Focus

Credit Market Liquidity: FINRA Proposal - The Debate Continues

CORE

FINRA proposed a pilot program to study two changes to the TRACE reporting system: an increase to the current dissemination caps and delayed dissemination of any information about block trades trades for 48 hours. We use enhanced TRACE data to estimate what effects these proposals could have on transparency and liquidity.

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This is a reprint of Credit Market Liquidity: FINRA Proposal: The Debate Continues, January 30, 2020.

- **Motivated by concerns that corporate bond liquidity has deteriorated, particularly for large block trades, in 2019 FINRA proposed a pilot program to study two changes to the TRACE reporting system for investment grade bonds: increasing the block reporting threshold from $5mn to $10mn and masking trades above the new higher cap for 48 hours.**

- **The proposed changes represent a compromise: on the one hand, raising the reporting threshold increases transparency as the true volume of a larger number of trades is revealed to the market. On the other hand, delaying dissemination decreases transparency, as it affects the accuracy of the end-of-day pricing of corporate bonds. Recent news reports suggest that FINRA may be rethinking the proposal in light of substantial commentary from both opponents and supporters.**

- **Given the diverging views on this subject, we use enhanced TRACE data to estimate what effects – positive and negative – these proposals could have on transparency and liquidity in the corporate bond market. The costs associated with reduced transparency depend on the relevance of large block trades for price formation, since those trades would be masked under the proposal. The benefits of improved liquidity would come from reducing any distortions that exist regarding the reporting threshold in the current regime.**

- **In aggregate, 28% of total volume currently comes from trades larger than $10mn. More importantly, we find evidence that a significant amount of these trades occurs at prices different from those of much smaller trades in the same CUSIPS, suggesting that blocks are indeed important for price formation.**

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- **On the other hand, we also find evidence of distortions around the current reporting threshold, suggesting that the current reporting regime may be negatively affecting block liquidity. There is a substantial discontinuity in the price impact of block trades around the current reporting threshold. Trades with sizes above $5mn have a significantly higher price impact than those below $5mn. For example, following a dealer block buy, bond prices decrease, on average, which makes it more expensive for the dealer to unwind its long position. Masking trades could alleviate this and give dealers time to offload their position before the market moves; this could reduce the costs associated with block trades.**

A Pilot Program to Study Liquidity in Corporate Bond Markets

Corporate bond liquidity continued to attract regulatory scrutiny in 2019, with a notable development being a proposal from FINRA to pilot several changes to the TRACE reporting system. The proposal includes increasing the threshold for trades reported with exact size, and, more controversially, masking trades above the new higher cap for 48 hours. This latter change is motivated by concerns that the capacity to execute block trades is particularly impaired, based on feedback from certain buy- and sell-side market participants.

The proposal has generated intense debate, with investors articulating both supporting and opposing views.[1] While some market participants view it as a welcome attempt to assess (and potentially fix) the liquidity issues besetting the corporate bond market, others fear the decreased transparency could further curtail liquidity and may give an unfair advantage to the liquidity providers. The latter cohort appears to have the leading hand for now: a recent press report suggested that the plan to test the impact of the proposed changes may have been halted following significant pushback from some investors. However, there has been no public announcement to this effect, and it appears that FINRA may still pursue at least some of these changes.[2]

A variety of pre-crisis academic research indicates that TRACE reporting does not impair liquidity.[3] However, more recent analysis suggests that trading has evolved in response to the post-crisis regulatory regime. It initially led to corporate bond volumes becoming concentrated in more liquid CUSIPs and, more recently, has led to an increasing preference for "agent" trading, where dealers line up both sides of the trade before executing, which has gained share over more traditional risk-based "principal" trading.[4] It is possible that, under the new regulatory regime, TRACE reporting has had a different effect on liquidity provisions in general, and/or on block liquidity in particular, than was previously the case. The FINRA proposal would test this by creating several different reporting regimes to determine how, if at all, block liquidity could be improved by tweaking the rules.

Although the FINRA proposal applies to both the investment grade and high yield corporate bond markets, in the rest of this report, we focus on the effect of the proposed changes on investment grade debt. We would expect these observations generally to extend to the high yield market as well. That said, the proposed change in the threshold for block trades is more significant for high yield debt (from $1mn to $5mn), which *a priori* would suggest that any effect is likely magnified.

[1] https://www.finra.org/rules-guidance/notices/19-12

[2] See "Delayed Disclosure of Biggest Corporate Bond Trades Stalls," Bloomberg, January 22, 2020.

[3] See Bessembinder, Maxwell and Venkataraman (2006) and Goldstein, Hotchkiss and Sirri (2007).

[4] https://live.barcap.com/go/publications/content?contentPubID=FC2240005&restriction=DEBT

Increasing Transparency, Decreasing Transparency

The proposed changes to TRACE rules appear to be a balancing act: on the one hand, increasing the block trade limit from $5mn to $10mn improves transparency, as the true volume of a larger set of trades is revealed to market participants. On the other, delaying the dissemination of block trades to 48 hours substantially worsens transparency in the corporate bond market. The potential negative consequences of these changes are more readily apparent. Although revealing the exact notional of trades less than $10mn in size would improve the accuracy of VWAP-type estimates, not having any block trade information for trades executed in the last two business days could, among other things, critically affect end-of-day pricing for corporate bonds. As we discuss in subsequent sections, nearly 28% of total volume every day, on average, has come from trades larger than $10mn in notional – none of which would be available for 48 hours post-trade.

Estimating the average price/spread of a corporate bond index is already fraught with challenges, given that a significant portion of the index does not trade every day and pricing algorithms typically rely on matrix pricing for these securities. Delaying the dissemination of block trades would therefore directly affect the pricing not only of the related CUSIPs but also potentially of the rest of the universe if it affects matrix pricing estimates. This could introduce, or exacerbate, errors in calculation of end-of-day pricing for corporate bond portfolios. While the errors are likely to be small and normalize over time, it could create a significant challenge for funds that use end-of-day NAVs for pricing redemptions and inflows. This includes open-end mutual funds, which, having grown meaningfully over the past decade, are now a significant portion of the market. While very few (if any) transactions for ETFs and closed-end funds happen at end-of-day NAV, investors rely on pricing relative to NAV as an important measure of relative value offered by the underlying product. Error in its calculation would reduce the reliability of this measure. Liquidity provided by electronic platforms could also decline, or at least become more expensive, if pricing algorithms do not have the visibility of all recent trades.

Given the potential negatives, the introduction of a dissemination gap can be justified only if it generates an improvement in block liquidity. To assess the potential for it to do so, we use recent enhanced TRACE data (ie, with uncapped trade volumes) from the US investment grade market to determine if the current reporting requirements are causing any detectable distortions in trading behavior or prices. Our goal is to determine if there is any evidence that current dissemination rules may suppress block liquidity and if a change in those rules could, therefore, improve dealers' and/or investors' ability to trade blocks.

- Trades with sizes just over the cap are less frequent than trades further over the cap, whereas in every other size range, the opposite is true: larger trades are less frequent than smaller trades. The proposed rules may reduce these distortions; however, they are not significant enough to warrant regulatory intervention, in our view.

- More significant is evidence that a block trade alters future trading patterns. Bonds with a block trade have fewer small trades in the ensuing 48 hours, but more large trades. One interpretation is that investors slow or pause regular-way trading in a bond with a block trade until they see the risk clear. We cannot determine if this is because dealers are more reticent to quote the bond or if investors want to see the price action settle before resuming normal transactions. Regardless, the reduction in small trades could discourage dealers from providing block liquidity: they know that regular trading will slow until they clear the block risk. If this interpretation is correct, delaying the dissemination of block trades for 48 hours could help facilitate more blocks to the extent that the regular flow of trades provides the dealer with an outlet for risk.

- Most significantly, we find evidence of a discontinuity in the price impact of block trades around the reporting threshold. Investment grade trades with sizes just above $5mn have a

substantially larger price impact than those just below $5mn. Effectively, markets move against the dealer: for instance, following a dealer block buy, bond prices decrease, on average, making it more expensive for the dealer to unwind its long position. In general, larger trades have a higher price impact, but the jump around the reporting threshold is multiples higher than the increase for other sizes.

This suggests improvement in liquidity from both increasing the threshold for masking volumes and delaying the dissemination for block trades. The existence of a threshold means that investors will assume that trades just above it are larger than they truly are; thus, they will generate a higher price impact. Raising the threshold would reduce this problem, as it would reduce the number of affected trades as well. In addition, the difference between the threshold and the median trade size would also decline: currently, the median trade size is two times higher than the threshold, whereas increasing the threshold to $10mn would diminish this difference to 1.6 times. Finally, the high price impact could deter both dealers and investors from executing block trades; to the extent that it reflects the immediate market reaction to a block trade that will need to be cleared, delaying the reporting of the trade could remove this barrier.

Better Block Liquidity or Better Transparency

The above observations imply that potential gains to block liquidity need to be balanced against the costs associated with decreased price transparency, which could be especially severe for open-end funds, which trade at end-of-day NAVs, and for systematic investors, who rely heavily on accurate real-time pricing. Assessing this trade-off is clearly subjective; we take no view on the merits of the proposal. Given the growth in the corporate bond market, an improvement in block liquidity would certainly be welcomed by market participants. Whether it will still be palatable if it comes at the expense of reduced transparency is unclear, although any new challenges to the ability to price a portfolio accurately at the end of each day would be a significant obstacle.

The FINRA Proposal and TRACE Data

The current TRACE reporting rules for the corporate bond market require dealers to report any trade within 15 minutes of execution. All reported trades have the price, time of trade, and a flag for direction (dealer buys, dealer sells, or dealer to dealer). Investment grade trades with sizes up to $5mn are reported with their exact size.[5] Trades above $5mm, referred to as block trades, are reported as $5mn+.

FINRA has proposed two possible changes to these rules.

- Increase the block reporting threshold to $10mn. Therefore, trades with sizes between $5mn and $10mn would be reported with exact size.
- Introduce a 48-hour reporting delay for trades above the block threshold. No information about these trades would be released until the delay has passed.

To study the effect of these changes, FINRA has proposed a pilot program set to run for one year (but it could be shortened in certain instances). Every bond would be assigned to one of four buckets: three pilot study groups and one control group. The three test groups will differ by trade reporting rules: the first will have a 48 hour-delay but the current $5mn cap, the second would have no reporting delay but an increase in the cap to $10mn, while the third would include both changes.[6] Differences in trading behavior – transaction costs, trading volumes, etc. – across the four buckets would be an indication of the effect of the proposed changes.

[5] The rules for the high yield market are similar but with a $1mn block trade threshold.

[6] https://www.finra.org/rules-guidance/notices/19-12

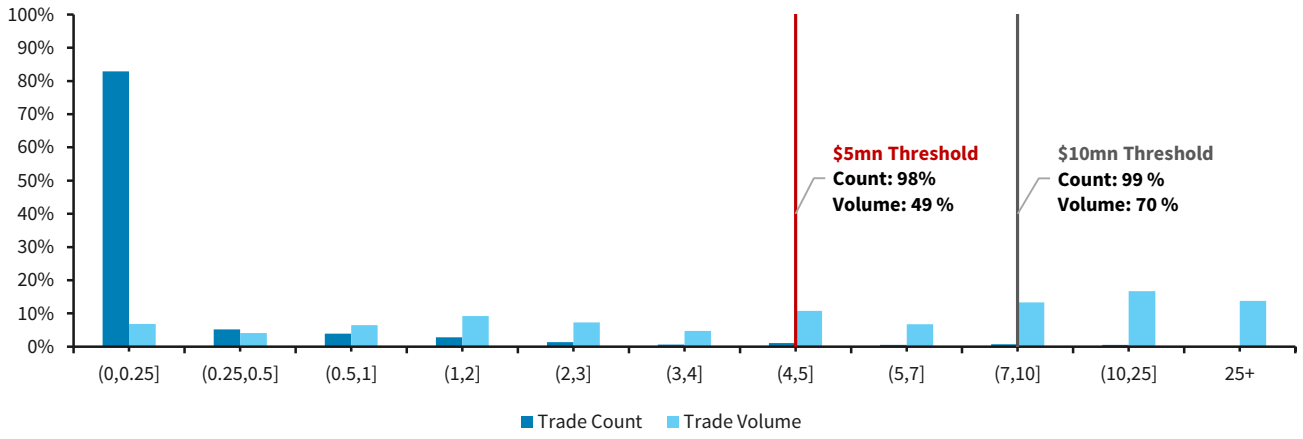
This proposal was recommended by a panel of market participants convened by the SEC to study fixed income market liquidity, and FINRA formally proposed the study (and asked for comments) in April 2019. It has generated substantial commentary from both supporters and opponents; most recently, news reports suggest that FINRA is rethinking the proposal, and may pause or cancel it pending discussions with the SEC.

In advance of any potential experiment, we use historical TRACE data to assess the potential costs and benefits of these proposed changes. The true size of block trades is initially masked in TRACE, but six months after the calendar quarter in which they are reported, TRACE reveals it. This allows us to test how different trade sizes affected the market, even though only more limited information was available to market participants in real time.

We use high-frequency transaction level data from TRACE over 1 January 2017 to 28 September 2018. To narrow the list of bonds, we include only securities in the Barclays IG Corporate Index. We merge TRACE data with data on bond characteristics.[7] The result is a comprehensive dataset including c.18 million transactions for 7,576 unique CUSIPs.

We divide trade data into 11 buckets of increasing trade notional[8] and compute the proportion of trades and volume contained in each (Figure 1). Bond trades are unevenly distributed; there is a large amount of very small trades. 82% of all trades fall within the smallest size bucket (below $0.25mn), but these account for only 6.8% of the total volume. For comparison, trades in the largest trade bucket ($25mn+) account for 0.12% of the total trades but 13.8% of total volume.

FIGURE 1. **Distribution of Trades by Count and Volume ($mn)**



Note: Data from January 1, 2017, to September 28, 2018.
Source: TRACE, Barclays Research

Delaying Dissemination Would Reduce Transparency

Increasing the threshold for immediate dissemination of full trade information to $10mn would significantly raise the proportion of trades whose uncapped volume is revealed in real time. The current block threshold of $5mn implies that the full size of c.98% of all trades and c.49% of all volume are revealed. Due to the heavy right skew of the volume distribution, increasing the

[7] Bond characteristics include bond identifier, maturity, rating, amount outstanding, issue date, quantity traded, price, yield, trade execution and trade report time.

[8] The category "$25m +" contains a small number of very large trades. To mitigate the effect of outliers, we remove trades where the quantity traded is larger than the amount outstanding. However, we are aware that we could still be overstating the trade volume in the largest trade bucket.

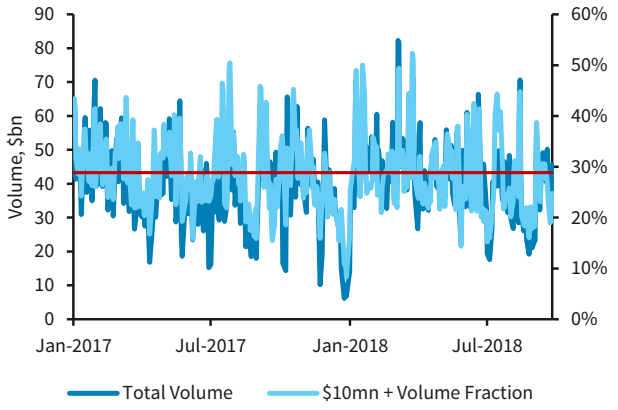
dissemination cap would entail a large informational benefit. Increasing the reporting threshold to $10mn translates into over 99% coverage by trade count and c.70% coverage by volume – obviously the latter being the more relevant statistic.

However, delaying dissemination of trades above the threshold would reduce the real-time information available to investors, who at least now know that the trade did occur, albeit not the full size. Delaying information reduces transparency, which in general means less precise pricing marks. This is particularly challenging for bond mutual funds and, to a much lesser extent, bond ETFs, which derive their value from an underlying pool of corporate bonds. Bond mutual funds provide investors with liquidity at end-of-day NAV. Masking trades could reduce the accuracy of NAV calculations, particularly if large trades play an outsized role in price formation. Similarly, error could be introduced in the NAV calculations of ETFs. Although less problematic, as it would not affect secondary trades nor create and redeem units (neither of which are explicitly linked to NAV), NAV is still an important barometer of relative value.

Figure 2 shows the total trading volume over rolling two-day periods and the fraction of volume transacted in trades with a notional of more than $10mn. On average, $10mn+ trades account for about 28% of total volume. Under the proposal, this is the information that will not be revealed to market participants in real time: 28% of the last two days' volume will not be available to pricing algorithms.

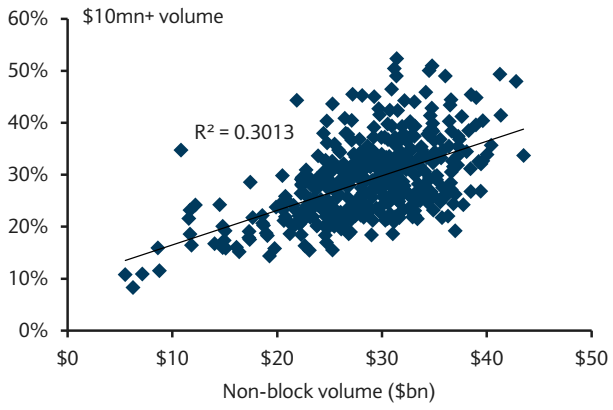
Importantly, block volumes are positively correlated with non-block volumes (Figure 3), which at least partly mitigates the negative consequences of the reporting delay. On low volume days, a higher proportion of trades is visible in real time. While more trade volume would be subject to reporting delay on active trading days, the non-block volume is also high during such periods, likely reducing the estimation error induced by masking blocks.

FIGURE 2. Trading Volume and Block Trades over Time



Source: TRACE, Barclays Research

FIGURE 3. $10mn+ Volume Fraction Is Positively Correlated with Non-block Volumes



Note: Data from January 1, 2017, to September 28, 2018.
Source: TRACE, Barclays Research

Estimation Error in Calculating Portfolio NAVs

The exact error in estimating portfolio-level NAV due to the dissemination delay is a function of the specific pricing algorithm used. Rather than implement a specific pricing algorithm, we estimate two measures of the distortion that would be caused by the proposed change for a randomly chosen two-day period; we compute these metrics for every CUSIP in our data set:

1. The fraction of total volume in $10mn+ trades in past two business days: this serves as a measure of the "quantum" of information lost due under a 48-hour dissemination delay. A higher fraction means more information is unavailable in real time.

2. The absolute difference in execution price of block trades versus non-block trades: this is a measure of the "quality" of the lost information. For instance, if block trades are, on average, executed at roughly the same level as the rest of the trades, the lost information is not particularly important. In contrast, if the block trade execution levels are meaningfully different than other trades, the error introduced by a dissemination delay would be more significant.

Because this is over a two-day period, most bonds (~84%) do not have a block trade over $10mn; these would be unaffected by the rule change. Figure 4 buckets the remaining 16% of bonds in different categories based on the above metrics. Bonds where at least one of the metrics is low – either the quantum or quality of the delayed information is not substantial – would introduce limited estimation error. About 5% of bonds fall in this bucket (shaded in green). However, those that score high on both metrics could be more problematic. Nearly 11% of bonds (shaded in orange/red) fall in this category. This suggests that on any given day, about 11% of bonds would have a substantial amount of information masked that would be extremely relevant to price formation/estimation.

FIGURE 4. Amount Outstanding of Bonds (as % of Index) Affected by Dissemination Delay

Price Difference	Percent of volume in $10mn+ trades			
	(0, 25 %]	(25,50 %]	(50,75 %]	[75%, 100%]
($0, $0.05]	0.3%	0.8%	0.3%	0.4%
($0.05, $0.10]	0.3%	1.1%	0.3%	0.8%
($0.10, $0.25]	2.6%	0.6%	2.5%	2.0%
> $0.25	0.6%	0.8%	1.2%	1.7%

Note: The figure is a snapshot of trading activity at a random point in time. Price impacts are calculated for dealer sell trades. The number in each box is the amount outstanding of bonds as % of total index).
Source: TRACE, Barclays Research

The negative consequences of the information loss could be mitigated if the subset of bonds most affected by the delay were predictable and constant over time. This information could be used as a valuable input to models predicting or simulating fund prices. Recently issued securities would generally have the most $10mn+ trades, but more broadly, the set of bonds that have a high number of large block trades appears to change meaningfully over time.

To assess the predictability of the bonds with many large block trades, we compute a "retention rate": the fraction of bonds for which large block trades make up over 50% of their volume on one day and also meet that criterion the next day. For example, a retention rate of 75% means that 75% of the CUSIPs for which block volume made up greater than 50% on day 1 also had more than 50% of volume in large block trades on day 2. Actual retention rates are far lower than this; the maximum we find is 5%. This implies that the subset of bonds that would be most affected a reporting delay is basically random. This result is particularly problematic, as it implies that fund managers could not obtain a reasonable ex-ante estimate of the price impact for a given CUSIP.

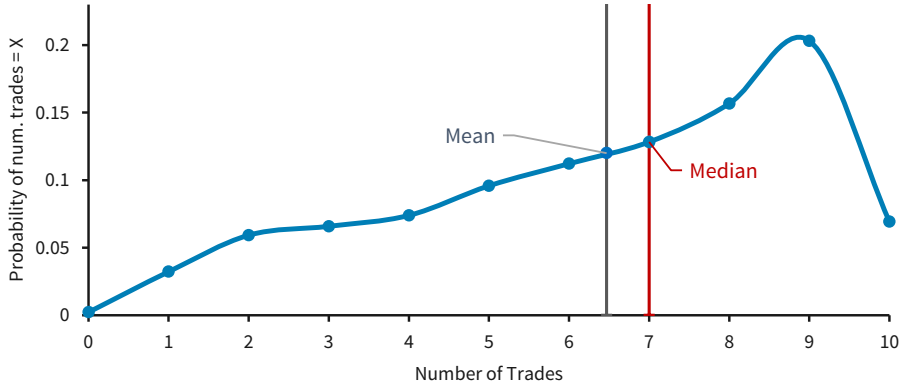
A final caveat to these results: we are estimating the loss of transparency under the current rules. If changing the reporting rules successfully encourages more block trading, then by definition, the loss of information would get worse. In other words, success on the liquidity-improving front necessarily increases the costs of reduced transparency.

Price Impact of Block Trades

Balanced against these costs are any potential benefits to block liquidity from tweaking the TRACE rules. The strongest evidence that the current reporting regime affects block liquidity is that there appears to be a discontinuity in the price impact of trades at the block reporting threshold. This suggests that delaying dissemination for block trades could provide market makers with enough time to manage their positions and risks before the market responded.

To estimate the price impact of block trades, we look at the price of each block trade and the price of the next 10 trades completed for that CUSIP within 48 hours.[9] This approach has two main advantages. First, by focusing on a very tight time interval, we mitigate the chance that any price impact we observe is contaminated by factors other than the block trade itself (eg, market movements or earnings announcements). Second, by working with transaction-level data, we bypass the problem of selection bias, which arises chiefly because of differences in the frequency with which bonds trade. In Figure 5, we plot the distribution of trades of a given bond over a two-day period (keeping in mind our subset includes only relatively liquid bonds). On average, bonds trade 6.5 times in two days. Although the fact that the median (seven trades) is very close to the mean suggests a fairly symmetric distribution, there is still a non-negligible fraction of bonds that trade very infrequently, even in this more liquid subset. Using transaction data allows us to avoid mixing prices of bonds that have few trades with those that have many more trades.

FIGURE 5. **Probability Density**



Note: Data from January 1, 2017, to September 28, 2018.
Source: TRACE, Barclays Research

We estimate separately the price impact for dealer sell and dealer buy trades. For each unique CUSIP in our sample, the price impact for dealer sell trades is defined as the difference between prices of sell trades following a block buy trade in that CUSIP and the price of the last sell trade before the block buy.[10] Similarly, the price impact for dealer buy trades is defined as the difference between prices of buy trades following a block sell trade and the price of the last buy trade before the block sell. If block trades affected liquidity, we would expect prices to decrease following a dealer block buy; ie, the market would move against the dealer when it unwind the long. Conversely, on average, prices would increase following a dealer sell.

Using a bond's last price as a reference point for our calculations provides a cleaner measure of price impact compared with, for instance, using the mean price over the last two days. If block trades do indeed affect the market, then these price movements should be reflected in the

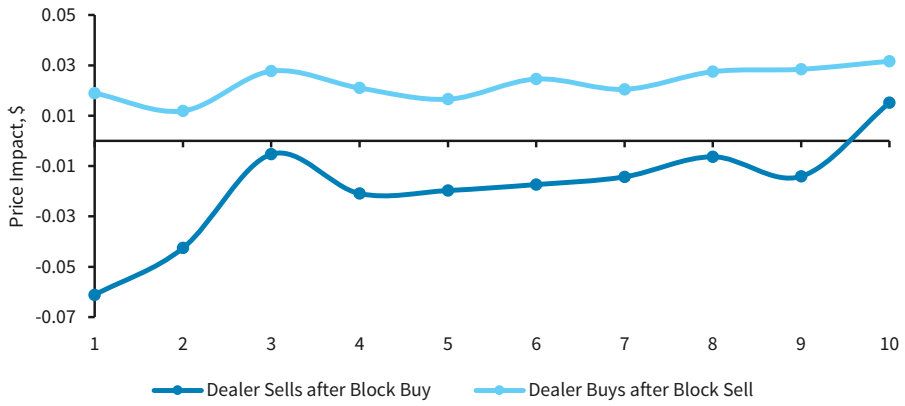
[9] We choose a period of 10 trades following a block trade because the average bond in our sample takes a little over two days to complete them. We exclude bonds issued in the three days before a block trade (buy or sell) occurs.

[10] For example, given prices denoted by P and a block buy trade at time t, the price impact for the subsequent sell trade at time t+1 equals Pt+1 - Pt-1. Similarly, the price impact 2 trades after a block trade = Pt+2 - Pt-1.

mean over the short run.[11] In contrast, the chance that a bond has two consecutive block trades is less than 2%, which gives us confidence that our estimates are not biased. Finally, we average the price impacts across all CUSIPs to arrive at an aggregate measure for each of the next 10 trades following a block buy.[12]

Block trades produce a significant price impact (Figure 6). Sell prices are markedly lower after a large dealer buy: the price of the first sell trade following a dealer block buy trade is $0.065 lower than the last sell trade before the block. The effect is consistently negative for trades 1-9, with an average price impact of -$0.022. Therefore, market makers looking to offload their positions after a large purchase are in an unfavorable position and face substantial downward pressure on prices. Moreover, the effect decreases in magnitude over time and turns slightly positive ($0.015) after trade number 10. The lack of persistence suggests that liquidity, rather than new fundamental information, is driving the price impact we estimate. The results on block dealer sells are similar. Following a block sell, dealer buys transact at a higher price. Although not as extreme as in the case of dealer sells, the price impact is still clearly detectable and ranges from $0.011 to $0.032.

FIGURE 6. Price Impact of Block Trades



Note: The x-axis records the price trajectory following a block trade over a period of 10 trades. For example, "Dealer Sells after Block Buy = 1" represents the first sell trade after a block buy trade and Dealer Sells after Block Buy = 5" represents the fifth sell trade after a block buy trade.
Source: TRACE, Barclays Research

Investors' Perceptions at the Threshold

The price impact of block trades documented above is not only large in absolute terms, it is significantly above that of smaller trades. In Figure 7, we compute the price impact of trades as a function of trade size. As expected, for very small trades it is small, but increases with trade size. What is notable is that there is a discontinuity in price impact at the reporting threshold: trades just above the $5mn threshold have a significantly larger price impact than those just below the threshold. The precise dollar magnitude of the discontinuity is $0.0543 - $0.0133 = $0.041. Although small in absolute terms, its relative effect is considerable because it shifts the price impact of 51% of the total trading volume (>$5mn) by $0.041.

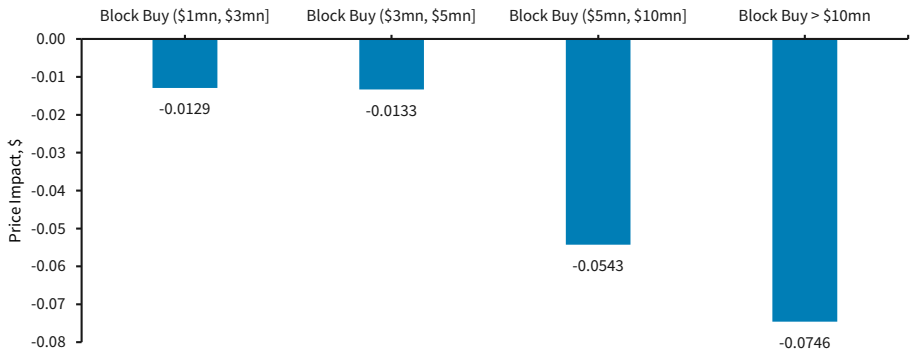
What drives the discontinuity? One explanation could be that bonds that trade below and above the threshold have fundamentally different risk profiles. However, comparing the ($3mn, $5mn) trade bracket to the ($5mn, $10mn) trade bracket in terms of amount outstanding, time

[11] Note that our results still hold even if we use mean prices as a reference category.

[12] Our conclusions are qualitatively unchanged if we use volume-weighted averages. In robustness checks, we find that small trades (< $ 1mn) are unaffected by block trades and that the price impact increases with trade size. Therefore, our results serve as a lower bound on the true price impact.

since issuance, maturity and yield, we cannot detect any sizeable differences, except for the reporting rule, based on which the size of trades above the threshold is masked (Figure 8)

FIGURE 7. Price Impact at the Threshold



Source: TRACE, Barclays Research

Under the current scenario, investors' behavior after having observed a masked "$5mn+" buy trade is in part determined by their assumption regarding the true size of the trade. In reality, 67 % of all block trades fall between $5mn and $10mn. Part of our explanation why there is such a discontinuous price impact is that investors overreact in expectation of a rather large trade. For example, assuming an investor uses the median value (= $10mn) of block trades as a reference point and given a hypothetical true size of $ 5.1mn, the investor will overstate the true size by nearly two times.

Under the proposed rule, when market participants observe "$10 mn+" trades, they will know precisely that this is a very large trade. The median value of block trades above $10mn is $15.85mn. Increasing the dissemination cap to $10mn would, thus, reduce the distance between the cut-off and the median trade size. For example, given a trade of $10.1mn, the investor will overstate the true size by only 1.6 times. Therefore, we believe that increasing the reporting threshold would improve transparency and price discovery and be beneficial for investors and achieve policy makers' goals.

FIGURE 8. Bond Characteristics below and above the Threshold

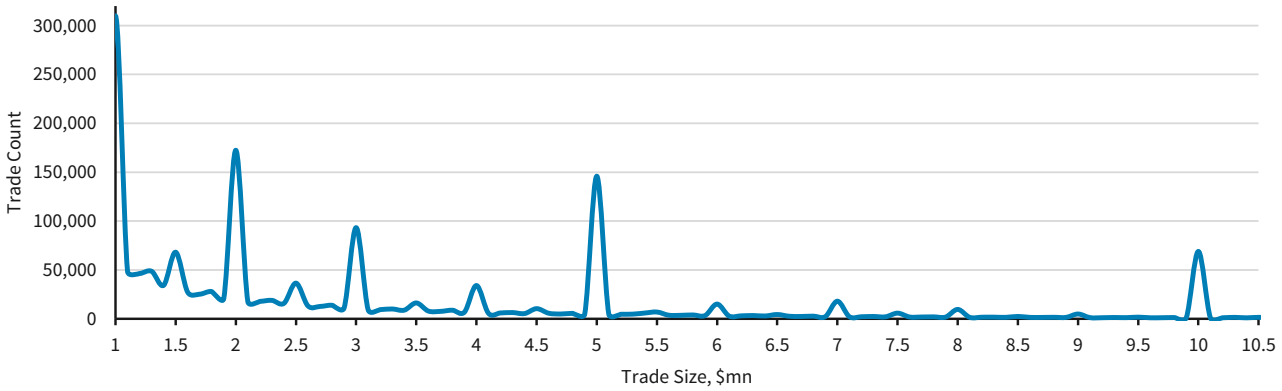
	($3 mn, $5mn]	($5 mn, $10 mn]
Outstanding Basis	$1,701,013	$1,771,863
Time Since Issuance	821 days	792 days
Maturity	5,660 days	5,252 days
Yield	3.64%	3.61%

Source: TRACE, Barclays Research

Current Rules Do Appear to Introduce Distortions in Behavior

In addition, we find some evidence of distortions in volumes around the threshold for block trades; for example, it is possible that reporting $5mn+ discourages trades just above the threshold. To uncover more detailed patterns in the data, we sort trades into granular bucket sizes of $0.1mn each and zoom in on trades around the threshold (Figure 9).

FIGURE 9. **Distribution of Trades around the Threshold**

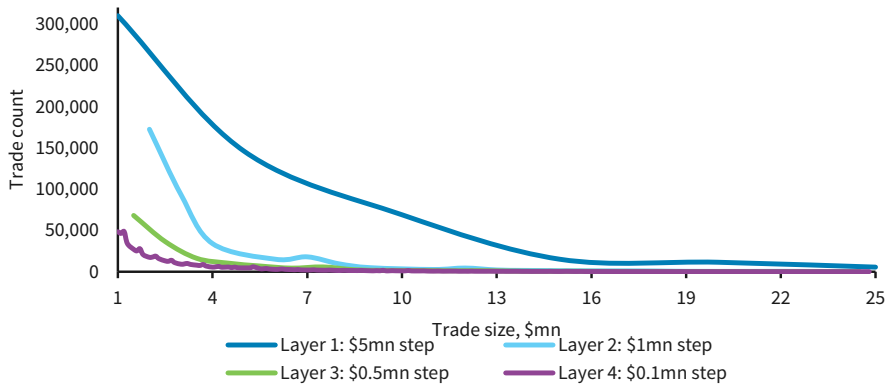


Note: Data from January 1, 2017, to September 28, 2018.
Source: TRACE, Barclays Research

Several points are worth mentioning. First, in line with Figure 1, larger trades are generally less frequent than smaller ones. Second, the distribution of trades is not smooth, but exhibits spikes at specific round lot sizes. Investors prefer trading round lots. Trades with $5mn lot sizes (eg, $5mn, $10mn etc.) are more frequent than those with $1mn lot sizes (eg, $2mn, $3mn, $4mn etc.), which are themselves more frequent than trades with $0.5mn lot sizes (eg, $1.5mn, $2.5mn, $3.5mn etc.). The least preferred are $0.1mn lot sizes (eg, $1.1mn, $1.2mn, $1.3mn).

To account for these spikes, we slice the data into layers of decreasing trade size. We use four layers of step size: $5mn, $1mn, $0.5mn and $0.1mn. These successfully filter the data, meaning we generate smooth curves of trade count versus trade size using these bins. We plot these four layers separately in Figure 10.

FIGURE 10. **Data Filtering**

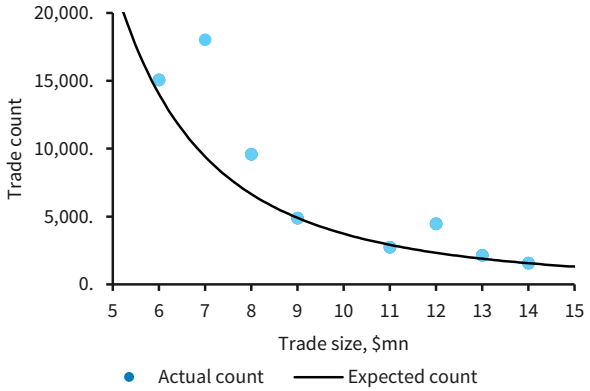


Source: TRACE, Barclays Research

The smoothness of the distributions derived in this way allows us to detect aberrations from the pattern, which are not so clearly visible on Figure 9. Contrary to expectations, we find that $7mn trades are more frequent than $6mn trades; the same is true for $7.5mn trades compared with $6.5mn trades. One way to think about these figures is to argue that since dealers know that trades above the threshold carry higher inventory risk, they are willing to enter into trades only large enough to justify the risk. However, the fact that only trades close to the threshold are affected suggests that the magnitude of the distortion is not large.

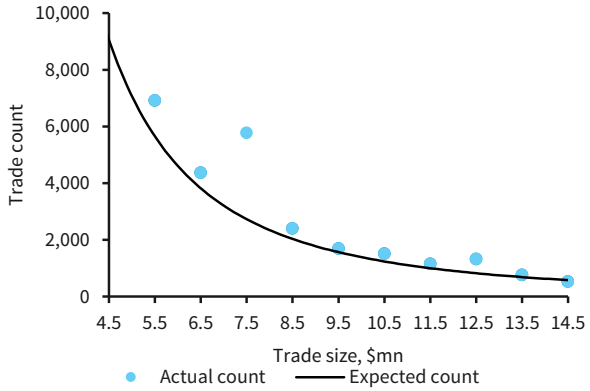
We plot separately trades with a step size of $0.5mn and those with a step size of $0.1mn, excluding $7.0mn and $7.5mn trades, and fit the data to a power distribution. Judging by the R^2 of 98% in both cases, we are confident that the power law reasonably describes the empirical distribution of trades. This gives us a tool to compare expected trade counts with actual trade counts observed in the data (Figures 11 and 12).

FIGURE 11. Distortions around the Threshold: $7mn Trades



Source: TRACE, Barclays Research

FIGURE 12. Distortions around the Threshold: $7.5mn Trades



Source: TRACE, Barclays Research

The power distribution predicts 50% fewer $7mn trades and 47% fewer $7.5mn trades than actually occurred. Putting these numbers into perspective, the current distortion in the range between $7mn and $7.5mn affects roughly 8% of total volume.

Extending the cap on block trades could reduce these distortions. First, we would expect volumes just over the $5mn cap to normalize. This would be offset by potential new distortion over the new cap: eg, $11-13mn. Drawing parallels between the two policies, we might expect investors to prefer $12mn and $12.5mn trades to $11.0mn and $11.5mn trades. However, the economic magnitude of the distortion would not be symmetric; even if the current distortions reappeared just above the new threshold, they would affect only 3.5% of the overall volume because the total volumes in that range are smaller. Similarly, delaying reporting of block trades for 48 hours, regardless of the size of cap, could also help reduce these distortions. But again, it is difficult to surmise that these changes in behavior have meaningful consequences; removing them is likely not a justifiable policy goal, particularly given the transparency issues discussed above.

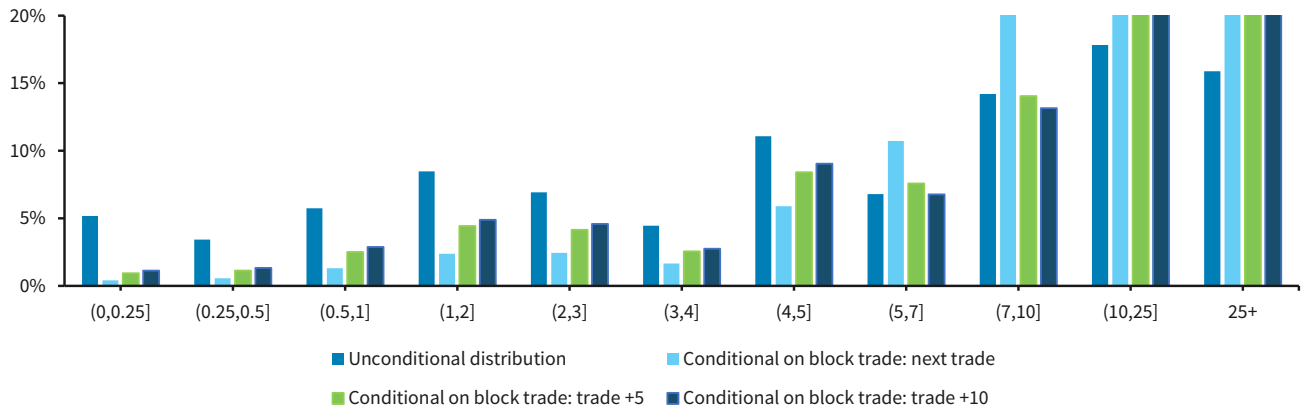
The Effect of a Block Trade on Future Trades

We find evidence of distortions in trading patterns that follow a block trade more of a concern. Because block trades are unevenly distributed through the universe of CUSIPS (some bonds, such as larger or newly issued bonds, are more likely to have block trades), we focus on a sub-sample of bonds that are most likely to have block trades. We first calculate the number of block trades per each CUSIP and then retain only those CUSIPs that have more block trades than the average bond over our sample two-year period (leading to a threshold of 46 block trades). This reduces our sample size nearly in half and leaves us with c.10mn trades and 2,181 unique CUSIPs. We evaluate trading patterns for these bonds along three dimensions: time between transactions, volume and type of trades.

Unconditionally, it takes on average 1.02 days to complete 10 trades within our sample. After a block trade occurs for a given CUSIP, trading activity in that bond declines and it takes 1.40 days to complete 10 trades. We plot the distribution of volume by size bucket and compare unconditional and conditional distributions (Figure 13). Following a block trade, there is an increase in the number of large trades (>$7mm) that occur in that CUSIP. This is expected and

likely due to dealers' finding the other side of the original block. However, there is a decline in the number of smaller trades (<$5mm), with the net effect being a reduced number of trades.

FIGURE 13. Distribution of Trade Volume Conditional on a Block Trade



Note: The x-axis records the trading volume trajectory conditional a block trade over a period of 10 trades. For example, "Conditional on block trade: trade +5" represents the fifth trade following a block trade.
Source: TRACE, Barclays Research

One possible explanation is that after a block trade is reported, investors/dealers delay trading in small lot sizes until the risk associated with the block has cleared. We cannot determine if this is because dealers are more reticent to quote the bond or if investors want to see the price action settle before resuming normal transactions. Regardless, the reduction in small trades could inhibit dealers from providing block liquidity; they know that regular trading will pause (or at least slow) until they clear the block risk. If this interpretation is correct, masking the block trades for 48 hours could help facilitate more blocks, to the extent that the regular flow of trades provides the dealer with an outlet for risk.

Policy Implications

Our analysis of the proposed change to TRACE reporting rules suggests that there are liquidity improvements to be had from both increasing the reporting threshold and delaying block trade dissemination for 48 hours. Most significantly, the presence of a discontinuity at the current threshold suggests that block trades have a higher price impact by virtue of being reported as block trades. By masking those trades, it is possible that dealers would be able to move the risk without the price impact materializing (or with a smaller one), with the result being a greater willingness to trade larger sizes. This would come in the form of small bid-offer spreads and greater demand from investors for those trades.

However, the benefits of increased block liquidity need to be carefully balanced against the costs associated with decreased price transparency. A significant amount of volume would be masked even if current trading patterns persist. On average, 28% of volume over a two-day period would be masked, but more of a concern is that we estimate that 11% of CUSIPs would have a significant amount of information lost, information that would be relevant for setting prices. Further, if the new rules did succeed at inducing more block trading, this would axiomatically prove to be an underestimate. Lost information at the CUSIP level raises issues for marking portfolios to market; pricing algorithms rely on matrix pricing, given the paucity of trades in many single names, and matrix pricing clearly becomes less effective when fed with fewer real transactions. The consequences of the reporting delay could be particularly severe for open-ended mutual funds; systematic investors reliant on pricing data; and, to a much lesser extent, ETFs.

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