Systemic microstructure risks of high speed trading

Pankaj Jain Pawan Jain Thomas McInish

Discussed by:
Nidhi Aggarwal
, Finance Research Group, IGIDR

December 19, 2014

The paper

- Examines how latency improvement at the exchange's end affected

The paper

- Examines how latency improvement at the exchange's end affected
  1. Liquidity,

The paper

- Examines how latency improvement at the exchange's end affected
  1. Liquidity,
  2. Systemic microstructure risk.

The paper

- Examines how latency improvement at the exchange's end affected
  1. Liquidity,
  2. Systemic microstructure risk.
- Hypothesis: Latency improvement increased high frequency trading in the market.

The paper

- Examines how latency improvement at the exchange's end affected
  1. Liquidity,
  2. Systemic microstructure risk.
- Hypothesis: Latency improvement increased high frequency trading in the market.
  1. Has that improved liquidity supply in the markets?
  2. Has that made the markets more fragile?
- Exploits an exogenous event: the introduction of a high speed trading platform, the *Arrowhead*, by the Tokyo Stock Exchange.

The paper

- Examines how latency improvement at the exchange's end affected
  1. Liquidity,
  2. Systemic microstructure risk.
- Hypothesis: Latency improvement increased high frequency trading in the market.
  1. Has that improved liquidity supply in the markets?
  2. Has that made the markets more fragile?
- Exploits an exogenous event: the introduction of a high speed trading platform, the *Arrowhead*, by the Tokyo Stock Exchange.
- Pre and post analysis for a set of 150 stocks.

The paper

- Examines how latency improvement at the exchange's end affected
  1. Liquidity,
  2. Systemic microstructure risk.
- Hypothesis: Latency improvement increased high frequency trading in the market.
  1. Has that improved liquidity supply in the markets?
  2. Has that made the markets more fragile?
- Exploits an exogenous event: the introduction of a high speed trading platform, the *Arrowhead*, by the Tokyo Stock Exchange.
- Pre and post analysis for a set of 150 stocks.
- Finds that while
  1. Liquidity improved for a majority of the sample stocks,

The paper

- Examines how latency improvement at the exchange's end affected
  1. Liquidity,
  2. Systemic microstructure risk.
- Hypothesis: Latency improvement increased high frequency trading in the market.
  1. Has that improved liquidity supply in the markets?
  2. Has that made the markets more fragile?
- Exploits an exogenous event: the introduction of a high speed trading platform, the *Arrowhead*, by the Tokyo Stock Exchange.
- Pre and post analysis for a set of 150 stocks.
- Finds that while
  1. Liquidity improved for a majority of the sample stocks,
  2. there was a corresponding increase in the systemic microstructure risk as well.

The paper

- Examines how latency improvement at the exchange's end affected
  1. Liquidity,
  2. Systemic microstructure risk.
- Hypothesis: Latency improvement increased high frequency trading in the market.
  1. Has that improved liquidity supply in the markets?
  2. Has that made the markets more fragile?
- Exploits an exogenous event: the introduction of a high speed trading platform, the *Arrowhead*, by the Tokyo Stock Exchange.
- Pre and post analysis for a set of 150 stocks.
- Finds that while
  1. Liquidity improved for a majority of the sample stocks,
  2. there was a corresponding increase in the systemic microstructure risk as well.
- Severe implications from a policy perspective.

The design

- The introduction of Arrowhead induced higher levels of HFT into the market.

The design

- The introduction of Arrowhead induced higher levels of HFT into the market.
  - **Q**: What is the degree of HFT at TSE for the sample? Can use available proxies to get a sense of it?

The design

- The introduction of Arrowhead induced higher levels of HFT into the market.
  - **Q**: What is the degree of HFT at TSE for the sample? Can use available proxies to get a sense of it?
- Is there a large cross-sectional variation in the degree of HFT for the sample stocks?

The design

- The introduction of Arrowhead induced higher levels of HFT into the market.
  - **Q**: What is the degree of HFT at TSE for the sample? Can use available proxies to get a sense of it?
- Is there a large cross-sectional variation in the degree of HFT for the sample stocks?
- If yes, can we identify stocks with high HFT and low HFT post arrowhead? Do we see systematic differences in the measures used in the paper across these two sets in the pre and post Arrowhead period?

On the measures used

- To capture systemic microstructure risk, the paper uses CoVaR and CoVaQ.

On the measures used

- To capture systemic microstructure risk, the paper uses CoVaR and CoVaQ.
  - Not clear as to how is the tail risk being captured?

On the measures used

- To capture systemic microstructure risk, the paper uses CoVaR and CoVaQ.
  - Not clear as to how is the tail risk being captured?
- To capture shock propagation risk, autocorrelation and cross correlation in order flow are used.

On the measures used

- To capture systemic microstructure risk, the paper uses CoVaR and CoVaQ.
  - Not clear as to how is the tail risk being captured?
- To capture shock propagation risk, autocorrelation and cross correlation in order flow are used.
  - **Q**: Is the cross correlation being measured between the security and the market index? Or with all other securities?

On the measures used

- To capture systemic microstructure risk, the paper uses CoVaR and CoVaQ.
  - Not clear as to how is the tail risk being captured?
- To capture shock propagation risk, autocorrelation and cross correlation in order flow are used.
  - **Q**: Is the cross correlation being measured between the security and the market index? Or with all other securities?
  - Boehmer and Shankar (2014) examine commonality in the order flow after the introduction of co-location at NSE, and find that AT *reduces* this commonality.

On the measures used

- To capture systemic microstructure risk, the paper uses CoVaR and CoVaQ.
  - Not clear as to how is the tail risk being captured?
- To capture shock propagation risk, autocorrelation and cross correlation in order flow are used.
  - **Q**: Is the cross correlation being measured between the security and the market index? Or with all other securities?
  - Boehmer and Shankar (2014) examine commonality in the order flow after the introduction of co-location at NSE, and find that AT *reduces* this commonality.
- Quotes to trades ratio used to capture quote stuffing risk
  - High quotes to trades ratio a typical feature of HFT.
  - Not convinced how it captures quotes stuffing risk.

On the measures used

- To capture systemic microstructure risk, the paper uses CoVaR and CoVaQ.
  - Not clear as to how is the tail risk being captured?
- To capture shock propagation risk, autocorrelation and cross correlation in order flow are used.
  - **Q**: Is the cross correlation being measured between the security and the market index? Or with all other securities?
  - Boehmer and Shankar (2014) examine commonality in the order flow after the introduction of co-location at NSE, and find that AT *reduces* this commonality.
- Quotes to trades ratio used to capture quote stuffing risk
  - High quotes to trades ratio a typical feature of HFT.
  - Not convinced how it captures quotes stuffing risk.
  - An alternative: Ratio of quotes to trades to average time to modifications? Requires data on quote updates.

The econometric approach

- The paper uses three periods: Jun 2008, Jan 2009 and Jan 2011 to analyse the impact.

The econometric approach

- The paper uses three periods: Jun 2008, Jan 2009 and Jan 2011 to analyse the impact.
- Co-location introduced in November 2008, and Arrowhead in Jan 2010.
    1. **Q**: Effect of co-location not expected to be large in Jan 2009?

The econometric approach

- The paper uses three periods: Jun 2008, Jan 2009 and Jan 2011 to analyse the impact.
- Co-location introduced in November 2008, and Arrowhead in Jan 2010.
    1. **Q**: Effect of co-location not expected to be large in Jan 2009?
- For robustness, regression analysis between Jun 2008 and Jan 2009 will be useful?

The econometric approach

- The paper uses three periods: Jun 2008, Jan 2009 and Jan 2011 to analyse the impact.
- Co-location introduced in November 2008, and Arrowhead in Jan 2010.
    1. **Q**: Effect of co-location not expected to be large in Jan 2009?
- For robustness, regression analysis between Jun 2008 and Jan 2009 will be useful?
- Add a control for market volatility in the regressions?

The econometric approach

- The paper uses three periods: Jun 2008, Jan 2009 and Jan 2011 to analyse the impact.
- Co-location introduced in November 2008, and Arrowhead in Jan 2010.
    1. **Q**: Effect of co-location not expected to be large in Jan 2009?
- For robustness, regression analysis between Jun 2008 and Jan 2009 will be useful?
- Add a control for market volatility in the regressions?
- Some more details of HIGHSPEED and LOWSPEED dummy used in the regression?

The econometric approach

- The paper uses three periods: Jun 2008, Jan 2009 and Jan 2011 to analyse the impact.
- Co-location introduced in November 2008, and Arrowhead in Jan 2010.
    1. **Q**: Effect of co-location not expected to be large in Jan 2009?
- For robustness, regression analysis between Jun 2008 and Jan 2009 will be useful?
- Add a control for market volatility in the regressions?
- Some more details of HIGHSPEED and LOWSPEED dummy used in the regression?
- Report the regressions with intraday seasonality dummy?

Thank you