) and the argument that co-location is enhancing market efficiency is wrong.<sup>163</sup> Order anticipation through co-location only works if it enables some traders to be faster than others. Korsmo's analogy would work if HF traders simply tried to improve their *absolute* speed. However, this is not the case. HF traders invest in co-location not because they aim to be fast but because they need to be faster than other traders. The point of co-location is that it offers traders the ability to have information before other traders and this is a violation of the principle that all market participants should have access to the same information. If traders invested in technology simply for the purpose of making more accurate forecasts about the future cash flow of a company, then Korsmo's analogy would be correct. Being able to forecast future cash flow more accurately gives traders an advantage over other traders. However, at least in principle, even if all traders had access to technology (and therefore, be able to forecast, cash flow more accurately) they would receive an advantage. The situation is different for order anticipation, which is based on co-location. If co-location was available to everyone then it would be useless for order anticipation. (Note, however, that trader may still have an incentive to pay for co-location, to avoid suffering a disadvantage). If co-location was available to everyone traders would pay the exchange without receiving any advantage. It is important to note that in this analysis, the person being treated unfairly is not the trader whose order is being front-run but all the traders in the market. To summarise, there are two problems with co-location. First, co-location is unfair because it gives the exchange an 'arbitrary' profit. Second, it is unfair because it violates the principle of equal treatment among market participants.

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<sup>163</sup> Korsmo supra note 73

## 8. Policy implications

There are many other aspects apart from fairness, which will determine the policy treatment of order anticipation. As the above arguments only dealt with fairness the policy implication will be rather short. The only recommendation that will be made is that there are two types of inside information (one is information relating to fundamental information about the issuer and one is information about the demand and supply of a financial instrument), and it is better to keep the two separate. To see the relevance of this point it is important to recognise that from a high level policy view, regulators have three choices:

- i) Allow traders to hide liquidity (e.g. allow iceberg orders), and do not outlaw order anticipation
- ii) Allow traders to hide liquidity (e.g. allow iceberg orders), and outlaw order anticipation
- iii) Do not allow traders to hide liquidity (e.g. outlaw iceberg orders)

Thus far, regulators have favoured approach i). Although, *prima facie* may appear rather inefficient. It creates a system in which institutional investors spend resources on hiding their trading intentions and HF traders spend resources on detecting trading intentions, which in turn may induce institutional investors to spend more resources on hiding it better, and so on. However, besides this apparent inefficacy, choosing option i) may be a good choice.

Regulators may view it as too risky to require complete order flow transparency (e.g. by outlawing iceberg orders). On the other hand, regulators believe order flow contains valuable information, which the market should have. Option i) is a low risk compromise. This is not to say that future research may not be able to show that either option ii) or iii) are better, however, at the moment option i) is the safe choice. Broadly speaking regulation still favours

option i), however, in Europe with the introduction of EU MAR there is a move towards option ii). EU MAR does away with the concept of ‘trading information’. According to the FCA article 7 EU MAR means that “the concept of trading information is irreconcilable with EU MAR”. Consequently the FCA has cancelled all the references to trading information in the FCA handbook. This is significant for order anticipation. Before the implementation of the EU MAR the FCA operated a *de-facto* dual regime for inside information which was fundamental information and inside information that was order flow information. For instance, MAR 1.3.2 E(1) made this clear by stating that the FCA does regard “dealing on the basis of inside information *which is not trading information*” (emphasis added) as market abuse. “Trading information”<sup>164</sup> has a very similar definition to order flow. Thus, dealing on the basis of order flow information normally did not amount to insider dealing (whereas dealing on the basis of other types of inside information normally amounts to insider dealing). In fact, it is only under special circumstances that the FCA regards trading based on order flow information as insider dealing (e.g. front-running within the context of M&A transactions (MAR 1.3.2(2) - (4) these exemptions were not changed by EU MAR). However, by eradicating the concept of trading information it will be more difficult for HF traders to

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<sup>164</sup> ‘Trading information’ is defined as:

information of the following kinds:

- (1) that investments of a particular kind have been or are to be acquired or disposed of, or that their acquisition or disposal is under consideration or the subject of negotiation; or
- (2) that investments of a particular kind have not been or are not to be acquired or disposed of; or
- (3) the quantity of investments acquired or disposed of or to be acquired or disposed of or whose acquisition or disposal is under consideration or the subject of negotiation; or
- (4) the price (or range of prices) at which investments have been or are to be acquired or disposed of or the price (or range of prices) at which investments whose acquisition or disposal is under consideration or the subject of negotiation may be acquired or disposed of; or
- (5) the identity of the persons involved or likely to be involved in any capacity in an acquisition or disposal.

In FCA Handbook <https://www.handbook.fca.org.uk/handbook/glossary/G1697.html?date=2016-07-02> (accessed 6 Oct 2016)

justify order anticipation.<sup>165</sup> The exemptions allowing traders to hide liquidity have been left untouched by EU MAR.

However, regardless of whether one thinks it to be beneficial to stop order anticipation or not, there are better methods available than conflating order flow and fundamental information. Even under the regime in place before July 2016 it would have been desirable to make it explicit that there are two types of inside information, however, rather than making the distinction more explicit the EU MAR abolishes it. The distinction between fundamental information and order flow information is one of substance and the issues that they raise are different. One difference is that the former usually attracts an obligation to the information to the market but the latter does not and there are many others. This is not a novel idea and has already been noted by other commentators.<sup>166</sup> Keeping in mind this distinction helps to explain a number of ‘curiosities’. For instance, within the US context Fox *et al* note that it is “permissible for core-data information to reach an HFT more rapidly than the public recipients of the SIP as long as the signal sending the data to the HFT did not precede the signal sent to the SIP”.<sup>175</sup> The important point about this passage is that information is deemed to be in the public domain (and therefore not inside information) when it is sent by the relevant entity and not when it has (or can reasonably be expected) to be received by the market. As Fox *et al*. highlighted this as a somewhat peculiar interpretation. They write:

Interestingly, this focus on the time at which information reaches end users rather than the time of a public announcement is the approach the courts and the

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<sup>165</sup> This is not the end of order anticipation. As HF traders can still potentially rely on the market maker exemption (MAR 1.3.7G), or the argument that information received through co-location is not inside information because it is publicly available

<sup>166</sup> See for instance Stanislav Dolgoplov “INSIDER TRADING, INFORMED TRADING, AND MARKET MAKING: LIQUIDITY OF SECURITIES MARKETS IN THE ZERO-SUM GAME” 3 Wm. & Mary Bus. L. Rev. 1 2012

<sup>175</sup> Fox et al supra 21 page 270

SEC have traditionally taken with respect to when, for purposes of the regulation of insider trading, information is no longer non-public.<sup>176</sup>

For fundamental information (i.e. information about an issuer) the relevant time when information is deemed to be public is after the market has a reasonable time to absorb it. Whereas for order flow information the relevant time is when the information was sent. Thus, the questions arises what explains this difference. According to the principles underlying current regulation information, about an issuer, which is disclosable, should be as widely distributed in the market as possible. (Of course, issuer are not required to disclose all information about themselves. Issuers are for instance allowed to withhold the content of patents, and to delay disclosure to protect its legitimate interest). However, the point is that once information is deemed disclosable ideally every market participant should have this information. The regulatory goal is to ensure that fundamental information is as widely distributed as possible and as quickly as possible. Therefore, it makes sense to regard fundamental information to be deemed publicly available only after the market has a reasonable time to respond to it. This is not the case for order flow information. Order flow information never become disclosable as such, to trade is to make the disclosure. How uncomfortable the concepts of trading on order flow information and trading on fundamental information sit together can also be seen by the way front-running is handled. MAR 1.3.2(2) provides that a broker front-running her client is *prima facie* insider dealing. However, 1.3.15(2) provides that one of the behaviours to be taken into account to assess the legitimacy of this behaviour is whether the client has agreed to it. This is somewhat strange, as was noted by Hopper,<sup>177</sup> because the in the UK insider dealing is regarded as a wrong against other

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<sup>176</sup> Ibid page 271

<sup>177</sup> Martyn Hopper, Kikunj Kiri, Mark Bardell, Carol Shutkever, Christine Astaniou, Tim West, Karen Anderson, A Practitioner's Guide to the Law and Regulation of Market Abuse, Sweet and Maxwell, London, UK, 2013 Page 303

market participants, thus, consent by the client should be irrelevant. If it is decided to stop order anticipation it would be better to make this explicit rather than trying to subsume order flow information into fundamental information.

## **9. Conclusion**

The goal of this article was to bring clarify the debate about fairness of order anticipation. The conclusion is that generally speaking order anticipation is not unfair. It may be socially wasteful but it is not unfair. Co-location, on the other hand, is unfair because it is based on receiving information before other market participants rather than simply receiving information faster. As, an aside it was suggested that, regulators should make an explicit distinction between inside information which is fundamental information (i.e. information about the issuer) and inside information, which is based information about the demand and supply of a security. The question about fairness of order anticipation is, of course, only one of the issues that need to be resolved with regards to HF trading. However, the main contribution of this article to the debate on HF trading is that the debate should be about efficiency only, that the charge of unfairness against order anticipation is largely misplaced.