

Essay Plan: High Frequency Trading.

Introduction

This section should begin the essay by providing a simple background on high frequency trading (HFT) and explain why this investigation is interesting. The introduction should then briefly describe how the paper is organised and how each subsequent section contributes to the overall narrative.

Changes in the history of trading

A useful historical guide to the developments that led to the emergence of HFT is provided in Capgemini (2012). First, highlight some of the modern technologies that have been adopted over the years:

- 1971: The development of the NASDAQ, the first electronic market which also introduced an electronic quotation system.
- 1976: The Designated Order Turnaround (DOT) system on the NYSE which allowed the electronic transmission of buy and sell orders.
- 1980s: The advent of program trading where programs could automatically place orders for securities without human intervention.
- 1990s: The introduction of ECNs to facilitate trading between counterparties rather than through an exchange.

Some of the regulatory changes have also been important such as the narrowing of spreads in 2001 and the passing of Regulation National Market System in 2005 by the SEC. This was

aimed at promoting transparency between markets and required trade orders to be posted nationally instead of at individual exchanges.

What is high frequency trading

Begin with a definition of HFT. SEC (2010, p. 45) gives one example: “professional traders acting in a proprietary capacity that engage in strategies that generate a large number of trades on a daily basis”. Capgemini (2012) adds several characteristics attributed to HFT as well including the use of high-speed computer programs for order execution, co-located servers and data feeds to minimise latencies, short trading timeframes, submitting orders that are cancelled soon after submission, and maintaining very few overnight positions.

Crucially, however, not all trades that fall under these requirements necessarily represents HFT activity which makes an actual definition difficult. SEC (2014), for instance, suggests that HFT is “what HFT firms do”. Thus, SEC (2014) quotes research such as ASIC (2013) to show that trades that were initially suspected to be HFT trades turned out not to be HFT trades after all. Further, Brogaard et al (2015) found that non-HFT firms also used co-located servers like HFT firms, implying that the use of co-located servers on its own is not necessarily an indicator of HFT activity. Finally, another issue is that non-HFT market participants frequently use trading systems which have automated functions that allow orders to be submitted to the market beyond the capabilities of human beings, but are not trading algorithms used to facilitate HFT (SEC, 2014).

Methods and Strategy

The SEC (2014) gives a good overview of a number of papers that have been written to classify different HFT strategies. There are generally four types of short-term trading strategies used in the market – passive market making, arbitrage, structural, and directional – and HFT has been applied to each one of these trading strategies. This section should

differentiate between active and passive HFTs, where passive HFTs are used purely for market making strategies to automatically provide liquidity to the market while active HFTs are liquidity taking orders that are aimed at making trading profits from the market.

Effects of HFT

As suggested by the SEC's (2010) Concept Release, HFT may have significant effects on the market. Notably, HFT may have effects on various dimensions including short-term volatility in security prices, liquidity, spreads, and price discovery. A number of papers in the literature have investigated this. The following examples of papers generally report the effects of HFT activities on liquidity.

- Jovanovic and Menkveld (2016) showed that the entry of HFTs in a limit order market increased the number of trades by 17% and reduced adverse selection by 23%.
- Bershova and Rakhlin (2012) examined HFT activity in the Tokyo and London equity markets and found that HFTs tend to increase intraday volatility, thus increasing transaction costs. However, HFT also significantly reduced bid-ask spreads. In general, the activity of HFTs led to a net reduction in trading costs.
- Malinova et al (2013) determined that an increase in regulatory fees which led to a decrease in HFT activities led to a decrease in the volume of orders, trades, and order cancellations by 30% and an increase in the bid-ask spread by 9%. This led to a negative impact on the returns of intraday retail traders while institutional traders saw greater returns from their intraday market orders.

This section of the essay should focus on the other papers that have been written on the subject, examining further how HFTs affect the other measures of market microstructure (price discovery, volatility, etc)

Conclusion

The conclusion of the essay should briefly summarise the results found in each of the sections of the essay before offering a considered opinion on whether HFT, in general, has positive or negative effects on the market.



References

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<https://www.sec.gov/rules/concept/2010/34-61358.pdf>

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