Discussion

Liquidity versus Information Efficiency

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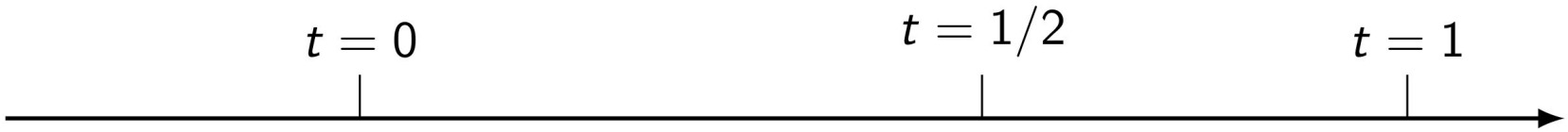
Summary

- This paper: studies the impact of large traders (HFT) on liquidity and price informativeness
- Main results
  - Multiple equilibria
  - Increase in private information precision may reduce price informativeness
  - Increase in the number of HFT's improves liquidity (reduces price impact) but reduces information efficiency
  - More competition between HFT's can make all traders worse-off
- Interesting and important question

Roadmap of my discussion

1. Review of environment
2. Review of results
3. Comments and thoughts

Environment



- Conventional traders observe $s_j = v + \epsilon_I$
- HFTs observe $\eta = Z + \epsilon_Z$
- HFTs trade with conventional traders
- Orderflow Z arrives
- HFTs trade to adsorb Z
- v is realized

- Risk-neutral agents + quadratic costs $\Rightarrow$ Linear-quadratic objective
- **Remarks on HFT**
  - Finite number N (strategic)
  - HFT trade twice
  - They learn about order flow Z (have no private info)

Liquidity and Informativeness

- Liquidity $\mathcal{L}$ is the inverse of price impact

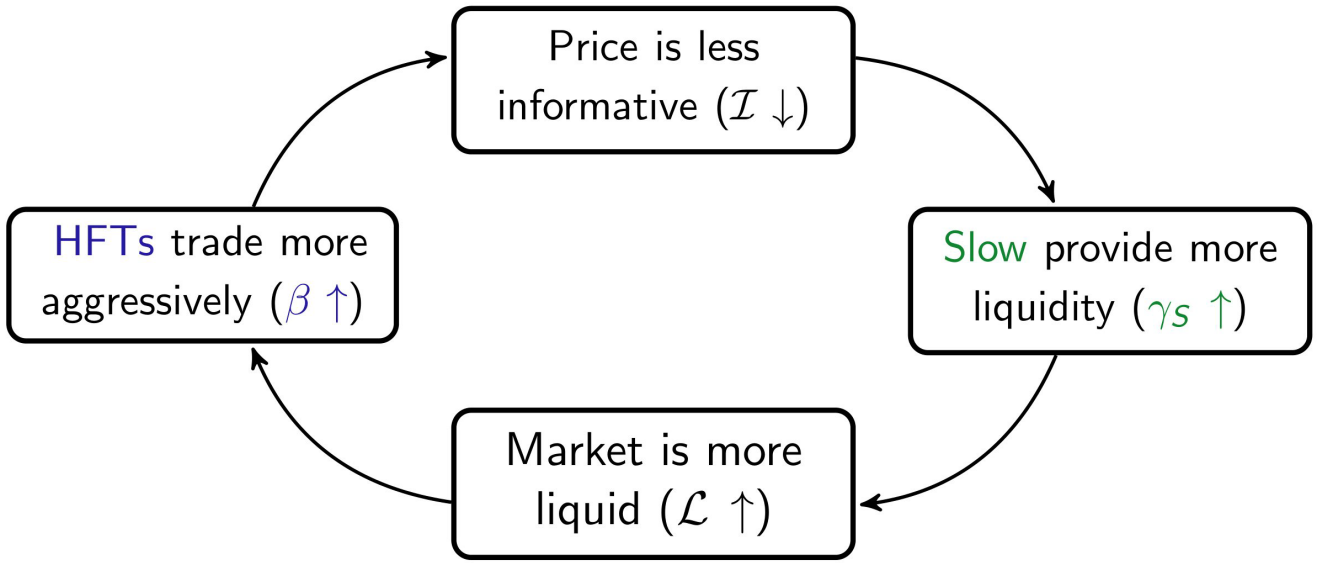
$$\mathcal{L} = 1/\lambda = (N-1)\gamma + \gamma_S$$

- Informativeness

$$\mathcal{I} = \frac{Var\left(v\right)}{Var\left(v|p_0\right)} = \frac{Var\left(v|p_0\right)^{-1}}{Var\left(v\right)^{-1}} = \frac{\text{Posterior Precision}}{\text{Prior Precision}}$$

Results (1)

1. Feedback loop:
   - HFT pay more attention to noise, price is less informative, slow traders demand is more sensitive prices ($\gamma_s \uparrow$), market is more liquid (market depth is higher), HFT pay more attention to noise (**strategic behavior shows up in last step)**



2a. bLiquidity $\mathcal{L}$ is increasing in number of HFTs N (as expected)

2b. Information efficiency $\mathcal{I}$ is decreasing in N (in this model, large traders just add noise)
   - Increasing N increases their sensitivity to their signal $\Rightarrow$ noise $\uparrow$

Results

3. Impact of changes in precision of private information and $\mathcal{L}$ and $\mathcal{I}$ is ambiguous
   - Sufficient condition in the paper
4. Welfare is ambiguous
   - Numerical illustration

Comments/Thoughts

1. Size vs. Frequency of Trading vs. Asymmetry
   - Size: market impact
   - Frequency: ability to trade fast
   - Asymmetry: differences in signals, etc
   - **This paper conflates all three ideas**
   - Once you introduce asymmetry even in competitive, single-date model, one can have multiplicity
   - What is special about the price impact?
   - How about a symmetric model in which some agents are large and some others are small?
2. Exogenous order flow Z makes the model even more asymmetric
   - There is a third group of fully inelastic agents
   - Is it reasonable to keep the distribution of Z constant when doing other comparative statics?
3. Can we get the multiplicity purely with asymmetries?
   - Maybe it is not about size, but it is about heterogeneity or different signals
   - What is the unique prediction of size or HFT for liquidity and informativeness?

Comments/Thoughts

4. What is informativeness?
   - Paper uses normalized posterior variance
   - Suggestion: use variance of signal given fundamental

$$Var\left(p_0|v\right)^{-1}$$

   - Remember that: posterior precision = prior precision + $Var\left(p_0|v\right)^{-1}$
   - Very easy to adjust in the paper
5. Relation to measurement papers
   - The empirical papers referenced use quarterly/annual data
   - Tension if we think of HFT?
   - The measurement framework of Davila/Parlatore 19 (Identifying Price Informativeness) encompasses this paper
6. Endogenous information acquisition
   - Market Power and Price Informativeness 18 (Kacperczyk, Nosal, Sundaresam)