August 1, 2017

Time of Day & Marketability: Missed trading opportunities ... Part 2

In a recent note, we discussed missed trading opportunities at Luminex, the instances where on the same day two opposite side orders in the same symbol were present in the pool but did not trade. We found missed trading opportunities at Luminex were primarily due to one of two reasons – time or marketability – and amounted to nearly **1 billion unmatched shares in the first half of 2017**.

The subject matter received a lot of attention and sparked numerous discussions within the community of Luminex Subscribers. Two requests were common: 1) Tell us *when during the trading* day missed opportunities occurred and 2) measure lack of marketability (limit prices) in basis points versus cents per share. Given the large number of questions and requests for that information, we would like to take this opportunity to share our results.

Highlights

Time of Day

- Nearly half of short-term missed events – less than 30 minutes and between 30 and 60 minutes – were in the first few hours of trading.
- **However, we also found that short-term misses happened throughout the entire trading day and increased in the last hour of trading**.

Marketability (Basis Points)

- Limits within five basis points of being marketable were responsible for 15% of misses due to lack of marketability. The average spread of the stocks that comprised those events was $0.04.
- Limits that were more than 100 basis points away from being marketable were responsible for 24% of missed events. The stocks in this grouping had an average spread of $0.07.
- Large cap made up the majority of missed events, but the breakdown of missed opportunities in basis points maintained an even distribution within each of the market cap categories.

Time of Day

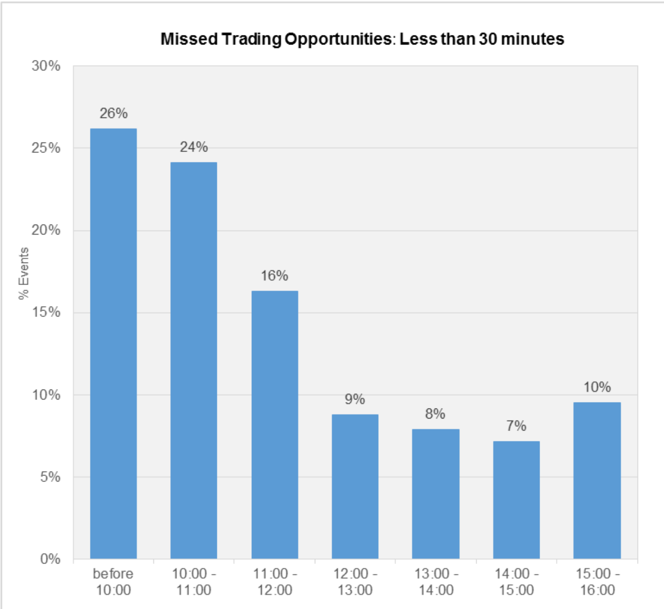
In our earlier note, we argued that the high rate of short-term misses and the longer duration time characterizing institutional orders implied that counter-parties were more than likely trading their respective orders around the same time, but were incurring missed opportunities because of the transient nature of liquidity and the perceived need to keep up with tape volume.

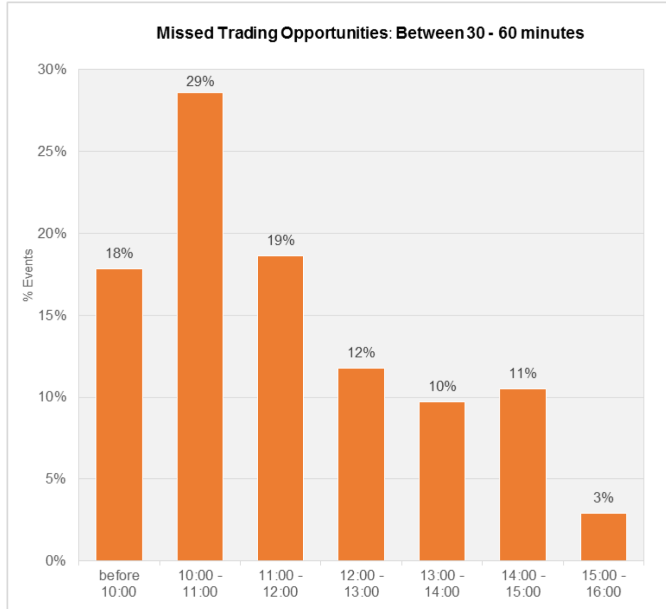
The data around short-term misses was surprising to many, but equally important is knowing not only if they happen, but *when* in order to prevent them going forward. Specifically, are short-term misses more prone to occur at a certain time of day, like shortly after the open, or at some other point(s) throughout the trading day?

What we found most interesting...

Upon further examination of the two shortest time intervals, **we found close to 50% of the missed events occurred in the first half of the trading day**. This outcome was one we expected because, generally, participants experience higher rates of crossing activity earlier in the day; it is an active period in the marketplace and the time when the vast majority of orders are in the beginning stages of the trading lifecycle. Order start times and trader participation rates may vary, especially in the morning, and as the day goes on, fewer and fewer shares remain available for execution leaving orders entering the market later – e.g. a PM at Firm A creates a BUY order at 12:30pm – with fewer crossing opportunities.

While the bulk of short-term misses occurred early in the day, **we found that orders continually missed one another by short time periods throughout the entire trading day and slightly more so in the last hour of trading.** We found this interesting because the higher activity resembled that of the broader market and indicated that participants are still looking to source block liquidity at the end of the day, a time when liquidity tends to migrate on-exchange.



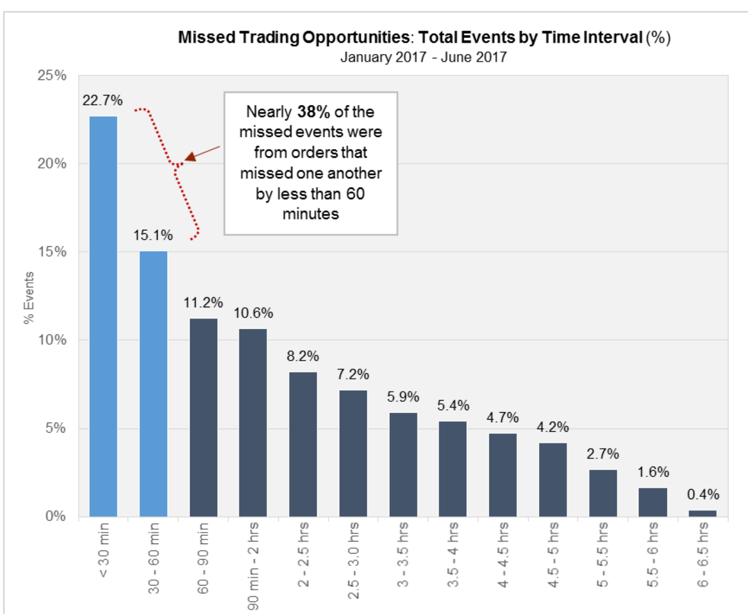


Why do we think this happened? We believe the increase in end of day misses is due to a combination of two events: the end of the day being a major liquidity event in the marketplace and newer orders looking for meaningful liquidity prior to accessing the broader marketplace.

The last hour of trading is one of the most significant volume episodes in the marketplace and this "late-day" trend has led to a rise in the overall number of orders, many of which attempt to source block-sized liquidity prior to accessing the broader market. As the end of the day approaches and urgency levels rise, orders that need to complete will shift toward the venues with greater execution certainty, which is usually on-exchange. So, even though orders may cancel out of Luminex in order to "get to work," they often miss a viable counter-party also attempting to source block-sized liquidity first before trading in the marketplace.

What else did the data show?

Similar to our initial results, nearly 40% of missed events were from orders that missed one another in the two shortest time intervals: *30 minutes or less and between 30 and 60 minutes*. This is an important finding because the percentage of events reinforces our view that traders *are* working their respective orders around the same time and our previous measure of unmatched shares was not due to a few abnormally large orders that happened to miss one another from time to time.



Calculating Time of Day

To account for time of day, we measured missed opportunities as a series of events rather than unmatched shares between buyer and seller. For instance, a missed opportunity that would have amounted to 1,000,000 shares between Buyer A and Seller A is equal to an event between Buyer B and Seller B totaling 500,000 shares. Additionally, time of day was determined by the cancellation time of the first order. Here is an example:

Timing Miss: Less than 30 minutes

Time of Day: 10:00AM – 11:00 AM

Unit of Measure: 1 Missed Opportunity

Order Sequence: Trader A submits BUY 250,000 XYZ, Trader A cancels 250,000 XYZ at 10:15AM, Trader B submits SELL 100,000 XYZ at 10:35AM (20 minutes after Trader A canceled his or her order)

Marketability Misses (Basis Points)

Initially, we measured missed opportunities due to marketability as a function of cents per share because it is the trading increment for most U.S. stocks (excluding Tick Pilot securities) and typically used by traders when entering and changing limit orders. (A marketability miss occurs when two orders (a buy and a sell) are present in the system at the same time, but a limit on one or both of the orders is preventing them from trading.) However, basis points are a more appropriate unit of measure for determining marketability simply because of higher stock prices, so we used basis points in this analysis as a number of clients had requested.

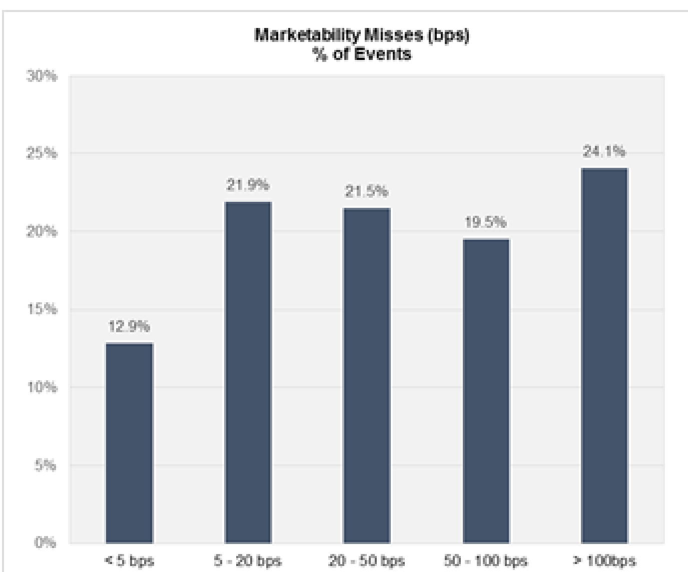
Limits that were within 5 basis points away from being marketable accounted for 13% of the missed events due to marketability. The greatest percentage (24%) of missed marketability events was due to limits that were greater than 100 basis points away from being marketable.

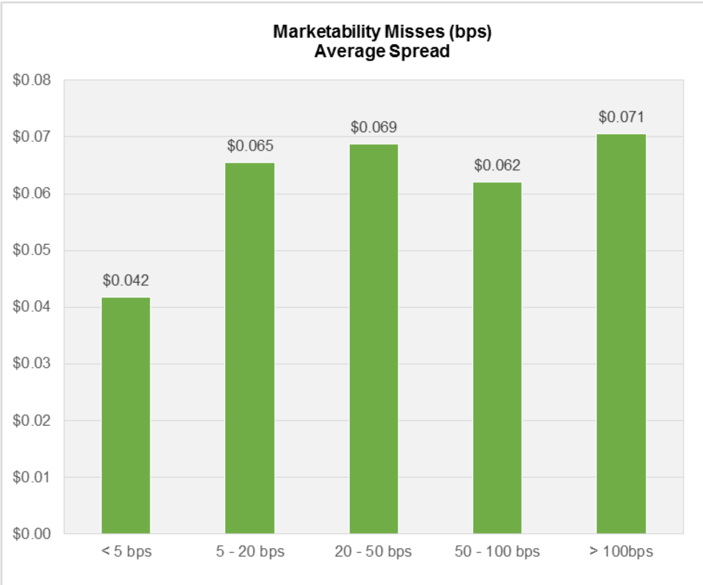
What about the Bid/Ask spread?

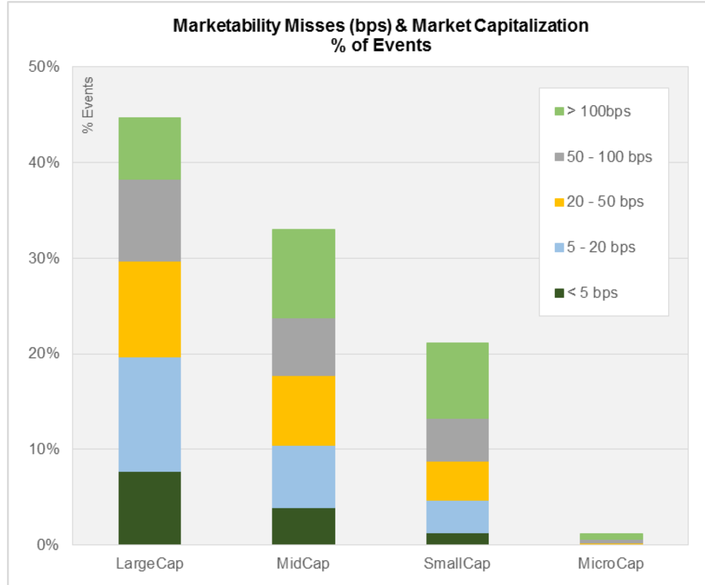
The average spread of the stocks that comprised marketability misses of less than 5 basis points had an average spread of $0.04. Missed opportunities caused by limits that were greater than 100 basis points away from marketability had an average spread of $0.071, wider by nearly 70%. *(See chart below)*

Luminex determines an order's marketability relative to the NBBO *midpoint*, so even though a limit may be only one or two basis points away from being marketable, it doesn't mean that it will necessary fall *inside* the spread; it could be outside of the NBBO, and by a significant amount. A limit price two basis points away from the midpoint of a stock with a bid/ask spread of $0.01 is a very different scenario from a stock with a bid/ask spread of $0.15.

Market cap was equally interesting. As expected, large cap made up the majority of missed events, but the breakdown of missed opportunities by basis points maintained an even distribution within each of the market cap categories, which tells us, again, that limits aren't as simple as they used to be.







Conclusion

The truth of the matter is that several elements can influence an order's timing, its marketability, and ultimately, its final interaction. Timing and price are just two of them. *We found that majority clients missed more shares than they actually traded*, and many wanted to know if they had encountered missed opportunities and if time or limit prices were causing them. Order routing and venue selection are complex, so even though the data may show one thing, like anything else, it boils down to more: the *intent* behind the order, liquidity needs, and trading style.

As always, if you have any other questions, please call the Luminex Sales Team at 1-844-586-4639. To see the latest insights and commentary from the team at Luminex, please visit www.luminextrading.com/insights.

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