Ryan Riordan
Discussion of: The Profits of High Frequency Traders

Matthew Baron
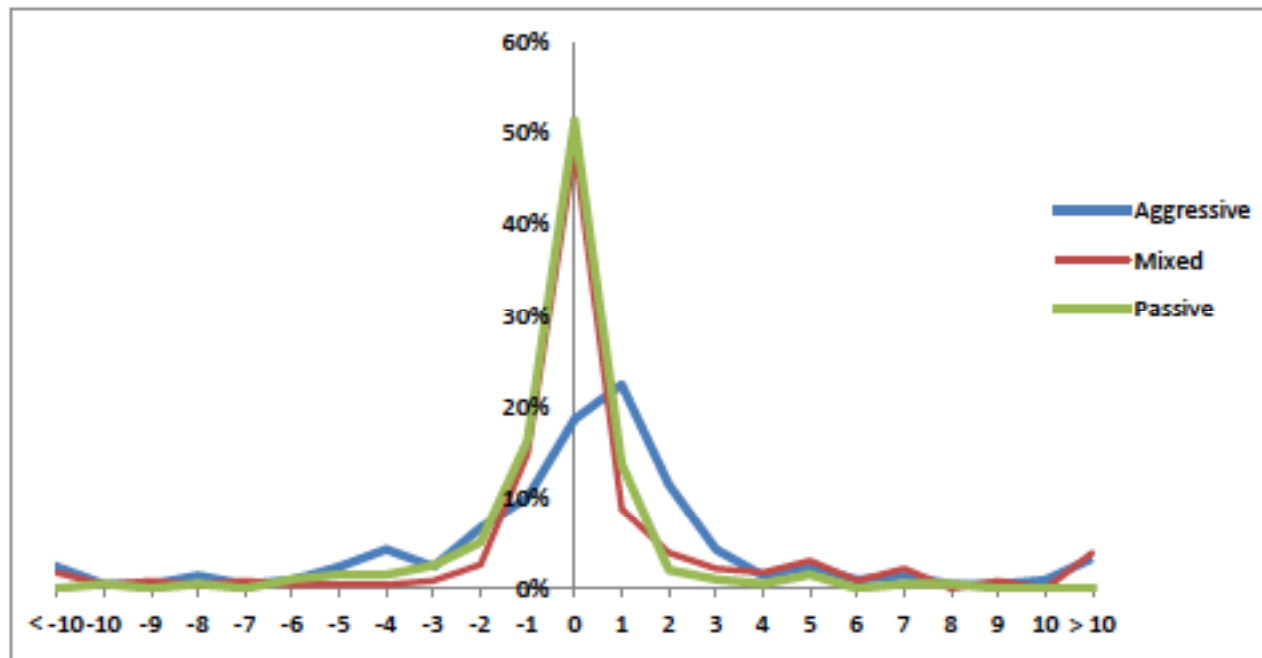**Jonathan Brogaard**
Andrei Kirilenko

University of Ontario Institute of Technology - Faculty of Business and Information Technology

Paper Summary

- Study of the profitability of a class of intermediaries (HFT)

Profits Per Contract

What this paper does well

- Interesting data set
  - Order level trading data in the e-mini
  - Identifying participant information

- The instrument being studied is important
  - S&P 500 e-mini

- Good job of identifying different participants
  - HFT (including subgroups)
  - Opportunistic, fundamental, small, other intermediaries

- Focus on profits and link these to our understanding of market efficiency

What this paper could do better

- Story…
    - What is economically important about these results?
    - Get away from the market efficiency story
    - More later

- Give us more context for trading in S&P 500 e-minis
    - This is a huge and important market and it isn't being stressed enough in the paper
    - E-minis are used for speculation, hedging, passive investing, asset management, risk-management…
- HFT profiting from traders with different motives may not be a bad thing
    - Are they profiting more/less than intermediaries that pre-date automation (in this market)?
- Sharpe ratios may not be a good measure given we do not observe costs and these may be wildly different for HFT versus others

Hasbrouck and Sofianos – JF 1993

	Total Sample
Number of securities	137
Median (average number of transactions per day)	19.73
Total profits ($ per transaction)	
Median	7.55
Median S.E.	15.78
I.Q.R.	19.55
Long-term profits ($ per transaction)	
Median	−7.02
Median S.E.	13.22
I.Q.R.	22.73
Medium-term profits ($ per transactions)	
Median	6.08
Median S.E.	5.55
I.Q.R.	8.89
Short-term profits ($ per transaction)	
Median	12.24
Median S.E.	2.81
I.Q.R.	10.34

- Hasbrouck and Sofianos look at the trading and profitability of NYSE specialist

- Important because specialists were highly regulated monopolist

- Regulation removed their monopoly, traditional specialist firms are almost non-existent

- Specialists profit in the short term and lose over longer periods (profits from ST information and spread)

Harris and Schultz JFE 1998

J.H. Harris, P.H. Schultz/Journal of Financial Economics 50 (1998) 39–62
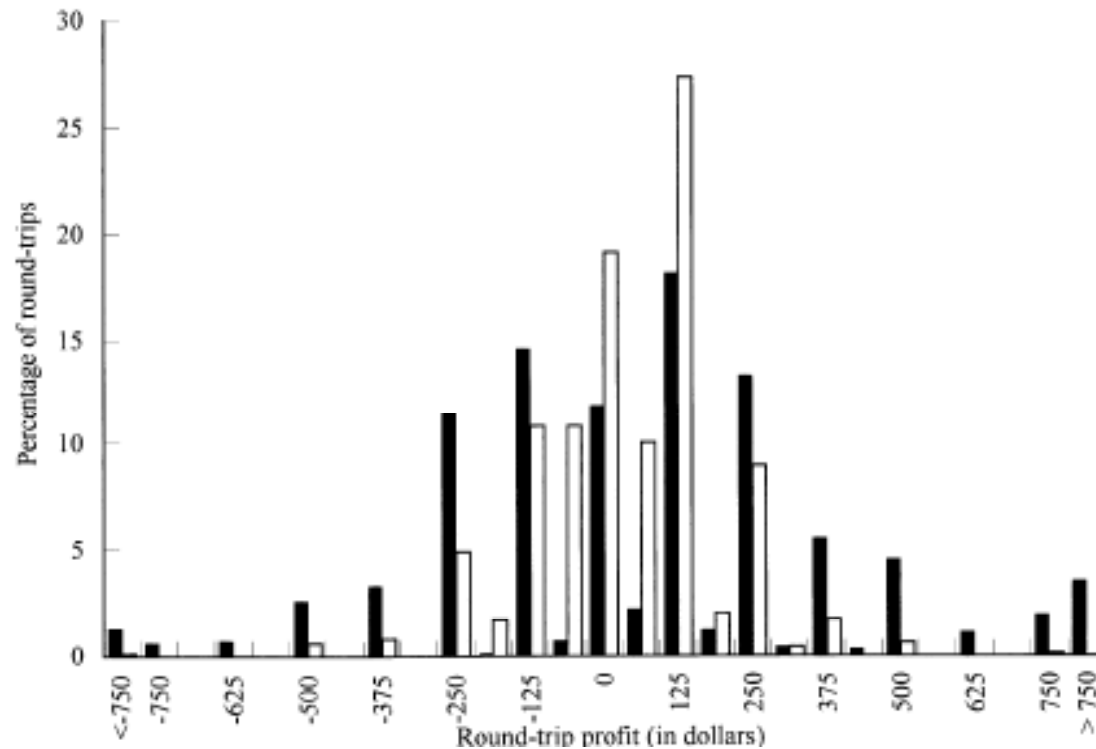
- SOES Bandits arbitrage prices on SOES and Island and Instinet (ST-Information)
- These SOES bandit profits look similar to HFT^A profits
- A lot of small gains and more mass in tails than we would expect (normal)
- Their story revolves around the structure of the different markets (NASDAQ, Island, and Instinet)

6

Hau: Location Matters (JF 2001)

- Hau formulates 5 hypotheses to explain trading profits
    - Financial center (Frankfurt)
    - Joint culture and geographic distance (Foreign)
    - Pure geographic (Austria, Switzerland)
    - HQ proximity
    - Institutional economies of scale (Large versus small)

- Most relevant finding: He finds evidence of an informational advantage due to HQ proximity to traders for HF (intra-day) trading.

Dvorak: Do Domestic Investors Have an Information Advantage? JF 2005

- Similar setup to Hau
- Two most relevant findings

- Those closest to the market (locals) had the highest intraday profitability
- Trade initiation ratio had no explanatory power

What can you focus on?

- One clear story is to simply characterize their profits (mostly done) and compare these results to what is extant in the literature
  - Show that HFT profit overall and that profits are small on a per transaction basis
  - Aggressive trading appears to increase their profitability
    - You can study these profits in relation to sources of ST information (OF, Macro, Liquidity)
    - …

- Expand on Table 9 (see next slide)

BBK – Table 9

	Log(Profits)				Log(Losses)			
	HFT	HFT^A	HFT^M	HFT^P	HFT	HFT^A	HFT^M	HFT^P
α	-.856***	-.158*	-.34***	-.865***	-.637***	-.981***	-.52***	-.57***
	(.033)	(.0664)	(.0621)	(.0465)	(.0312)	(.0714)	(.0497)	(.0415)
Log(Account Volume$_{i,s}$)	.13***	.0994***	.146***	.2***	.114***	.154***	.0486***	.0864***
	(.0023)	(.0036)	(.0042)	(.0051)	(.0023)	(.0039)	(.0034)	(.0049)
Log(Volatility$_s$)	.201***	.223***	.235***	.124***	.163***	.191***	.156***	.134***
	(.0036)	(.0069)	(.0063)	(.0049)	(.0035)	(.0073)	(.0051)	(.0047)
Account Aggressiveness$_{i,s}$	.404***	.563***	.209***	.302***	-.393***	-.608***	-.21***	-.137***
	(.0092)	(.0135)	(.0166)	(.0184)	(.0094)	(.015)	(.0148)	(.0165)
Account Avg Aggressiveness$_s$	.589***	-.114***	-1.24***	.742***	.351***	1.16***	-.221**	.119
	(.0142)	(.0311)	(.0877)	(.0648)	(.0131)	(.0306)	(.0691)	(.0658)
Account Inventory Range$_s$	.315***	.596***	.0474	2.8***	.609***	.808***	.258***	2.15***
	(.0188)	(.0266)	(.0267)	(.0696)	(.0168)	(.0282)	(.0224)	(.0659)
Log(|Account net position$_{i,s}$|)	.639***	.6***	.671***	.518***	.761***	.698***	.846***	.716***
	(.0023)	(.0044)	(.0037)	(.0039)	(.0025)	(.0051)	(.0035)	(.0047)
Log(Market volume$_s$)	.057***	.0622***	.0464***	.0397***	.0187***	.0284***	.0078	.0245***
	(.0038)	(.0073)	(.0066)	(.0056)	(.0036)	(.0075)	(.0051)	(.005)
Adj-R²	0.547	0.407	0.518	0.497	0.657	0.468	0.748	0.640
N	248521	72174	101411	74936	198768	66549	77123	55096

- Combine profits and losses
- Add variables relating to the other investors identified
- Do HFT profit more from OT when volatility is hi/low
- Why no liquidity variables

- Too many logs difficult to interpret
- Probits would be helpful to let us know when HFT are trading

Overall

- Interesting paper

- Needs to work on the story

- I think a clean/clear profitability paper is a significant contribution
  - Other variables relating to inventory are interesting
  - Profiting from trading of other investors (front-running, momentum)
  - Flesh out where the profits come from not only who

- Minor points
  - Are profits stationary? The spectral suggests no.