

INSIDER TRADING UNDER THE MICROSCOPE

BY ANDRIY SHKILKO

Discussion by Emiliano S. Pagnotta

Imperial College London

EFA, August 22, 2019

OUTLOOK AND LITERATURE

- **Motivation.** Corporate insiders are an important group of informed traders and they impact efficiency and welfare (e.g., Ausubel, 1990; Leland, 1992) and capital formation (e.g., Manove, 1989; Easley and O'Hara, 2004)
- **Theory:** Canonical representation in Kyle (1985): insiders face price impact risk (noise trading risk) and carefully split trades over time. Additional risks:
 - Uncertain horizon (e.g., Back and Baruch, 2004)
 - Competition risk (e.g., Holden and Subrahmanyam, 1992)
 - Legal risk (e.g., DeMarzo, Fishman, Hagerty, 1998)
- **Empirics.** Recent empirical interest in learning about the process of insider trading, both legal (e.g., Cohen, Malloy, Pomorski, 2012) and illegal (e.g., Kacperczyk, Pagnotta 2018, 2019)

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This paper

- Focus on legal insiders
- **Main innovation:** intraday subsecond time stamps. Why? Exciting opportunity to better understand learning process

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$$\omega_{jt}^i \neq \omega_{jt}^{i,\text{optimal}}$$

2 Valuation disagreement

$$\mathbb{E}^{*i}(v_j | I_t) \neq \mathbb{E}^{*-i}(v_j | I_t) = \text{price}_{jt}$$

v is fundamental value and I_t is public information at t

3 Private information

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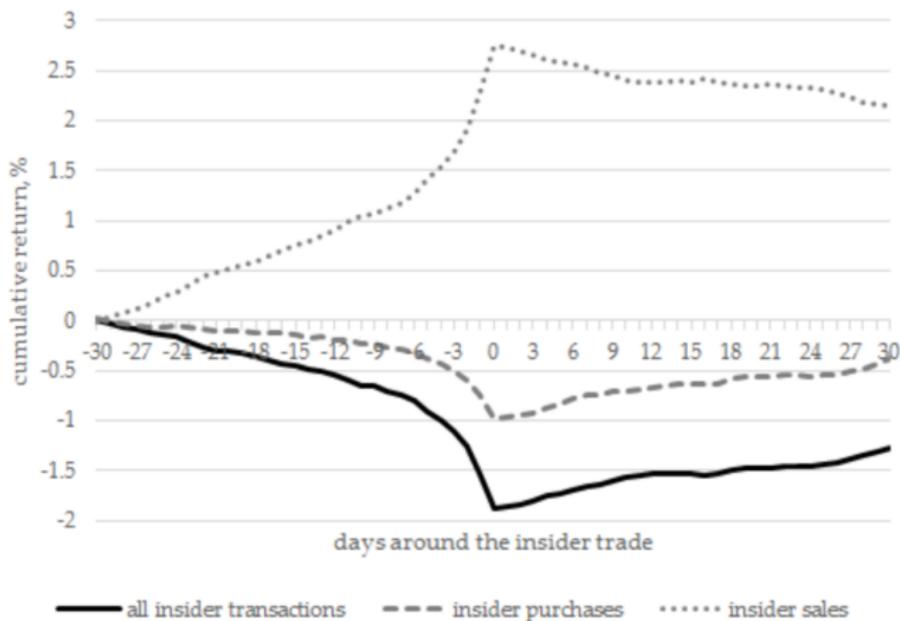
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$$\mathbb{E}^*(v_j | I_t, \text{signal}^i) \neq \mathbb{E}^*(v_j | I_t) = p_{jt}$$

- Paper focus is not (1)
- (2) and (3) seem similar if \mathbb{E}^{*i} coincides with objective density
- What is the relative importance of each motive?

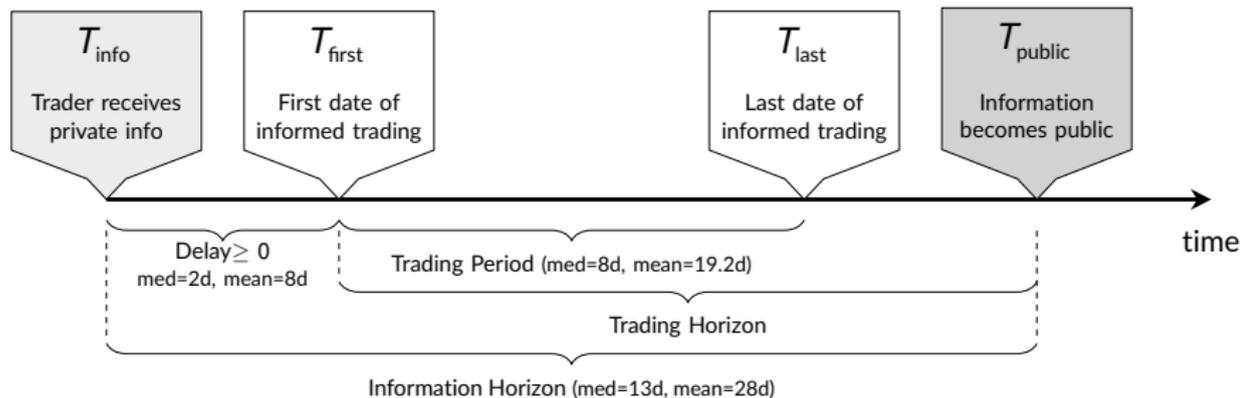
PAPER'S EVIDENCE



- Strong pre insider trade drift suggests that (2) is more important
- How about (3)? Would like to reproduce this picture for subsample of trades post announcements. Still contrarian pattern?

CLASSICAL INSIDER TRADING TIMELINE

FIGURE: Time line of an insider trading case



- Illegal insiders (Kacperczyk and Pagnotta (2019)):
 - Earnings: mean info horizon 12.38, median 9 days
 - M&A: mean info horizon 32.07, median 20 days

PRIVATE INFORMATION TRADING WITH LEGAL RISK

- Times $t = 1, 2$. Public announcement at time T_{public}

$$\text{Prob}(T_{\text{public}} \in (1, 2)) = \rho$$

- Insider trades detected with prob. q_t
- Value function $t = 1$

$$V_1 = \max_{x_1 \in \mathbb{R}} \{ \mathbb{E} [(v - p_1) x_1 + (1 - \rho) V_2 | v] - \rho \times q_1 \times \text{penalties}(x_1) \}$$

- Conditional on no early disclosure, the value function $t = 2$ is

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- Kyle (1985): $q_1 = q_2 = 0$ (and $\rho = 0$)
- Kacperczyk Pagnotta (2019), Carre et al. (2019): $0 < q_t < 1$
- **Here:** Legal insiders subject to mandatory disclosure $\Rightarrow q_t \approx 1$ if $t < T_{\text{public}}$
- Additional constraint: $x_t = 0$ unless $t \geq T_{\text{public}}$

HOW MUCH TRADING PRE- AND POST-ANNOUNCEMENT?

% of insider trades over daily total (3 days)	Mean	Median
insider trades prior to EAs	0.42	0.38
insider trades prior to non-EAs	0.10	0.08
insider trades after EAs	12.92	12.26
insider trades prior to non-EAs	9.31	8.74

- Timing is key! Would like to know more about the time distribution of insider trade volume!
- What % of informed trading happens pre-announcement over longer window? say two weeks
- What % of trading happens right after announcement? Proxy for (3). If large, that rationalizes the “momentum chasing” pattern
- What % of trading seemingly unrelated to announcements? Proxy for (2)
- Events where T_{public} is partially endogenous? (e.g., M&A)

RELATED FINDINGS (1)

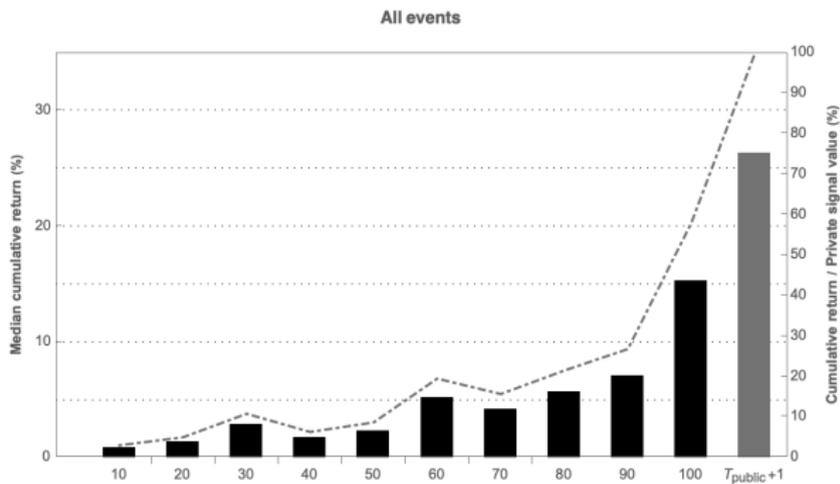
- **Insiders trade more aggressively right after corporate announcements compared to similar non-announcement periods**
- Paper's interpretation: "During such periods, insiders generally do not know how long the market will take to fully process the information and as such may trade with greater urgency" (uncertain horizon risk)
- A different spin:
 - (3) is more urgent than (2) due to competition after public announcement (competition risk)
 - Corporate insiders don't have a choice for (3): need to wait until the announcement (legal risk), regardless of horizon risk

RELATED FINDINGS (2)

- **Third party traders appear to learn about insider presence by simply observing order flow rather than being tipped off by insider brokers**
- To what extent is this true for trades away from announcements?
- Third party trades could be correlated to insiders' (public information), instead of caused by them (order flow)

RELATED FINDINGS (3)

- Overall, the data show that when insiders trade on price-relevant information, detection avoidance is not their primary concern. First, they choose to demand liquidity using marketable orders rather than limit orders. Second, they trade large quantities relatively quickly, creating sizable order imbalances.
- Intuitive to ignore bid-ask spread, not so much price impact
- Again, legal constraints seem key! Other informed traders may have much greater ability to time trades and better camouflage

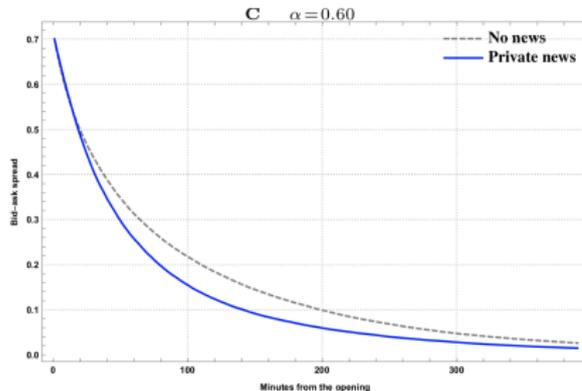
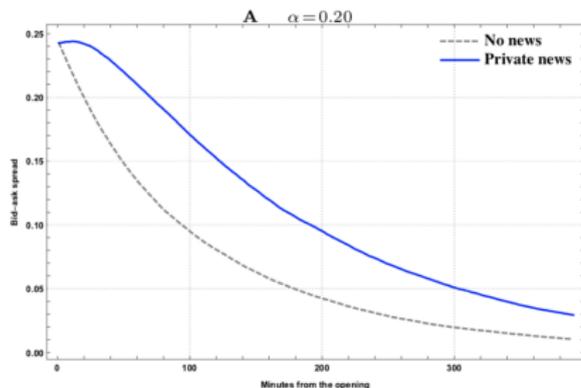


MARKET MAKERS AND LEARNING

- In sequential markets, following orders, market makers adjust quotes (Glosten Milgrom, 1985; Easley O'Hara 1992)
- What happens to bid-ask spreads around corporate insiders' trades?

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- Kacperczyk Pagnotta (2018): Market makers' prior about PIN is key



ADDITIONAL COMMENTS

- To analyze determinants of insider trading, using valuation ratios could help (related to motive (2))
- Would be nice to further explore the decision to make liquidity, a very attractive feature of the data

CONCLUSIONS

- Premise: understanding insider trade dynamics is key to our understanding of market learning and price formation
- Very nice contribution: Clean identification of intraday trade times and liquidity making allows for very rich connections with the theory