"Information Chasing versus Adverse Selection"
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Discussion
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May 31, 2021

- Motivation
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What is different about OTC markets?

- Many large asset classes (e.g., FX and bonds) trade on **OTC** markets, despite post-Dodd Frank regulatory push towards anonymous CLOB trading platforms.
  - Demand for **immediacy** in the presence of infrequent and large customer order flow (Grossman-Miller (1988), Grossman (1992)).
  - Absence of **anonymity** can alleviate **adverse selection** (Seppi (1990), Benveniste, Markus, Wilhelm (1992), Lee and Wang (2019), Glode and Opp (2016)).
  - **Dealers** prevent All-to-All trading (Managed Fund Association (2015)).
- Evidence for adverse selection:
  - D2D and D2C order imbalance predicts future FX changes (Evans and Lyons (2002), Payne (2003))
  - Persistence in sophisticated clients trading performance in FX and Bond markets (CD, Hoffman, Vogel (2020), Kondor and Pinter (2020)
- Yet, D2C markups not always correlated with trade's likely information content:
  - Volume discounts (large trades get smaller markups).
  - Smaller markups for financial than non-financial firms.

  (Bjonnes, Kathiziotis and Osler (2016), Green, Hollifield, Shuerhoff (2007))

→ **Price discrimination** in D2C based on sophistication rather than adverse selection?

→ **Strategic dealing hypothesis**?

(Bjonnes, Kathiziotis and Osler (2016), Naik, Neuberger, Viswanathan (1999))

- This paper presents
  - Theoretical model consistent with the *strategic dealing hypothesis*,
  - Empirical results from *UK government bond market* consistent with the model.

A 3-stage model of OTC trading

- **Stage 0:** a speculator pays $c(\eta)$ to choose **precision (η) of binary signal X** about $V \in \{-1, +1\}$ with $p = 0.5$ to maximize expected profits from buying q units at $a(q)$:
$$\max_{\eta,q} q\left(E[V|\eta] - a(q)\right) - c(\eta)$$
- **Stage 1:** speculator makes **'Request-for-Market'** to n dealers to buy q units:
  - each dealer supplies a bid-ask price schedule $[b(q), a(q)]$.
  - the speculator chooses one dealer and hits one side of the bid-offer.
  - no post-trade transparency.
- **Stage 2:** a continuum m of uninformed noise-traders *(who value the asset $+1$ or -1)* request quotes from all dealers and trade at the lowest bid/offer.

$\Rightarrow$ Solve the model backwards:
- In stage 1 all dealers infer the speculator's stage 0 precision choice from q.
- In stage 2 only the dealer who trades with the speculator is fully informed and has an informational advantage over the $n-1$ other dealers.

$\rightarrow$ In stage 2 the expected profit is $\frac{1}{2}mE[V|q]$ for the informed dealer and 0 for all the uninformed dealers.

$\rightarrow$ In stage 1 all dealers offer aggressive bid-ask spreads to the dealer to gain the informational advantage:
$$a(q) = \underbrace{E[V|q]}_{\text{adverse selection}} - \underbrace{\frac{\frac{1}{2}mE[V|q]}{q}}_{\text{information chasing}}$$

Some intuition for the stage 2 'winner's curse'

- The $n-1$ uninformed dealers in stage 2 have an expected value of $E^u[V|q] = 0$. Suppose they choose the bid-ask $[b_0, a_0] = [0, 0]$
- The informed dealer knows $V = 1$ (because the speculator bought, say). She will then choose the bid-ask $[b^+, a^+] = [\epsilon, 1]$.
  - $\rightarrow$ noise-buyers will buy at 0 (asset worth 1) from the uninformed dealer.
  - $\rightarrow$ noise-sellers will sell at ϵ (asset worth 1) to the informed dealer.

$\Rightarrow$ uninformed dealers are adversely selected $\rightarrow$ revise their bidding ('winner's curse').

- Uninformed dealers pick bid-ask spreads $[b_0, a_0]$ drawn from a distribution to mimick the bidding strategy of the informed dealer.
- In turn informed dealers pick:
  - $[b^+, a^+] = [b^+, 1]$ when the signal is good,
  - $[b^-, a^-] = [-1, a^-]$ when it is bad,
  - with b^+, a^- drawn from a continuous distribution.
- The distributions of b^+, a^-, b_0, a_0 are all obtained in **closed-form!**

Comments on the Theory

- In equilibrium, the benchmark model generates **'counter-intuitive' results**:
  - Speculator charged zero spread in stage 1 (info chasing exactly cancels adverse selct).
  - Noise traders pay higher spread than informed speculator.
  - The average bid-ask spread (paid by noise traders in the second stage) is larger when there are more noise traders, or when the cost of information acquisition is lower.
- Some results seem a consequence of the **'information acquisition'** setup, rather than the OTC market structure, or lack of anonymity or post-trade transparency.
- For example, if there is more noise trading or if the cost of information is lower, then more information is acquired and thus that markets can actually become more illiquid (Admati-Pfleiderer (1988), Verrecchia (1982)).
- The model depends crucially on the fact that the **noise traders** in the second round are **not price sensitive**. This allows the informed dealer to turn around and fully exploit her informational advantage.
- But, in the **'strategic dealing hypothesis'** the informed dealer is expected to exploit his advantage in the inter-dealer market.

→ How would stage 2 play out if it was replaced by an **inter-dealer market**, with a small number of sophisticated strategic players, involved in repeat business, and which are **price sensitive**?

Empirical Setup

- Use proprietary ZEN data-base of UK financial conduct authority:
  - universe of secondary market transactions in UK bond market,
  - with trader identity (from Aug 2011 to Dec 2017).
- Identify **sophisticated informed clients** to be hedge fund and asset managers that have **high realized P&L**
- Unsophisticated uninformed clients are all other traders (including insurance, pension funds, government entities, and non-financial corporations).

Q? What is asymmetric information in the Government bond market? Central bank classified as uninformed?

Q? P&L definition does not seem to include coupons (may be important for longer horizon investors)?

- Estimate cost of trading as difference between transaction price and benchmark price computed as average transaction price at bond-day-dealer level.

Empirical Results

- Table 1 documents that execution cost is lower for 'informed' clients by about 0.5bps than for 'uninformed' clients.
- But, this drops to 0.17bps if does not define 'informed' clients based on realized P&L!

Q? Transaction costs and execution quality are highly likely to be large component of realized P&L.

→ How to break the mechanical link between t-costs and performance?

→ Could estimate sophisticated clients in first 3 years (say) and then run test on out-of-sample period (hoping for persistence in client skill).

- Table 2 shows that higher trading cost of informed agents seem to predict higher future performance of client trades.

Q? Would be nice to offer more direct test of the mechanism that information gleaned from informed traders helps in getting better performance on subsequent trades.

→ Do dealers skew their bid-ask after trading with informed traders in the direction of the informed trade?

Conclusion

- Elegant model that captures 'strategic dealing hypothesis'
- Would be nice to understand better what is driven by OTC market structure vs. information acquisition mechanism.
- Would be nice to extend to inter-dealer trading in stage 2, where the informed dealer would face strategic, price-sensitive traders.
- Unique data-set with interesting results.
- Perhaps experiment can be refined to show more direct evidence of strategic dealing hypothesis, i.e., link between the information extracted from specific trades with sophisticated traders and bid-ask spreads offered to unsophisticated traders.