Dark Trading Volume and Market Quality: A natural Experiment

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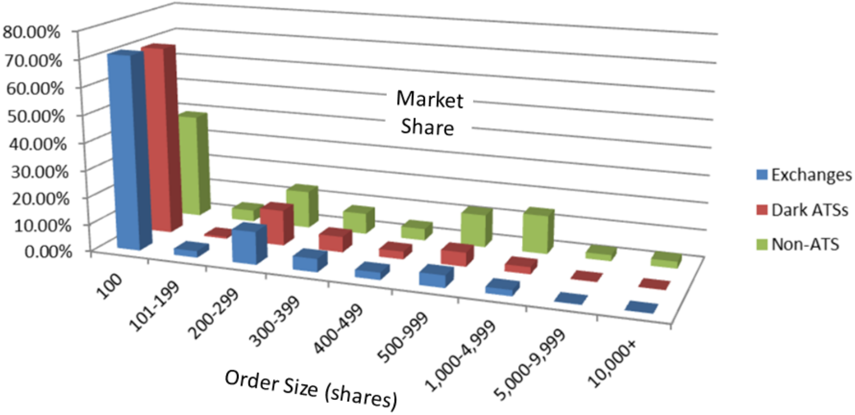
Where do stocks trade?



Souce: Tuttle (2014)

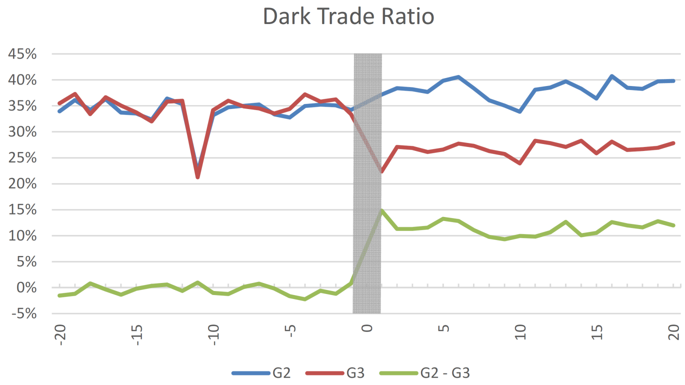
This Paper

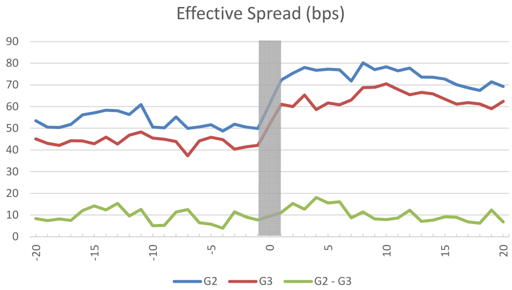
- Dark venues do not display orders.
- Theory predicts that dark trading may improve or harm market quality.
- This paper studies the causal impact of dark trading on market quality, and shows that the effect is not significant.
- Instrument: *Trade-at rule* implemented in 2016 for a randomly selected set of small and mid-cap stocks.

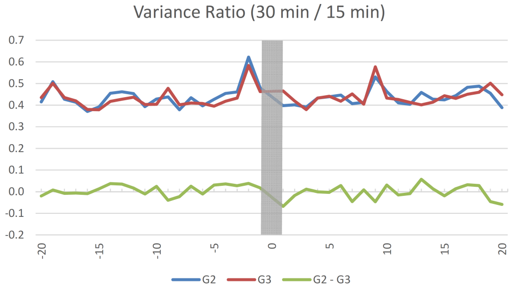
Trade-at Provision

The SEC implemented the Tick Size Pilot in October of 2016:

- Group 2: stocks must be quoted and traded at \$0.05 increments.
- Group 3: same as G2, plus stocks are subject to the *trade-at provision*, which prohibits a venue from executing a trade at NBBO unless it is displaying that quote.


Dark Trade Ratio
45%
40%
35%
30%
25%
20%
15%
10%
5%
0%
-5%
-20
-15
-10
-5
0
5
10
15
20
G2
G3
G2 - G3


Effective Spread (bps)
90
80
70
60
50
40
30
20
10
0
-20
-15
-10
-5
0
5
10
15
20
G2
G3
G2 - G3


Variance Ratio (30 min / 15 min)
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-0.1
-0.2
-20
-15
-10
-5
0
5
10
15
20
G2
G3
G2 - G3

Dark Trades

- This paper measures dark trades as all trades executed on dark ATS *plus* internalized trades of broker-dealers.
- These trades are coded 'D' in TAQ.
- Heuristically, the trade-at rule should only affect dark venues. It should not impact brokers ability to internalize trades.

Upstairs Markets

- OTC trading of equities occur on “upstairs” markets.
- Institutional investors can trade over-the-counter with dealers.
- Upstairs markets execute 18% of share volume (worth $195 billion) in US exchange-listed stocks (Tuttle, 2014). Dark trading account for about one-third.
- FINRA publishes weekly data for OTC (non-ATS) trades.

Theory on Dark Pools

- Competition between trading venues, market segmentation, attraction for uninformed traders.
- Informed traders face greater execution risk on dark pools – they are attracted to lit venues. (Zhu 2014).
- Empirically, OTC trades are also less informative compared to trades on exchanges (Rose, 2014, Bessembinder and Venkataraman, 2004).

Cream-skimming by OTC Dealers

Key Feature Price discrimination in OTC markets.

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Empirically,

- Dealers quote narrower spreads to traders who are likely to be uninformed (Linnainmaa and Saar, 2012, Lee and Chung, 2009)
- Trades execute at better prices over-the-counter than on exchanges (Smith, Turnbull, and White, 2001).

Spread versus Welfare

- Spread measures: $QS = \frac{NBO_t - NBB_t}{mid_t}$, $ES = 2\,\frac{|price_t - mid_t|}{mid_t}$.
- Welfare $=$ total *gains from trade* realized on *all* venues.
- Time necessary to execute a block trade.
- Conflict between waiting time and bid-ask spread (Choi and Huh(2017), Yu and Zheng (2017)). This paper controlled for *TradeSize*.
- Conflict between welfare and bid-ask spread (working paper with Tomy Lee).

Summary

Three suggestions:

- Does the trade-at rule affect internalized trades of broker-dealers?
- How about trades on upstairs markets?
- Can we quantify broader measures of market quality?