Contact Us

John Comerford
Managing Director
Instinet, LLC
150 California Street, Suite 1100
San Francisco, CA 94111
john.comerford@instinet.com
+1 415 766-3005

Scott Lyden
Executive Director
Instinet, LLC
150 California Street, Suite 1100
San Francisco, CA 94111
scott.lyden@instinet.com
+1 415 766-3008

United States
Electronic Trading Services
Instinet, LLC
309 West 49th Street, 6th Floor
New York, NY 10019
Informed.Trading@Instinet.com
+1 866 446-7846

Europe
Electronic Trading
Instinet Europe Limited
1 Angel Lane
London EC4R 3AB
Informed.Trading@Instinet.com
+44 207 154-7444

Asia-Pacific
Product Sales and Trading
Instinet Pacific Limited
Two International Finance Centre
Hong Kong
Informed.Trading@Instinet.com
+852 2585-0500

Market Commentary – September 2017

Flying Upside-Down

A closer look at the Tick Pilot's shift to inverted exchanges

Following on our analysis of exchange volume and quoting share in Venue Dynamics, we more closely examine the venue shifts driven by the Tick-Size Pilot. We find that the market share gains by the inverted fee pools cannot be explained simply by the change in spreads. We also discuss how the Tick Pilot might inform the access fee debate.

Key Takeaways

- Inverted destinations have seen striking market share gains, especially in stocks subject to the trade-at restriction (Group 3)
- It took the market longer than we would have expected to find equilibrium, again especially in Group 3
- The volume shifts have implications for the access fee debate, especially for tick-constrained stocks
- New academic evidence suggests the shift to inverted exchanges has helped offset some of the damaging effects of the trade-at rule

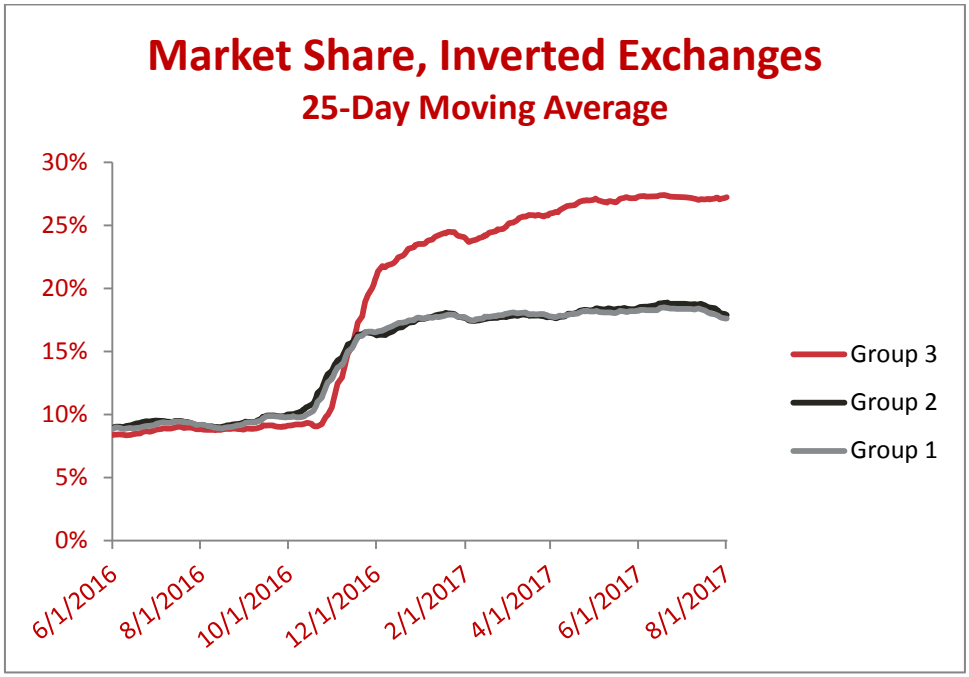

Figure 1 Source: Instinet

Introduction

The Tick Pilot has dramatically shifted the locus of trading in the stocks assigned for study. Before the Pilot began, we predicted that Groups 1 and 2 would see a modest increase in dark trading, but the biggest surprise of the Pilot is the massive shift of trading activity to exchanges with inverted fee structures. Year-to-date changes in market share are broken out by destination type in **Table 1**. The figures for each treatment group are shown relative to the untreated control group.

Table 1

	TRF	Inverted	Make-Take	IEX
Group 1 - Control	3.1%	6.9%	-10.6%	0.6%
Group 2 - Control	2.1%	7.4%	-10.2%	0.7%
Group 3 - Control	-10.1%	14.2%	-5.0%	0.9%

Source: Instinet

For the year to date, Group 3 stocks—the stocks subject to stringent trade-at restrictions—have seen inverted share grow to an astounding **fourteen percentage points above the control group share**. Total inverted share for these stocks has plateaued at around 27% of ex-auction volume. Though half as large as for Group 3, Groups 1 and 2 have also seen huge increases in inverted share relative to the control group (**Figure 1**).

A Closer Look

What is going on here? A significant clue comes from looking within the aggregate market share data to see how the individual take-make exchanges have fared over the course of the Pilot. As we see in **Table 2**, the growth in inverted share has come almost entirely from Bats BYX and NASDAQ OMX BX.

Table 2

	BATY	EDGA	XBOS
Group 1 - Control	3.6%	0.1%	3.2%
Group 2 - Control	3.8%	0.2%	3.4%
Group 3 - Control	6.7%	0.3%	7.3%

Source: Instinet

Undoubtedly, a large part of the explanation is that Bats BYX and NASDAQ OMX BX have much more steeply inverted pricing schedules than Bats EDGA. BATS-Y's rebates for crossing the spread range from $0.0010 per share to $0.0015. NASDAQ BX's rebates range from $0.0003 to $0.0016 per share. On the other hand, prior to June 1, EDGA's rebate for taking liquidity was $0.0002, provided you met a minimum volume requirement of 50,000 shares. Clearly, EDGA was only nominally an inverted exchange before it changed its fee schedule on

June 1st.[1] Just as clearly, traders have sought out the truly inverted exchanges in response to the more challenging trading environment imposed on the stocks in the Pilot.

Spreads, Quote Size and Fragmentation

The other piece of the puzzle is another dramatic consequence of the Tick Pilot: sharply wider spreads in all treatment classes. In a previous analysis we reported that the increase in median spread ranged from 50% for Group 1 stocks to 55% for Group 3. In Group 3, intra-spread trading is largely restricted to mid-quote activity and the execution uncertainty attendant to trading in the dark.

From the point of view of a liquidity taker, the attraction of inverted exchanges in this environment is that they offer a modicum of relief from artificially elevated spreads. A top-tier trader on NASDAQ BX can cross a nickel-wide spread for ¢4.84 per share instead.

On the other side of the ledger, a liquidity provider competing to earn the spread might well prefer to make a two-sided ¢4.74-wide market in Pilot stocks on NASDAQ BX rather than hold out for a full nickel spread (plus rebate) on make-take exchanges. Why? For one thing, liquidity providers are less subject to adverse selection risk on inverted exchanges, but the bigger reason is that the Pilot has caused greater congestion at the top of order books. By holding spreads artificially wide, the Pilot has indeed had one of its intended effects: Quote sizes at the National Best Bid and Offer have increased for the stocks in the study. Academic researchers Hansen et al. (2017)[2] , find that time-weighted NBBO quote sizes have more than doubled due to the Pilot, with the increase particularly strong in Group 3 stocks.

Pay to Display

Before the Pilot, a top-tier BX trader making a penny-wide market stood to net ¢0.74 per share for a return of 3.7bp on a $20 stock. Under the Pilot, that same market maker would pocket ¢4.74 per share from making a nickel-wide market, a return of 23.7bp on invested capital of $20. The posted spread increased five-fold in this scenario, but the returns to the market maker increased by a factor of 6.4, because exchange posting fees make up a diminished percentage of the overall spread under the Pilot.

With inflated spreads offered for making markets in Pilot stocks and the resulting increased congestion at the top of order books, queue position in Pilot stocks now commands a greater premium. So much so that liquidity providers are displaying increasing willingness to pay to display on the inverted exchanges.

[1] Effective June 1st, EDGA abandoned the inverted pricing model altogether in favor of a flat fee structure.

[2] Hansen, Peter Reinhard and Li, Yifan and Lunde, Asger and Patton, Andrew J., Mind the Gap: An Early Empirical Analysis of SEC's 'Tick Size Pilot Program' (May 22, 2017). Working paper.

This competitive process has played out over the course of many months. As we see in **Figure 2**, the steady increase in inverted share for Group 3 stocks lasted well into the second quarter of the year, suggesting that the market took many months to grapple with the challenges of trading these stocks. For the most part, markets learn very, very quickly. To see competitive pressures play out in this gradual way has been a surprise.

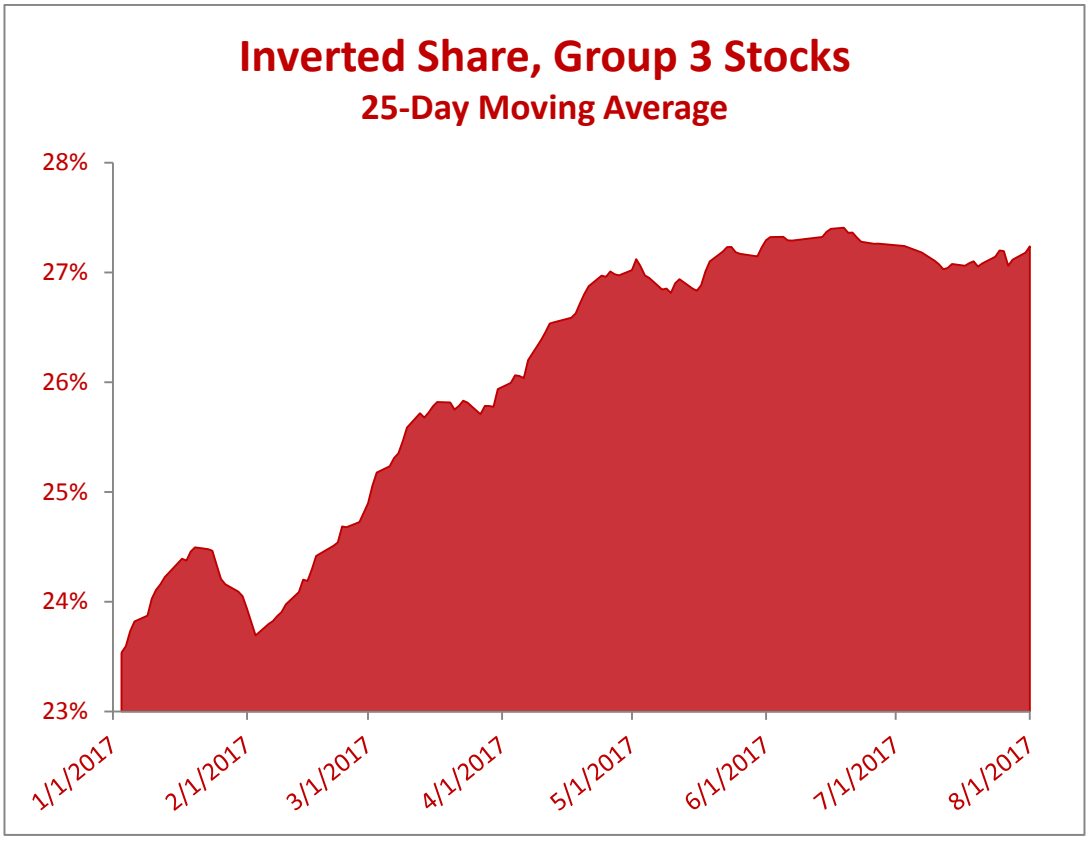

Figure 2 Source: Instinet

The figure shows that the migration to inverted destinations was as steady as it was gradual, suggesting to us that it wasn't driven primarily by wholesale changes in the behavior of a handful of dominant players.

Beyond The Pilot-Stock Universe

The artificially wide spreads in Pilot stocks are the result of a conscious experiment. Instinet has drawn attention to the fact that many stocks outside of the Tick-Pilot universe have percentage spreads that make them difficult to trade. The combination of fixed tick sizes and varying per-share stock prices results in many stocks having spreads that are too wide relative to their share price; the minimum tick (one penny) is too large for many low-priced stocks. **Figure 3** demonstrates that we see greater reliance on inverted exchanges for low-priced components of the S&P 500. It is clear from this data that inverted exchanges help to mitigate the adverse effects of overly large spreads in the wider universe of stocks beyond those affected by the Tick Pilot.

The upshot of all this: in a world of discrete price and tick increments, exchange fee structures have a material impact on where market makers display liquidity.

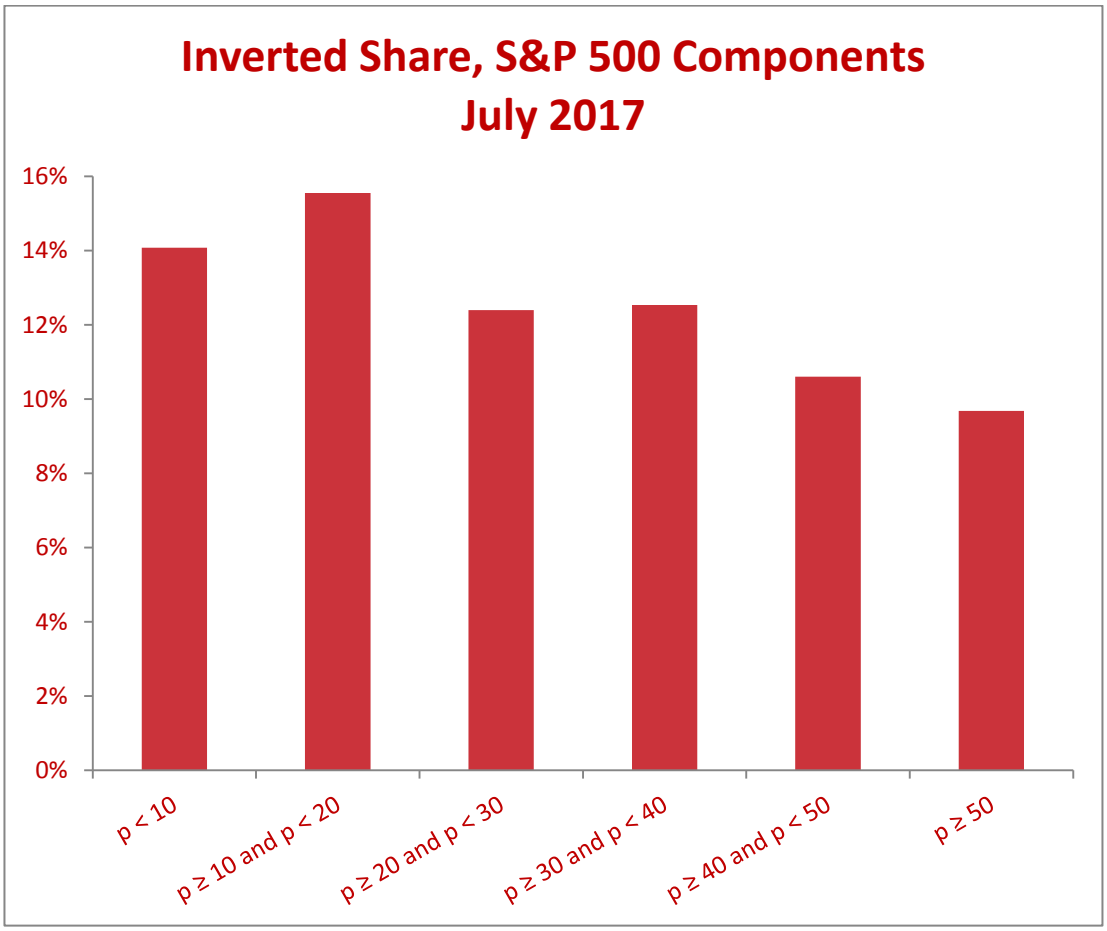

Figure 3 Source: Instinet

The Access Fee Debate

The Access Fee Rule, Rule 610 of Regulation NMS, is currently the subject of a heated debate in market structure circles. The rule sets a cap on trading fees of 30¢ per hundred shares. Because of the revenue implications, the rule in effect also caps the rebates exchanges can pay to segment order flow and alter the behavior of market participants.

Critics of access fees draw attention to the potential for conflict of interest between brokers and end investors. Brokers, they argue, might be more swayed by the rebates they receive from exchanges than the commission streams they earn from clients when they choose where to route orders. Whether and to what extent this actually happens in a world where broker performance is under constant scrutiny by sophisticated customers is an important question that deserves to be examined with level-headedness and attention to the evidence.

The current SEC Chairperson, Jay Clayton, has made it clear that access fee reform will be reviewed, almost surely with an access fee pilot, probably following a form similar to what was proposed by the Equity Market Structure Advisory Committee under the previous administration.

Since the Tick Pilot stocks had their minimum tick size increased without a proportional access fee increase, access fees and rebates are a much smaller percentage of the tick size in these Pilot Group names. In other words, access fees relative to tick size for tick-constrained Tick Pilot names approximate what we would see in an access-fee pilot in penny-tick names where the access fee is capped at 6¢ per hundred shares.

Figure 4 shows that, at greater levels of tick-constrainedness, Pilot stocks in all groups see greater migration to inverted destinations *relative to the control group*. When the cost of queue priority falls relative to the spread, more people make the leap. Although, this is not a clean test of the effect of lowering access fees, we suspect that this observation hints at greater fragmentation in a world where access fees are lowered and all other market features (especially top-of-book protection for individual exchanges) remain unchanged.[3]

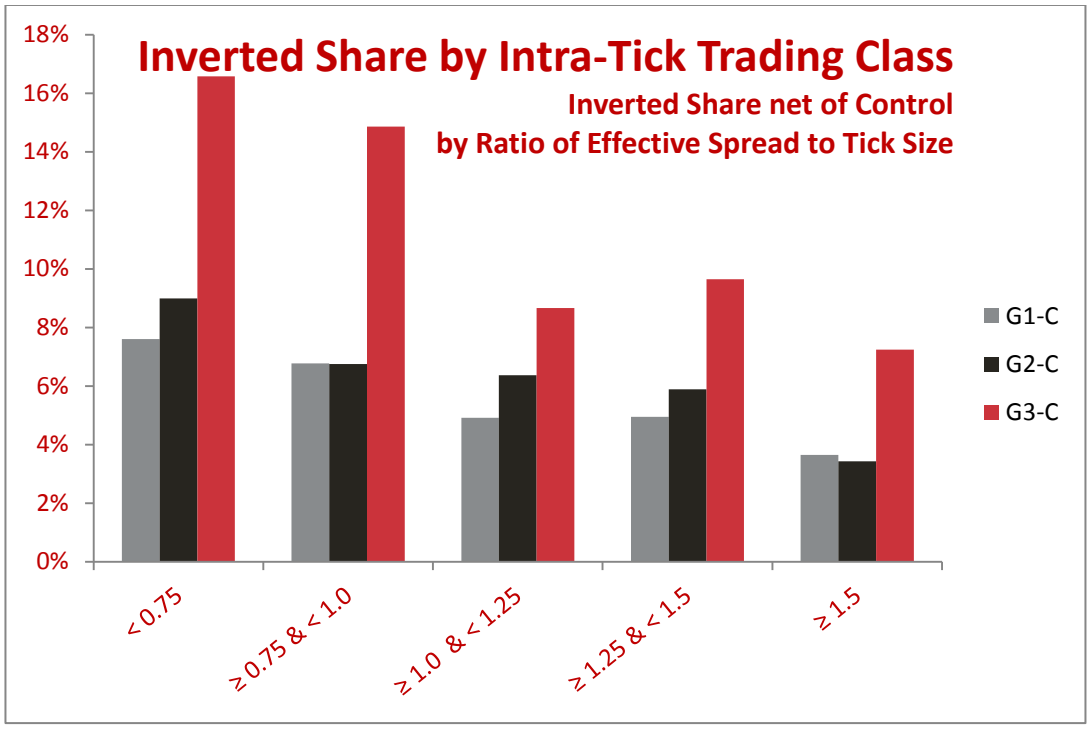

Figure 4 Source: Instinet

[3] See also Chao, Yong and Yao, Chen and Ye, Mao, Why Discrete Price Fragments U.S. Stock Exchanges and Disperses Their Fee Structures (January 20, 2017). Available at SSRN: https://ssrn.com/abstract=2530572 or http://dx.doi.org/10.2139/ssrn.2530572

Inverted Destinations and Market Quality

Both the previously mentioned academic study by Hansen *et al* and the Melbourne-based group of Comerton-Forde *et al*[4], present strong evidence that the Pilot Study's trade-at restriction has harmed market quality in Group 3 stocks. The latter paper, however, goes on to provide a careful analysis of the effects on market quality of the migration to inverted destinations under the Pilot. They statistically disentangle the effects of the Pilot restrictions to show that trading on inverted venues has helped to mitigate the damaging effects of the trade-at restriction. They find that the migration to inverted destinations has improved price discovery, mitigated high-frequency volatility and has helped to stem the decline in liquidity for Group 3 stocks. We encourage technically-minded readers to consult the paper for additional details.

In this very narrow sphere at least, it appears that taker-maker trading environments have had beneficial effects on the market eco-system. Heavier use of inverted exchanges for tick-constrained low-price components of the S&P 500 (**Figure 3** above) hints at the likelihood that the beneficial effects may extend beyond Pilot stocks.

Conclusion

If there is one over-arching theme to the issues we seek to highlight in our Market Commentary pieces, it is to explore the delicate balance of competitive forces shaping equity market microstructure. The shift to exchanges with inverted fee structures caused by the Tick-Size Pilot is a perfect example.

The US equity market is a complex organism that is best understood holistically. Access fees, for example, are part and parcel of a larger discussion of tick sizes, price discreteness, system robustness and complexity, and the quality and quantity of liquidity in the market. The Tick Pilot has helped to illuminate this complex inter-dependence – with both positive and negative outcomes.

[4] Comerton-Forde, Carole and Gregoire, Vincent and Zhong, Zhuo, Inverted Fee Venues and Market Quality (March 20, 2017). Available at: https://ssrn.com/abstract=2939012