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Trading Strategy
All Access Ticket

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Key Points

- The SEC has proposed a Transaction Fee Pilot to gather data in the hopes of shedding light on the effects of transaction-based fees and rebates on order routing behavior, execution quality, and overall market quality.
- The Pilot intends to create three test groups to test how lowering access fees and banning rebates will alter market dynamics.
- In our view, the pilot as proposed is likely to affect stocks differently depending on their liquidity profile. We expect a greater impact on Group 2 (significantly lower access fee cap of 5 mils) and Group 3 (bans rebates) stocks that are tick-constrained (where the spread is constrained by the tick size) and have orderly trading (i.e. trade at what we believe are reasonable, appropriate spreads). In contrast, we expect less of an effect on Group 1 (15 mil fee cap) and stocks that trade with wider spreads.
- Volumes seem likely to grow more fragmented as routing to inverted venues could significantly increase in response to the reduction of access fees and loss of exchange fee differentiation.

Transaction Fee Pilot Proposal Arrives

Access fees and the rebates they fund are an integral part of the way exchanges compete in today's fragmented markets. Proponents believe that current exchange pricing models benefit retail investors to the extent that they incentivize more liquidity and contribute to narrower posted spreads; however, critics argue that these models can exacerbate conflicts of interest between brokers and their customers, contribute to market fragmentation and complexity, and undermine price transparency.

In order to study these issues in more detail, the SEC proposed a Transaction Fee Pilot in mid-March to gather data in the hopes of shedding light on the effects of transaction-based fees and rebates on order routing behavior, execution quality, and overall market quality. At the heart of the pilot, there are three proposed test groups (and a control group) with the first two groups having fee caps of 15 mils ($0.0015) and 5 mils ($0.0005), respectively, while the third group would have no price-linked rebates. The proposed pilot would be scheduled to run for two years with an automatic sunset at one year unless extended by the Commission.

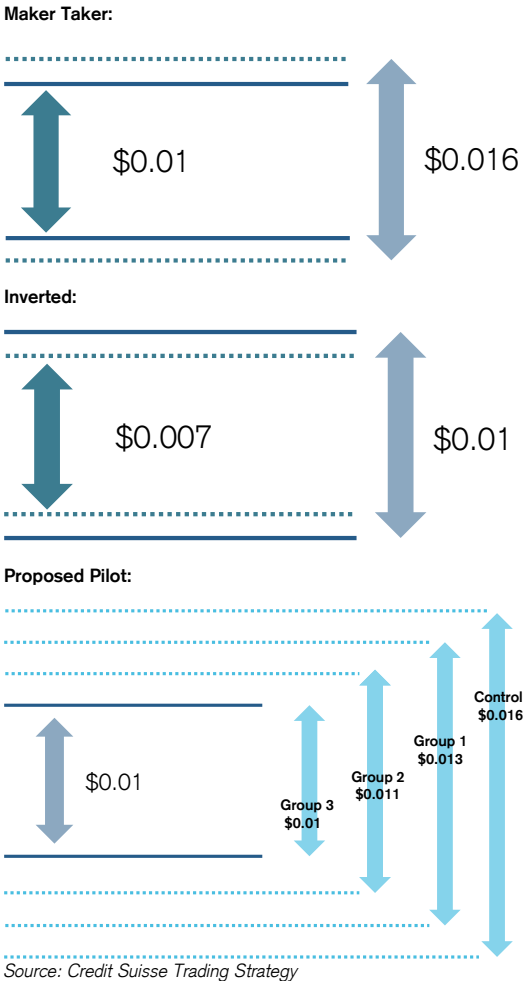
Some of the most pertinent questions that the SEC would like to see answered include how low/no rebates affects institutional traders obtaining queue priority (and capturing the quoted spread) and whether there would be more or fewer retail limit orders displayed on exchange. Ultimately, the pilot could result in a single access-fee cap or perhaps a tiered access-fee cap structure based on stocks' characteristics.

Exhibit 1: Proposed Transaction Fee Pilot

Duration	2 year Pilot with an automatic sunset at 1 year unless, no later than thirty days prior to that time, the Commission publishes a notice that the Pilot shall continue for up to another year; plus a 6 month pre- and 6 month post-Pilot period	
Applicable Trading Centers	Equities exchanges (maker-taker & taker-maker)	
Eligible Securities	NMS stocks with a share price ≥ $2 per share that do not close below $1 per share during the proposed Pilot and that have an unlimited duration or a duration beyond the end of the post-Pilot Period	
Pilot Design	**Test Group 1**	**$0.0015 fee cap** for removing & providing displayed liquidity (no cap on rebates)
	Test Group 2	**$0.0005 fee cap** for removing & providing displayed liquidity (no cap on rebates)
	Test Group 3	**Rebates and Linked Pricing Prohibited** for removing & providing displayed & undisplayed
	Control Group	Rule 610(c)'s cap continues to apply to fees for removing displayed liquidity

Source: SEC

Exhibit 2: **How Rebates Change the Economic Spread**



Source: Credit Suisse Trading Strategy

NASDAQ pilot

NASDAQ experimented with pricing models in 2015, and specifically with reducing the maker-taker fee. NASDAQ lost market share to other exchanges in the stocks that were included in the pilot, suggesting that a significant portion of market-making activity is highly sensitive to (and perhaps reliant on) certain rebate levels. Overall market quality did not deteriorate as market makers provided similar overall liquidity, but volumes shifted to other venues which were still subsidized. While the experiment was conducted unilaterally, making it difficult to draw similar inferences to when fees are reduced across all trading venues, the results lend credence to the stance that a portion of liquidity dependent on rebates could disappear altogether as fees compress – leading to more shallow markets and wider spreads.

Access Fees and Economic Spreads

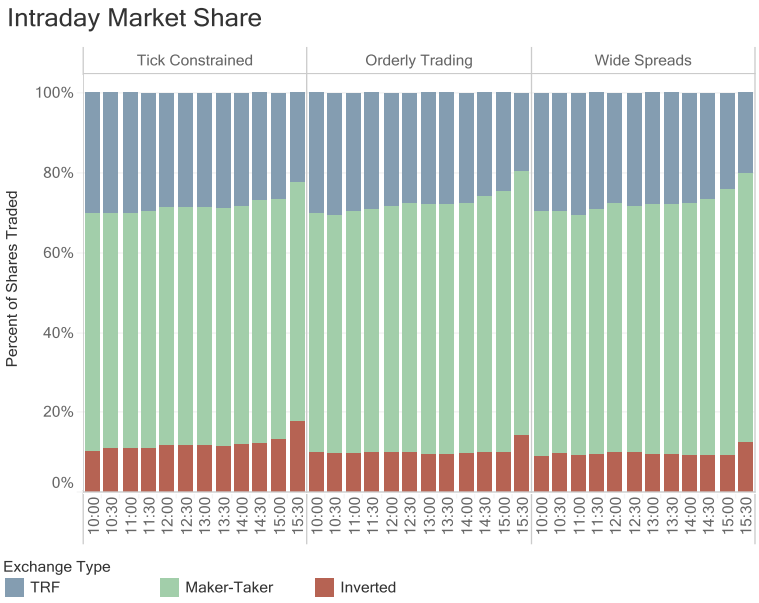
Stock exchanges compete for order flow through their fee models; the traditional maker-taker model pays a rebate to the liquidity supplier and charges a fee to remove liquidity. Therefore, trading centers earn the difference between the fee charged and the rebate paid. In addition, maker-taker rebates widen the economic spread potentially realized by liquidity providers (see Exhibit 2). For example, the full tick and rebate capture amounts to 1.6 cents in theory for a stock trading one tick/penny wide – meaning 37.5% of the profit is from rebates.

Conversely, an inverted model pays a rebate to liquidity demanders. In contrast to the maker-taker model, inverted venues narrow the economic spread that can be captured by liquidity providers.

The major concern surrounding these fee models is that there may be a incongruency between the best interests of the customer and broker incentives; in other words, it is possible that a broker could choose to maximize rebates at the cost of execution quality for the client. For example, a broker could choose to route nonmarketable orders to venues with the largest rebates. However, venues with large maker rebates are also financed by high take fees and as a result, brokers may be less inclined to route marketable orders that take liquidity to the same venue. Consequently, nonmarketable orders sent to venues with higher rebates/taker fees may experience lower fill rates.

To counter, market participants may turn to inverted markets to improve queue priority. This type of routing behavior appears to be evident when we look at intraday market share. Inverted venues experience a significant increase in activity at the end of the trading day, when queue priority becomes even more important.

Exhibit 3: **Inverted Market Share Increases at the End of the Day**



Source: Credit Suisse Trading Strategy, TAQ, S&P 500 data from April 2018

Through lowering and banning rebates, the SEC hopes to collect data that will shed more light on the considerations and incentives that drive liquidity making/taking as well as routing decisions.

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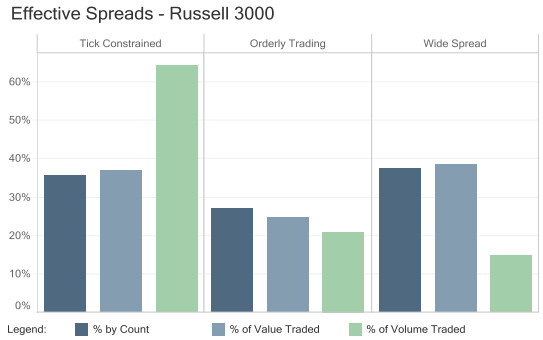
Exhibit 4: **Stocks Trade With Very Different Liquidity Characteristics**



Source: Credit Suisse Trading Strategy, TAQ, Data from February 2018

Potential Impact of the Proposed Pilot

We believe the pilot will affect stocks differently depending on their liquidity characteristics. To this end, we find it useful to partition stocks into three categories (see Exhibit 4):

- Tick-constrained - Stocks where the bid-ask spread is equal to a single tick; in other words, the spread is artificially constrained by the tick size.
- Orderly trading - Stocks that trade relatively efficiently and orderly with respect to their bid-ask spreads. For our analysis, we define stocks with effective spreads of 1.125-2.5 ticks wide.
- Wide spread – Stocks that trade at wide spreads relative to tick size where the rebate is less likely (as a smaller percentage of the spread) to be subsidizing lower spreads and be a significant factor in routing behavior.

In terms of the pilot, we believe certain segments will be affected more severely than others.

- Little change - We expect Group 1 to show little change. At 15 mils, there is still room for significant fee differentiation and rebates remain sizeable. We also expect stocks with wider spreads to continue to behave similarly given that their liquidity may be less driven by rebate-incentivized trading strategies to begin with.
- Most vulnerable to change - We expect the largest impact in Groups 2 and 3 for stocks that are tick-constrained and have orderly trading. Group 2 fees are capped at 5 mils, which reduces the fee differentiation between venues and lowers rebates by over 80%. Group 3 bans rebates altogether and should see similar effects as Group 2, but more severe.

Stock Type	Control	Test Group 1 (15 mils)	Test Group 2 (5 mils)	Test Group 3 (no reb)
Tick constrained	The control group will presumably operate unchanged.	• In general, we expect little change in Test Group 1. While the fee cap is half of the current level, there is still significant enough differentiation available in the fee structure that trading may not appear materially different than the control group. • Perhaps we would see slightly more volumes on inverted venues with reduced rebate levels.	• Inverted venues would likely increase market share as maker rebates disappear and the fee differential between venues declines for market makers, lowering the relative cost for queue priority. • Stocks with higher bid-ask spreads in basis points may not see spreads widen, but would likely see depth decrease. • Group 3 impact similar to Group 2, but likely more severe.	
Orderly trading			• Inverted venues would likely increase market share, but perhaps not quite as strongly as in the tick-constrained stocks • In theory, these subgroups could be at the most risk for reduced quote size and/or wider bid-ask spreads. • Stocks with shallow depth already would likely see spreads widen to adequately compensate market makers in lieu of rebates. • Trading in the dark could increase as well if traders seek liquidity more aggressively, which seemed to be the case in the Tick Pilot. • Group 3 impact similar to Group 2, but likely more severe.	
Wide spread			• Spreads are wide enough in these stocks that rebates make up a relatively small percentage and thus, less likely to significantly alter routing decisions. • This is particularly the case in higher priced stocks.	

* For our analysis, we consider "tick constrained" to be stocks with average effective spreads less than 1.125 ticks, stocks with "orderly trading" to have average effective spreads of 1.125 to 2.5 ticks wide, and "wide spread" stocks to have effective spreads wider than 2.5 ticks.

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The Tick Pilot – An Implied Access Fee Pilot?

If we look closely, the Tick Pilot included an implied access fee reduction. By moving to a nickel spread, the full rebate capture for a minimum tick stock became 5.6 cents as opposed to 1.6 cents. This changed the rebate to 12% of the nominal tick size, or the equivalent of a 6 mil rebate on a one cent tick - just a hair larger than the 5 mil cap on Test Group 2 of the proposed Transaction Fee pilot. Therefore, some of the observed activity in the Tick Pilot may be relevant in shaping our expectations for the Transaction Fee Pilot.

Competition Intensifies for Liquidity Takers

Ultimately, the compression in fees could lead to more fierce competition for liquidity takers. While there is no explicit fee reduction in the no-rebate group, the fee for removing liquidity could still move closer to zero in order for exchanges to incentivize takers in the absence of rebates.

What Happens When Priority Loses Value?

With fees falling under more competition for takers, the relative cost for priority falls; therefore, more traders may choose queue priority over the potential for diminishing gains. However, as more trading shifts to inverted venues, the ability to move to the front of the queue may become severely constrained. If this happens, will liquidity takers move more trading to dark pools?

Spreads More Likely to Widen, Depth to Decline

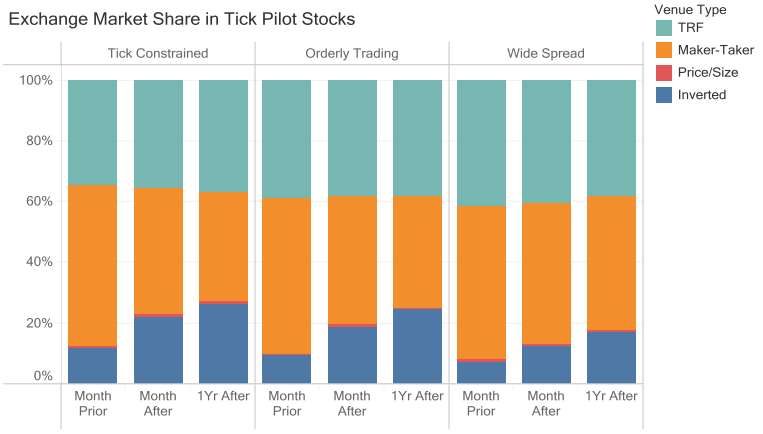
Market makers are mainly concerned that the total spread they capture adequately compensates them for the liquidity they are providing and the risk (adverse selection) they assume. Consequently, spreads seem more likely to widen as liquidity providers will be extremely limited in how much of the spread they can subsidize with the reduction in rebates, but need to remain economically viable. This seems most likely in stocks that have orderly trading in Groups 2 and 3. Tick-constrained stocks may not see spreads widen as much given the greater competition they typically have at the NBBO, but could see decreased depth.

Shift to Inverted

We believe that stocks that are tick-constrained or have orderly effective spreads will see more fragmented volumes as fees are further capped and rebates decline, compressing fee structures and reducing differentiation amongst venues. In particular, inverted venues could see an increase in market share as the gap between the potential rebate to make liquidity and paying to post (on inverted) dwindles. The changing risk-reward consideration may find more traders forgoing the smaller (or lack of) rebate to move up in queue priority.

We saw a hint of this in the Tick Pilot, which embedded an implied access fee reduction (see sidebar). Most notably, there has been a significant increase in volume on inverted venues in the Tick Pilot (see Exhibit 5), especially for stocks that are tick-constrained or have orderly trading - segments where the rebate decreased meaningfully as a percentage of the spread.

Exhibit 5: Increase in Market Share For Inverted Venues in Tick Pilot



Source: Credit Suisse Trading Strategy, TAQ

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Currently:

- About 15% of trades in tick-constrained stocks are executed on inverted venues.
- Stocks with orderly trading average around 10% of trades in inverted venues.
- About 8% of trades in stocks with wider spreads are transacted on inverted venues.
- Interestingly, inverted trading increases for less liquid/actively traded stocks across all three categories.
- Inverted trading also tends to increase near the end of the trading day across all stock categories

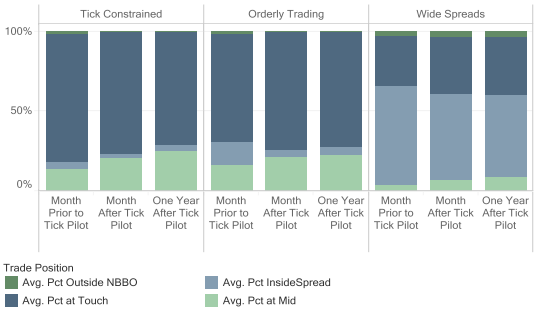
Exhibit 6: Market Share by Venue Type

		Avg Trades (Range)			
		>25000	10000 to 25000	2000 to 10000	<2000
Tick Constrained	Avg. TRF	36.7%	35.8%	36.4%	37.6%
	Avg. Inverted	10.3%	11.6%	15.8%	19.5%
	Avg. Maker-Taker	53.0%	52.6%	47.8%	42.9%
Orderly Trading	Avg. TRF	36.2%	34.9%	35.2%	36.6%
	Avg. Inverted	8.0%	8.6%	9.4%	12.6%
	Avg. Maker-Taker	55.8%	56.4%	55.4%	50.8%
Wide Spread	Avg. TRF	39.1%	34.8%	34.3%	35.7%
	Avg. Inverted	6.6%	7.7%	8.1%	8.7%
	Avg. Maker-Taker	54.2%	57.6%	57.7%	55.6%

Source: Credit Suisse Trading Strategy, TAQ

Exhibit 7: Midpoint Trading Has Seen an Increase in Tick Pilot Stocks

Where Trading Occurs (Pre/Post Tick Pilot)



Source: Credit Suisse Trading Strategy, TAQ

More Mid-point Trading

Along with the increase in inverted trading, there has also been an uptick in dark volumes in tick pilot stocks. In particular, there appears to be a higher percentage of trades executed at the midpoint of the NBBO following the tick pilot. This trading behavior could occur for the transaction fee pilot as well if traders move further away from passive trading to more aggressive, midpoint trading – especially if inverted queues become significantly longer.

Note that many market participants wrongly believe that off-exchange volume represents dark volume and assume all exchange volume is lit. However, exchanges have a significant amount of dark trading as well in the form of hidden orders and iceberg orders. Functionally, this dark volume on exchanges is similar to dark volume that transacts off-exchange in crossing networks or dark pools.

It is less clear if dark pool market share will significantly change as they are currently out of scope of the pilot and much will depend on how they adapt their fee structures in response to the change in access fees.

Exchanges Less Differentiated

As caps decrease, there will be less room and opportunity to differentiate on fees, perhaps leading to less complexity in fee structures and exchange tiering models. While we expect greater volume fragmentation in the shift towards inverted venues, it is possible that the loss in exchange differentiation could ultimately lead to consolidation and fewer venues overall.

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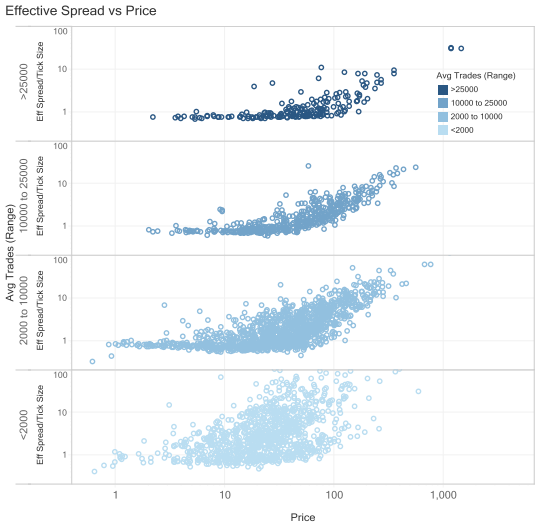
Exhibit 8: **Many ETFs Track the Same Underlying Index**

Underlying index	Number of ETFs
S&P 500	14
S&P MidCap 400 Index	11
Russell 2000 Index	10
ICE U.S. Treasury 20+ Year Bond Index	8
Gold Spot	7
ICE U.S. Treasury 7-10 Year Bond Index	7
S&P SmallCap 600 Index	7
Dow Jones Industrial Average	6
FTSE China 50 Index-USD NET	6
MSCI EAFE Index	6
MSCI Emerging Markets Index	6
NASDAQ-100 Index	6
STOXX Europe 50 Index	6
Alerian MLP Infrastructure Index	5
Bloomberg Barclays U.S. Aggregate Bond Index	5
Bloomberg WTI Crude Oil Subindex Total Return	5
NASDAQ Biotechnology Index	5
NYSE Arca Gold Miners Index	5
Russell 1000 Growth Index	5
Alerian MLP Index	4

Source: Credit Suisse Trading Strategy

Exhibit 9: **Transaction Fee Pilot to Renew Debate on Tick Sizes? The Relationship Between Spreads and Prices Still Reflects Inefficiencies**



Source: Credit Suisse Trading Strategy, TAQ. Note chart is in log scale.

Treatment of ETFs in Test Groups a Potential Issue

The inclusion of ETFs in the pilot raises several potential issues. There are several concerns ETF providers have in how the placement of funds in the different pilot test groups could unintentionally influence trading flows and affect competitive balance. The biggest concern focuses on how funds that track the same (or even very similar) underlying index are treated. These funds hold the same stocks (in theory), but may have different liquidity profiles in the secondary markets. If separated into different test groups, the Pilot could unintentionally advantage ETFs in the lower fee group. Therefore, it would seem prudent to place similar ETFs into the same test groups.

In addition, the issue of fairness could also be brought up with regards to ETF providers. Some may feel disadvantaged if a larger proportion of their products are put in higher fee group or conversely, if a larger proportion of their competitor's products are placed in a lower fee group.

Is Confidentiality Preserved in Order Routing Data?

The pilot also proposes to collect and publish order routing data containing information at the broker-dealer level. While the data would be aggregated and anonymized to some extent, there is still a significant risk that it could be reverse engineered and reveal confidential information that could be utilized for purposes other than academic research. Consequently, it may be safer not to make detailed order routing data publicly available - or at the least further aggregated such that the information would be harder to trace back to a specific broker-dealer.

Tempering Expectations

The proposed pilot will likely produce a wealth of interesting data; however, it may be prudent to temper expectations that the data will suggest a solution that is universally accepted to improve market quality and provide more efficient trading for all investors. In our estimation, we believe there could be varied results depending on stock trading characteristics, making it difficult to apply a uniform solution across the entire market. Brett Redfearn, SEC Director of the Division of Trading & Markets, even mentioned at a recent market structure symposium that there could be a "sweet spot" for different securities at different levels, creating a situation where regulations could impose fees at multiple levels. Yet, one would have to imagine that the debate on appropriate tick sizes would resurface if such a solution were proposed.

In the absence of a definitive result, evaluation of the pilot's success or failure becomes more subjective. While the pilot will yield useful information on how a host of metrics (spreads, depth, market share, slippage, etc.) could change, making a blanket statement on trading intent and broker order routing motives from that data may be difficult in an environment where there are many variables that cannot be controlled and market participants may be trying to accomplish very different objectives. This emphasizes the fact that routing is a complex process even outside of fees/rebates; decisions can be based upon a multitude of factors irrespective of the broker including the liquidity of the stock, the size of markets on which a stock trades, and even an individual client's specific preferences. Overall, these considerations stress the importance of looking at reform holistically and acknowledging that this pilot may only provide us with a better understanding of certain aspects of the market. In contrast, any potential reform could have effects that ripple through the entire market.

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