

MATCH NowSM

Footprint Analysis – No Thank You Fading Quote

Highlights

There is no quote movement after a trade occurs in MATCH Now

Confirmation of the high quality liquidity available to MATCH Now participants

MATCH Now represents 2.28% market share of TSX listed equity by volume and 3.17% by value

50% of the dark liquidity traded in Canada occurs on MATCH Now

Since the Dark Liquidity rule change, MATCH Now's market share continues to grow as traders continue to source high quality natural liquidity

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MATCH Now represents 50% of dark liquidity in Canada. As our marketplace continues to grow we have begun to focus on providing more information on how to quantify the value provided by MATCH Now.

This paper attempts to set a framework for continued analysis regarding the quality of liquidity available to participants who trade on MATCH Now.

We will attempt to analyze a hypothetical concern regarding quote fading by answering the following questions:

1. Is there information leakage from trading on MATCH Now before crossing the spread on the displayed market?
2. What value do investors realize by utilizing MATCH Now in the routing strategy?

To address these questions we isolated a random sample of the active retail trades for the months of November 2012, December 2012, and January 2013.

Retail trades were analyzed since this flow is often considered the least informed and most vulnerable type of order flow.

What is quote fading?

Quote fading occurs when an order is filled on one market and, subsequently, all the liquidity that was once available on other markets disappears.

This would be a concern if an order is partially filled in MATCH Now with the remainder filled at a worse price in the displayed market as the quote fades away.

Example:

Buy 1,000 shares of XYZ
NBBO (10.00 to 10.01)

Best Ask is \$10.01 size 2,000
Next Ask is \$10.03 size 1,000

In an ideal situation, the order is routed to MATCH Now and receives a complete or partial mid-point fill (\$10.005), followed by filling the remainder of the order at the best Ask of \$10.01. This sequence would provide the best execution price and quality for the client.

The concern arises when the Ask of \$10.01 for 2,000 shares disappears after a fill in MATCH Now. This would mean that any unfilled portion of the order would need to be executed at the next best price of \$10.03.

How to test for a fading quote?

Transaction Cost Analysis (TCA) provides a methodology to measure the impact of a fading quote.

TCA studies examine what happens after a trade and analyzes how the trade performed over time. For our study all trades are compared to their relative quote, Buys to Asks, Sells to Bids, since this is the relevant information for active orders crossing the spread.

We specified the time frames for which the value weighted effect of a quote move will be observed. For this study we chose, the next quote, +1 second, +2 seconds, and +5 seconds. The next quote is the quote available immediately following the trade.

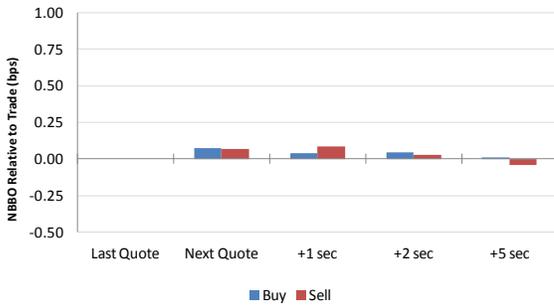
Finally we normalize/anchor all data to the last quote to measure the impact of a quote change relative to the quote available before the trade.

With this structure, a fading quote would be observed if there is a statistically significant positive trend after the MATCH Now print. (The fill in MATCH Now anchored to the last quote would be better and better as the quote moves in the wrong direction.)

If information leakage is persistent we would expect to see very large and significant positive observations over the Next Quote, +1 Second, and +2 Seconds trending upwards followed by a visible reversion.

Results

MATCH Now - Footprint Analysis Buys vs Sells



	Obs.	Next Quote	+1 Sec	+2 Sec	+5 Sec
Buy	51,826	Not	Not	Not	Not
Sell	45,472	Not	Not	Not	Not

These encouraging results indicate there is no statistical quote movement after a trade occurs in MATCH Now. The quote movement in every horizon is not significantly different from zero for buys and sells.

All buy and sell observations are also flat across time and are less than 1/10th of 1 basis point (bp). This result is consistent with no quote fading and no information leakage.

These results indicate that capturing dark liquidity in MATCH Now first before removing displayed liquidity does not affect the fill price of subsequent trades.

Please note the scale on the above chart is magnified to show the movement around the quote for both buys and sells. A 1/10th of 1 bp observation is incredibly small when compared to typical spreads in Canada of 10 bps.

Is there a market cap bias?

Across all categories there is no evidence of information leakage or quote movement. All results are very small relative to a typical 10bps spreads and only a few results are significantly different from zero.

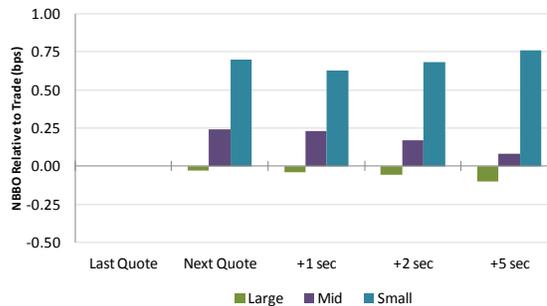
Small caps had less than a single basis point of movement and were flat across all time horizons.

The small cap quote movement was not significantly different than zero for the +1 Second and +2 Second time horizons. This would indicate that wider spreads, timing decisions, and market noise are most likely influencing the results.

The mid cap category had an interesting result as the quote movement was statistically different from zero across 3 of the 4 time horizons. However that movement is less than 1/4th of a basis point and flat over time. Given general spread costs, and a flat trend, the small movement for mid caps is not indicative of information leakage. This is more in line with general market noise, wider spreads, and retail timing decisions.

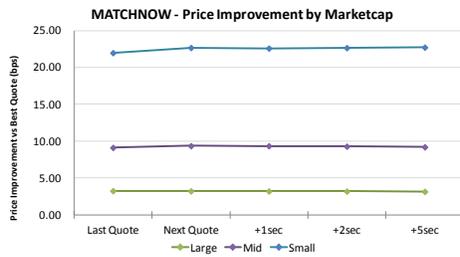
Large Caps show no sign of quote fading with all movements less than 1/10th of 1 bps. In fact large caps trend shows the exact opposite; the quote might get slightly better for subsequent fills. It is notable that the results show no statistical difference from zero across all categories but the +5 second time frame.

MATCHNOW - Footprint Analysis by Marketcap



	Obs.	Next Quote	+1 Sec	+2 Sec	+5 Sec
Large	53,859	Not	Not	Not	Significant
Mid	33,364	Significant	Significant	Significant	Not
Small	6,776	Significant	Not	Not	Significant

MATCH Now Value Add



The above chart highlights the value added by trading orders in MATCH Now before crossing the spread on displayed markets.

Most notably the cost savings is directly proportional to typical quote spreads. Large caps generate 3bps of price improvement while small caps gain 22bps of price improvement by trading in MATCH Now.

It is ideal to see price improvement remain flat over time which indicates the cost savings to investors are persistent through time. A flat price improvement line confirms the above study that there is no information leakage observed by quote movement.

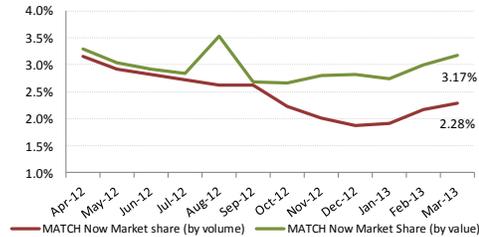
MATCH Now continues to lead the Canadian dark liquidity space with 47% of the dark volume and 50% of the dark value traded in Canada.

Since the dark liquidity rule changes MATCH Now's market share continues to grow as institutional and retail traders continue to source the high quality liquidity available in MATCH Now.

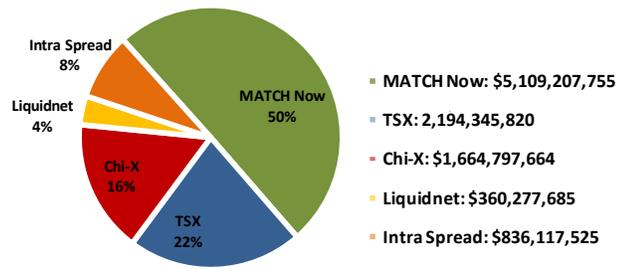
If you have any questions please contact:

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MATCH Now Market Share (TSX Listed Equity)



Canadian Dark Value (March 2013)



Canadian Dark Volume (March 2013)

