

Brokers and Order Flow Leakage

Evidence from Fire Sales

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Slow Trading and Predation

- Large investors have an incentive to split their trades to reduce market impact
 - Theoretically sound (Kyle 1985; Garleanu and Pedersen 2013)
 - Empirical support (Di Mascio, Lines and Naik 2016)
- Executing slowly over time \implies risk of predation
- Consequences of predatory trading:
 - Higher transaction costs, illiquidity
 - Amplification of shocks
 - Excess volatility and market fragility
- Predatory trading is problematic during **fire sales**
 - Brunnermeier and Pedersen (2005)
 - Coval and Stafford (2007)
 - Greenwood, Landier, and Thesmar (2015)

Brokers' Information Set

- Brokers intermediating fire sales are in a privileged position
- They may spread the news that a large trade is likely to extend over time
 - **Incentive:** for their clients, order flow info is profitable
⇒ establish a reputation as a source of valuable information
 - **Cost:** leaking leads to poor execution and bad reputation
⇒ they should invite other traders to provide liquidity
- **Empirical Questions:**
- Do brokers leak order flow information?
- Are fire sales exacerbated by predatory trading?

- **Objective:** analyze brokers behavior empirically
- Use data from Abel Noser Solutions (Ancerno Ltd)
- Transaction-level data on institutional trades (1999-2014)
- Advantages established by prior literature:
 1. Unique brokers ID associated to each execution
 2. Free of self-reporting bias
 3. Free of survivorship bias
- About 800 institutions (managers) executing 350 million trades in US equity stocks with 955 brokers

- Large and long-lasting portfolio-level liquidations
- Specifically, we require

1. Large abnormal negative portfolio-level flow

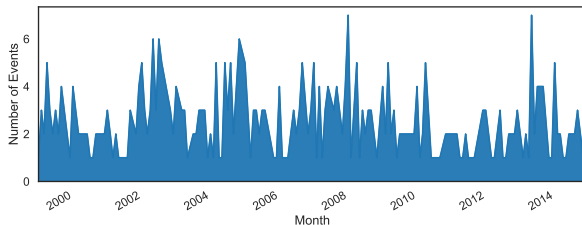
$$Z_t^m = \frac{DVol_t^m - E(DVol_t^m)}{\sigma(DVol_t^m)} \ll 0$$

for at least **5 days in a row**

2. Large volume at the stock-level (at least 1% of ADV)
 3. At least 10 stocks being sold
- Ideal setting to study information leakage by brokers
 1. High level of asymmetric information
 2. High value of order flow information
 3. Arguably exogenous to fundamentals

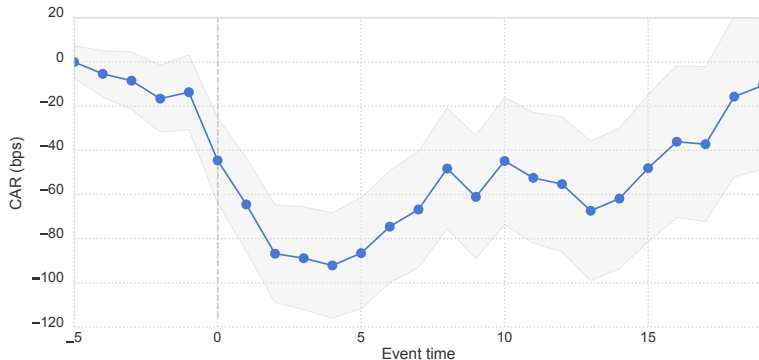
Fire Sale Events

We find **385 fire sale** events, evenly distributed over the sample



- Average liquidation is worth 380 millions (up to 1 billion)
- About 10% of the portfolio is liquidated on average
- More than 22 stocks sold, on average
- Proceeding are **not** re-invested in other stocks
- Generate on average 15% of the stock daily volume

Price Path



- Price drops by 1%, incrementally during the fire sale
- Complete reversal after one trading month

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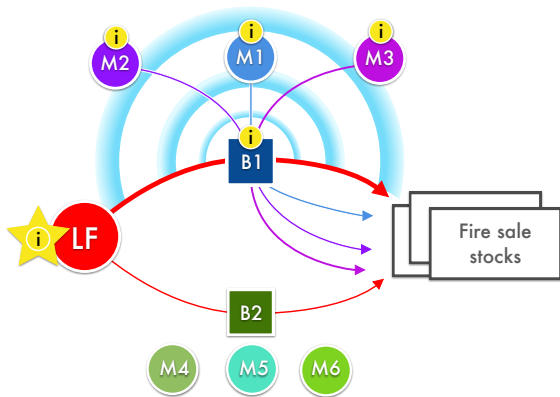
- Aware brokers are those intermediating enough volume to understand that a fire sale is happening

- Broker b is **aware** of the fire sale on stock j on day t if

Intermediated Fire Sale Volume $b,j,t > 2\%$ of ADV_j

- We find on average 2 aware brokers among the 29 involved
- Straightforward quantity to compute for the broker
- Robust to different thresholds and requirements

Identification Strategy



- **Variation across brokers:** not all brokers are aware

Do Aware Brokers Leak Information?

Exploit heterogeneity of clients' behavior across brokers

$$\text{Net Predation}_{m,j,b,t} = \beta_1 \text{Aware}_{b,j,t} + \gamma FEs + \varepsilon_{m,j,b,t}$$

- **"Aware" dummy:** equal to one if the broker executing the trades is aware of the fire sale (on that stock, on that day)

- **"Net Predation" metric:**

$$\text{Net Predation}_{m,j,b,t} = \mathbf{1}_{\text{Predation}} - \mathbf{1}_{\text{Liq provision}}$$

- $\mathbf{1}_{\text{Predation}} = 1$ if the client trades in the same direction as the originator
- $\mathbf{1}_{\text{Liq provision}} = 1$ if the client trades in the opposite direction

Predation Across Brokers

Order flow through aware brokers is more likely to be predatory

Dependent Variable	Probability of Predation - Probability of Liquidity Provision	
	(1)	(2)
Aware Dummy	0.202*** (7.142)	0.113*** (5.199)
Time Fixed Effects	Yes	Yes
Manager Fixed Effects	Yes	Yes
Broker Fixed Effects	Yes	Yes
Brokers \times Stock FEs	Yes	
Day \times Stock FEs		Yes
Observations	487,605	462,841
R-squared	0.203	0.229

- Stock \times Day FEs: not explained by stock-specific news or signals
- Broker \times Stock FEs: not explained by brokers specialization

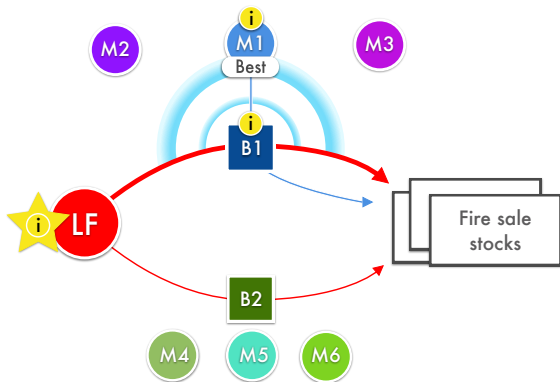
Best Clients

- If brokers spread information, they are expected to leak it mostly to their **best clients** (i.e. those generating more revenues for the broker)
- To test this, we run a diff-in-diff comparing best clients with other clients of the aware brokers, during the fire sale

$$\begin{aligned}\text{Net Predation}_{m,i,b,t} &= \beta_1 \text{Best Client}_{m,b,t} \times \text{Liquidation Period} \\ &+ \beta_2 \text{Best Client}_{m,b,t} \\ &+ \beta_3 \text{Liquidation Period} \\ &+ \gamma FE_s + \varepsilon_{m,i,b,t}\end{aligned}$$

- We consider 5 days before and into the fire sale: $[-5, 4]$
- "Liquidation Period" indicates the liquidation days: $[0, 4]$

Identification Strategy – Part 2



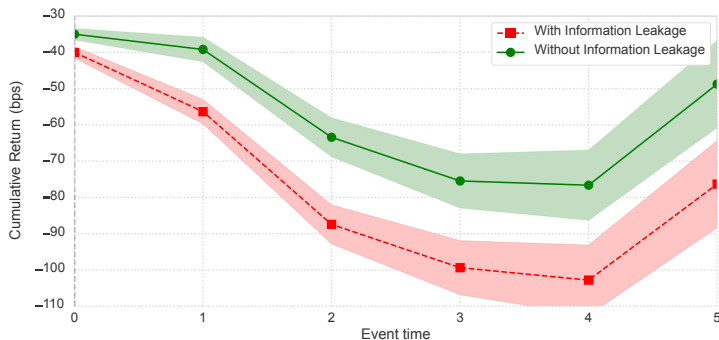
- **Variation across brokers:** not all brokers are aware
- **Variation across clients:** brokers should *selectively* share the information only with their best clients

Predation Across Clients of Aware Brokers

Dependent variable	Probability of Predation - Probability of Liquidity Provision	
	(1)	(2)
Best clients proxy	Ranking based on Volume	Ranking based on Commissions Paid
Best Client × Liquidation Period	0.055*** (3.181)	0.081*** (4.182)
Best Client	0.023 (1.427)	0.048** (2.500)
Liquidation Period	0.006*** (5.683)	0.005*** (4.942)
Time Fixed Effects	Yes	Yes
Manager Fixed Effects	Yes	Yes
Event Fixed Effects	Yes	Yes
Stock Fixed Effects	Yes	Yes
Broker Fixed Effects	Yes	Yes
Observations	501,567	501,567
R-squared	0.046	0.046

Predation Destabilizes Prices

- Look at price path with/without information leakage
- Use events with no aware brokers as counter-factual



- Information leakage exacerbates the (non-fundamental) shock

Further Results

- Best clients of aware brokers are more likely to reverse their trades after the fire sale is over
 - ⇒ Consistent with predatory trading
- Best clients of aware brokers generate more than 20 bps in two weeks, exploiting the leaked information with the right timing
 - ⇒ Order flow information is valuable
- Predation mainly comes from hedge funds
 - ⇒ As expected, since they can take short positions
- Brokers can charge the predating managers 10%-25% higher commissions
 - ⇒ Brokers benefit from leaking

Concluding Remarks

- This paper highlights that brokers' incentives to attract and retain business are likely to induce them to leak order flow information to other market participants
- Trade-off between slow execution to avoid price impact (Kyle 1985) and information leakage
- A source of concern for regulators: leakage exacerbates the costs associated with forced liquidations (especially important at times of scarce liquidity)
- Predatory trading can be an important source of alpha for active managers, which does not contribute to market efficiency