Tick Constrained Securities

The Tick Size Debate, Revisited

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New data supports our tick reform recommendations

Back in August 2021, MEMX submitted a request for exemptive relief to the Securities and Exchange Commission ("SEC") requesting that the SEC permit "tick constrained" NMS stocks that trade with an average quoted spread of 1.1 cents or less to be quoted in a half penny increment ($0.005), along with a commensurate 50% reduction in the access fee cap ($0.0015) for any securities trading in that smaller increment. Attached to the request was a white paper illustrating the potential benefits of tick reform, which include improved quote quality, lower trading costs, and greater venue competition. Now that we've entered a new year, and consistent with our dedication to data-driven market structure reform, we thought it made sense to quickly revisit the data on tick constrained NMS stocks to see how our recommendations have held up.

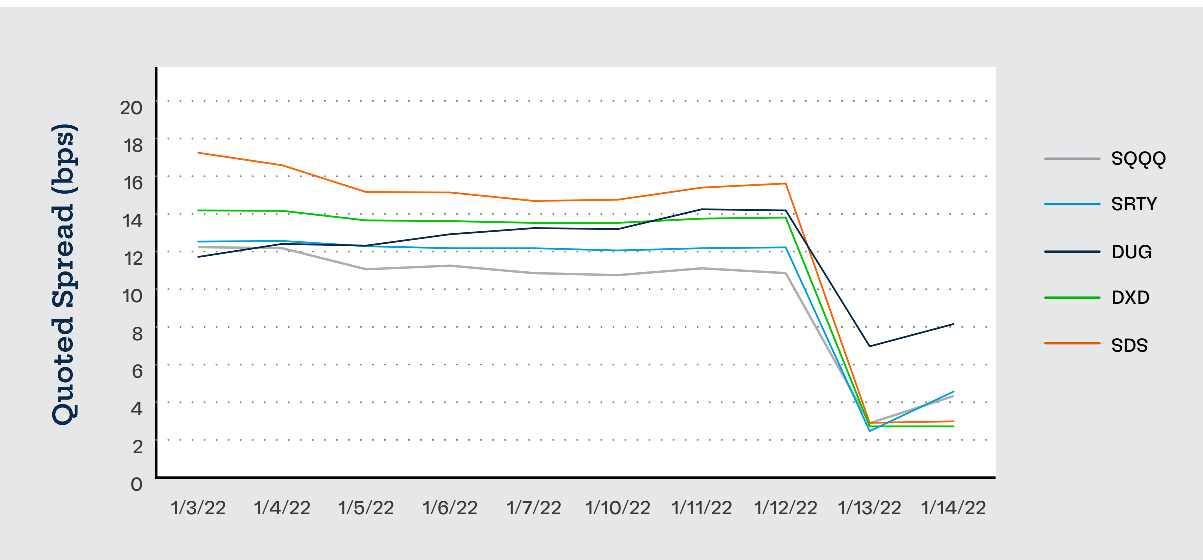
A recent set of reverse splits on certain low-priced ProShares exchange traded products ("ETPs") gives us just this opportunity.[1] As you may recall from our white paper, tick constraints are particularly prevalent among two categories of NMS stocks: 1) low-priced securities where a one cent minimum increment is more "economically significant" relative to the value of the security, and 2) ETPs, which are often able to be priced more efficiently by market participants. Many of the ProShares ETPs fell into both of these buckets and were unsurprisingly subject to tick constraints. At the same time, not all of the reverse splits were carried out in tick constrained products, allowing us to compare the impact of increased pricing granularity on those two groups, i.e., securities that were tick constrained before the reverse split, and those that were not.

Similar to the GE reverse split that we examined in our white paper, we would anticipate significant spread reduction in tick constrained products. The data shows that this intuition is correct. As we've discussed before, tick constraints are both more prevalent and more impactful at lower prices where a one cent spread is more meaningful in relation to the

1 See ProShares Announces ETF Share Splits dated December 22, 2021 available at https://www.proshares.com/press-releases/proshares-announces-etf-share-splits-122021.

price of the security. The tick constrained ETPs included in this sample all traded with significantly lower spreads post reverse split, when the impact of tick constraints was either eliminated or reduced at the new, higher, share price.[2] A similar result can be achieved by amending the tick regime to simply allow more granular prices, without the need to change the price of the security in question.

Chart I: Quoted Spread in Basis Points in Tick Constrained ProShares ETPs Before and After 1/13/22 Reverse Split[3]

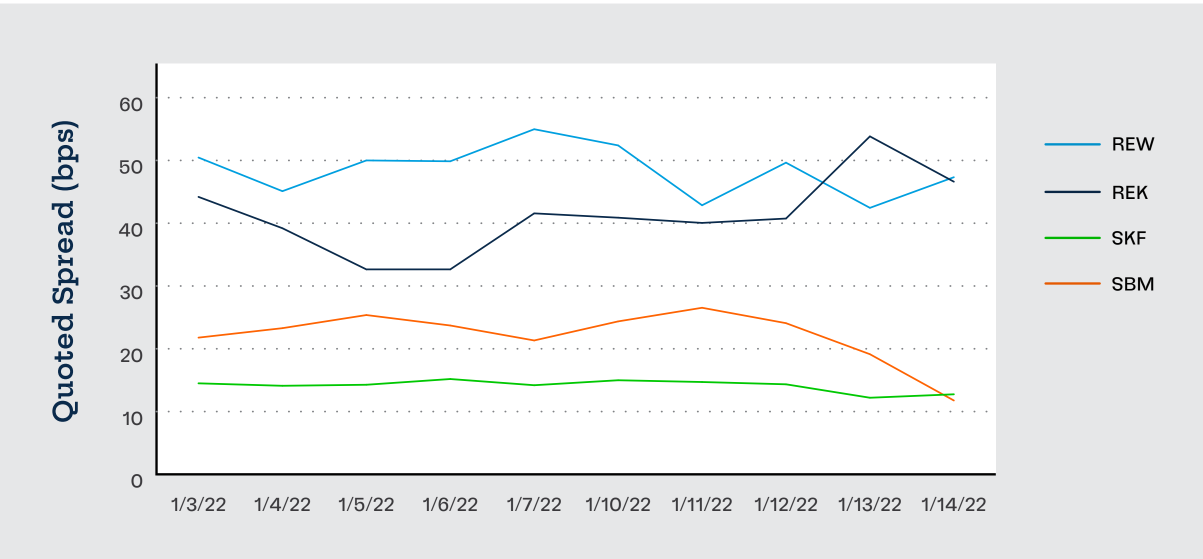


The same is not true for securities that are not limited by tick constraints. We do not expect those securities to benefit from a reduction in spread when the price increases. That's because the one cent minimum increment is already granular enough to allow for market participants to compete down spreads to their natural, i.e., unconstrained, level. That is, securities that are not subject to tick constraints are already quoted at competitive prices set by the market, and increasing pricing granularity should therefore not have a significant impact on market quality. The data we examined following the ProShares reverse splits also aligns with this intuition, showing no specific trend in spread measures for those ETPs that were not tick constrained prior to their reverse split.

2 Some ETPs remained tick constrained after the reverse split. However, increased pricing granularity reduced spreads across all ETPs that were tick constrained prior to the split.

3 Reverse splits effective prior to market open on January 13, 2022.

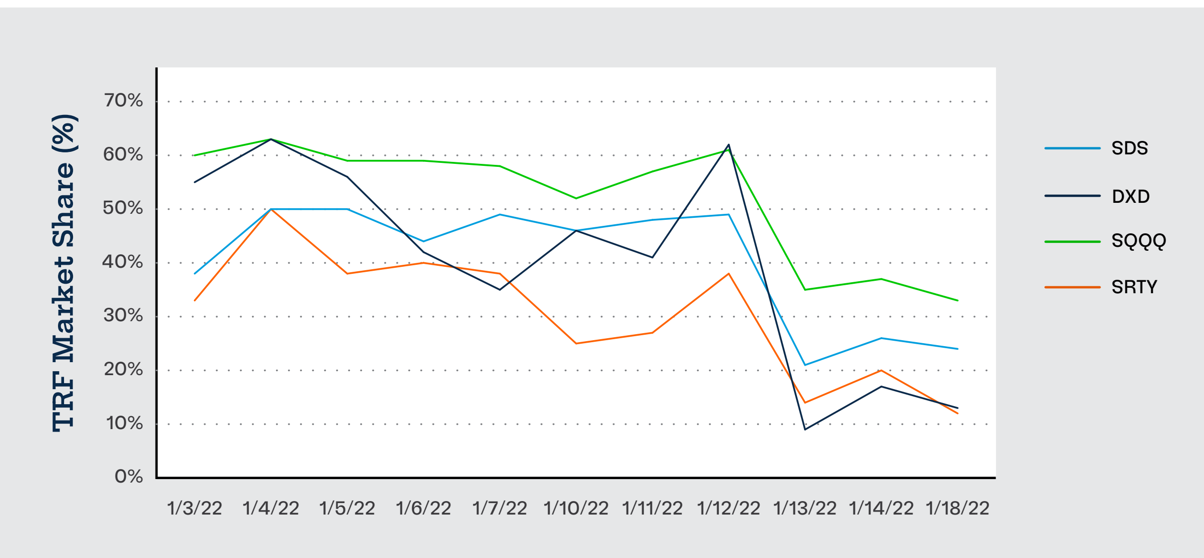
Chart II: Quoted Spread in Basis Points in Non-Constrained ProShares ETPs Before and After 1/13/22 Reverse Split



What about venue competition? When we examined the GE reverse split, we noticed that off-exchange volume reported to the trade reporting facilities ("TRFs") after the reverse split was roughly half of what it was beforehand. Although we have been careful not to draw any strong conclusions from a single data point, it makes sense that tick size reform could make exchanges, which are bound by the quoting increment, more competitive. This is an important observation, as one question that has been raised by the SEC in its review of U.S. equity market structure has to do with the appropriate balance between exchange and off-exchange trading. While we believe in a healthy balance between trading done on and off-exchange, regulators should think carefully about how to best achieve that balance. If there are ways to enhance competition by improving the quality of public quotes, either through tick size reform or other measures, such as round lot reform, those measures should be prioritized over regulatory changes that may unduly burden trading on off-exchange venues that provide significant value to the overall U.S. equity ecosystem.

Turning back to the data, would tick size reform enhance venue competition? The data continues to suggest that it would. To get a sense of the impact of tick constraints on venue competition, we examined TRF market share in the tick constrained ProShares ETPs before and after the reverse split. We focused on products that traded at least 100,000 shares during each day of the review period, as very illiquid securities may exhibit much less stable levels of off-exchange trading.[4] Of these securities, all showed a significant shift in market share to public exchanges immediately following the reverse split. While we'd like to continue to explore the question of venue competition with a more robust dataset,[5] the data that we do have suggests that tick reform may be a viable way to address the SEC's concerns. And, importantly, tick reform could enhance competition by exchanges without placing unnecessary new restrictions on other trading venues, and while also benefiting investors through critical improvements in overall market quality.

Chart III: TRF Market Share (%) in Tick Constrained ProShares ETPs Before and After 1/13/2022 Reverse Split



4 A small number of trades can change the daily metrics in very illiquid names. One symbol (DUG) was removed from this analysis based on our volume threshold.

5 The non-constrained products had a wider range of off-exchange trading activity and were excluded from our analysis based on the minimum volume threshold.

So, what does this all mean? While issuers can make pricing in their securities more or less granular through reverse or forward splits, it's not practical for the SEC and the industry to rely on them to do so. In fact, the data that we shared in our original August 2021 white paper shows that approximately half of all U.S. equity volume is transacted in tick constrained NMS stocks in which greater pricing granularity could significantly improve market quality measures and reduce implicit trading costs. The SEC spent much of 2021 discussing possible ways to improve the investor experience in the U.S. equity market. As they proceed through the rulemaking process on various market structure proposals, we hope that tick reform makes the cut. The data shows that this commonsense solution could improve both market quality and competition in securities that are of interest to retail and other investors. That's exactly the kind of reform that the U.S. equity market needs.

Appendix:
ProShares Reverse Splits (1/13/2022)

Ticker	ProShares ETF	Split Ratio	Tick Constrained Before Reverse Split	% Spread Change Post Reverse Split
DUG	ProShares UltraShort Oil & Gas	1:5	Yes	-42%
DXD	ProShares UltraShort Dow30	1:5	Yes	-71%
SDS	ProShares UltraShort S&P500	1:5	Yes	-80%
SQQQ	ProShares UltraPro Short QQQ	1:5	Yes	-81%
SRTY	ProShares UltraPro Short Russell2000	1:5	Yes	-68%
			Avg % Spread Change	-69%

Ticker	ProShares ETF	Split Ratio	Tick Constrained Before Reverse Split	% Spread Change Post Reverse Split
REK	ProShares Short Real Estate	1:2	No	29%
REW	ProShares UltraShort Technology	1:2	No	-9%
SKF	ProShares UltraShort Financials	1:2	No	-14%
SBM	ProShares Short Basic Materials	1:2	No	-35%
			Avg % Spread Change	-7%