BMO Capital Markets
Quantitative Execution Services

Welcome to the Dark Side

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Quantitative Execution Services
(416) 359-5743
qes@bmo.com

Rizwan Awan, CFA
(416) 359-5195
rizwan.awan@bmo.com

Benjamin Chiu
(416) 359-4151
benjamin.chiu@bmo.com

Jeremy Dietrich
(416) 359-5692
jeremy.dietrich@bmo.com

Andrew Ng
(416) 359-8692
andrew.ng@bmo.com

Andrew Karsgaard
(416) 359-7670
andrew.karsgaard@bmo.com

Nikhil Kanwar
(416) 359-7471
nikhil.kanwar@bmo.com

Introduction

The Canadian marketplace is primed for new Dark Pool entrants this summer. While Match Now and Liquidnet have operated in the Canadian markets for a number of years, it is only recently that a growing number of operators have indicated an interest in bringing additional dark pools to Canada. Chi-X Midpoint and TMX dark order types are the first of the new wave of dark pools/order types coming to Canada.

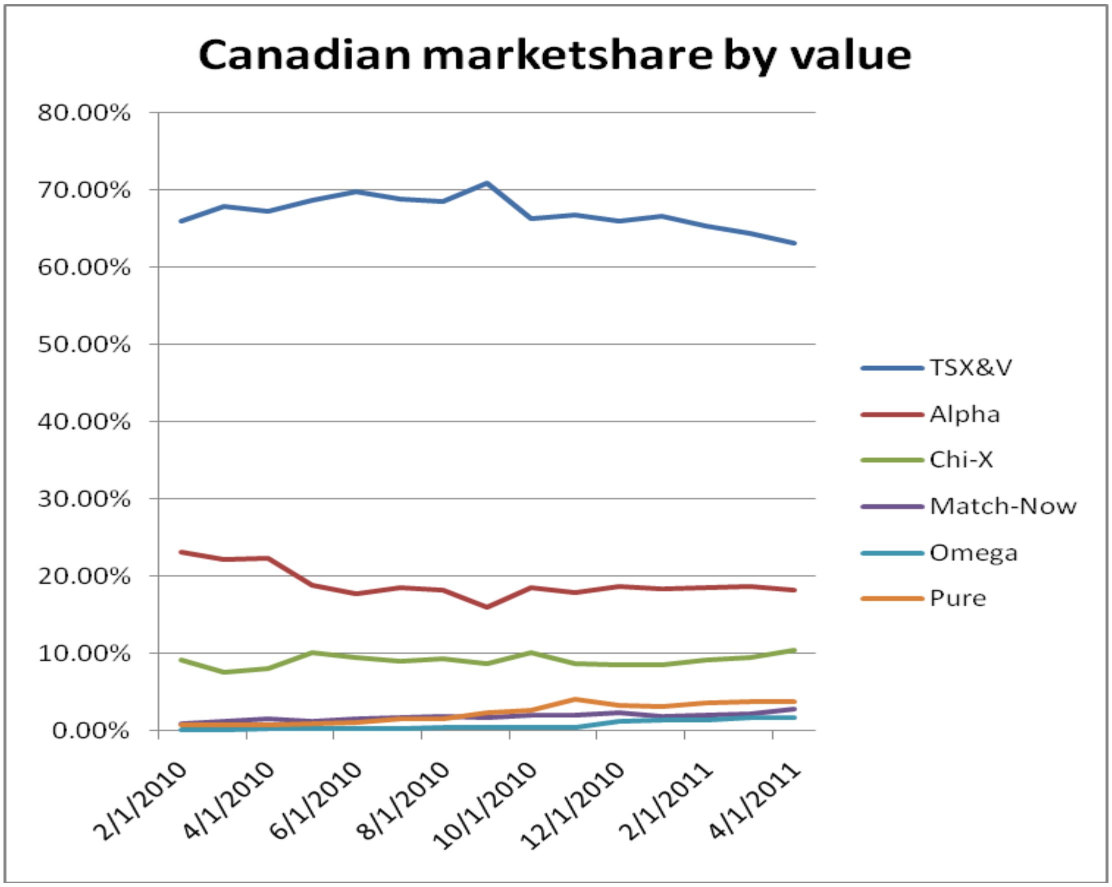
This paper will discuss the various dark pools slated for release in the coming months, some of their highlights as well as the pros/cons of trading in the dark. We will also reference our past dark pool papers Dark Pools (July 6, 2009), Trading in the Dark (March 31, 2009) and Not Trading in Dark (Nov 23, 2010) which provide a good primer on some of the ongoing discussion around dark pools in the Canadian marketplace. These papers can be accessed from our website at http://qes.bmo.com/papers/papers.php.

Dark Pools

The varying shades of "Dark"

Trading in the dark has been a relatively low key phenomenon in Canada attracting negligible market-share to-date when contrasted with the 15% marketshare that dark pools enjoy in the US.

The graph below shows the breakdown of marketshare between visible marketplaces and the predominant dark pool Match Now.



Canadian markets have always had a healthy 'upstairs' market which has muted the need for dark pools to date. However, as trading styles change, dark pools are gaining prominence in the Canadian marketplace. While Match Now, Liquidnet, Chi-X, and the recent TMX dark order types are the only incumbent dark pools today, a number of new dark pools are slated to launch in Canada in the coming months. Several of the US bulge bracket firms are in the process of importing their US dark pools, along with new offerings by the various exchanges/ATSs in Canada.

Regulation in Canada currently allows ATS/exchange-operated dark order types to trade 'at the touch' since visible orders will take priority. However, independently operated dark pools are required to offer price improvement in order to allow orders to trade in the dark.

The table below contrasts the dark pools that are available in Canada today or are on the horizon.

Dark Pool	Availability	Fees/share/side	Style (Blocks vs small trades)	Comments
Liquidnet	October 2006	\$0.0100 - \$0.0200	Blocks	Only accessible to buyside. Allows direct buyside to buyside negotiation.
Match Now	July 2007	\$0.0001 - \$0.0010	Small trades	Operated by ITG. Trades at midpoint for crosses and improves 2/10ths of spread (up to \$0.01) for active orders.
Chi-X Midpoint Peg	March 2008	\$0.0020 rebate for mid-point passive orders	Small trades	Operated by Chi-X. Trade at mid-point.
TMX Dark Orders	March 2011	Cross: \$0.0010 Passive/Active: Free/\$0.0010	Small trades	Midpoint as well as at touch limit trades. Integrated with TMX central limit order book.
Alpha IntraSpread	Summer 2011	TBA	Small trades	Operated by Alpha. Will offer price improvement
ICX (VWAP & BLX)	May 25th, 2011	VWAP: \$0.0005 - 0.0020 BLX: \$0.0010 - 0.0025	Blocks	Operated by Instinet. Provides VWAP crosses and aggregation of volume in Block crossing.
SIGMA X	June 15th, 2011	TBA	Small trades	Operated by Goldman Sachs. Trades at midpoint for crosses and improves 1/10ths of spread for active orders.

We believe the Canadian market is not big enough to support and sustain the number of dark pools that are slated to launch. We feel that the dark pools that will thrive are the ones that provide innovative order types, anti-gaming logic, ease of use, and non-predatory participant profiles since their advantages will become apparent to participants over time.

Dark Pools to the rescue

Dark pools are an essential part of the trading toolkit for any trader in this day and age. There are a number of scenarios where dark pools can be leveraged to minimize market impact and/or reduce the market footprint on a stock. They can also provide refuge for participants looking for shelter from some of the toxic flow in lit markets. We will discuss some of the advantages that can accrue when dark pools are utilized.

Access to liquidity with minimal market impact – The most obvious use for a dark pool is to match off on sizeable block to reduce market impact and opportunity cost associated with having to spread out an order. Not all dark pools cater to this style of trading and this is evident in their average trade sizes.

Innovative new order types – Dark pools can offer innovative order types not easily available in the past. ICX's VWAP and BLX crosses are a prime example of innovative order types that facilitate guaranteed VWAP crossing opportunities and consolidate algo flows into blocks.

Reduce market footprint – By not having a visible quote in the marketplace, it is tougher to game and ascertain the intent of an order. This in turn reduces the footprint of the order in the marketplace and reduces market impact.

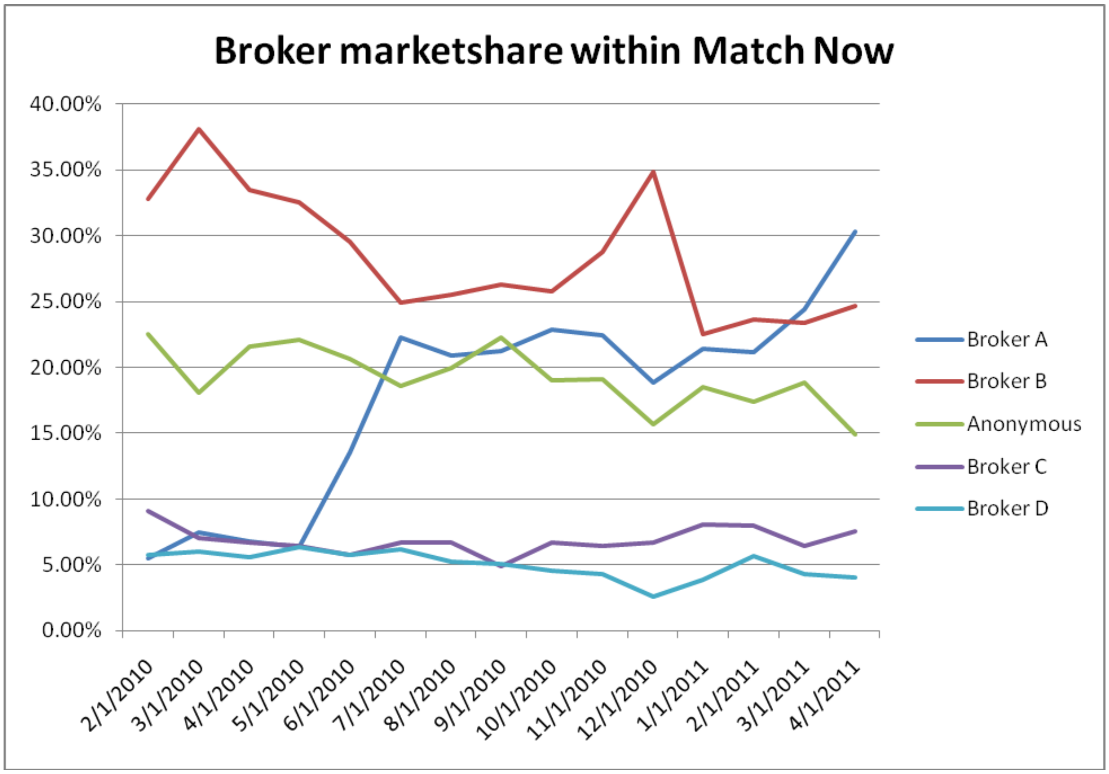
Queue priority – Some dark pools can facilitate 'jumping ahead of the queue' for the passive order in exchange for providing a small price improvement to the active order. This can be useful to get a trade done on a crowded quote.

Leaving quote intact – By not displaying orders on a visible quote, the order can not be 'pennied' and thus placing an order in the dark leaves the visible quote intact. This is extremely beneficial on illiquid securities where protecting the quote is imperative to best execution.

Out of the frying pan… and into a Dark Pool – When Dark Pools go wrong

Dark pools are primarily used by participants looking to minimize their market impact by hiding their footprints, or participants looking to execute without impacting the quote. Dark pool pricing is generally not pro-HFT and it is another reason why participants seek refuge from HFT flow in dark pools. It is thus concerning when we see HFT flow gaining traction in dark pools. While there are some very valid reasons why HFTs employ use of dark pools, they can also use dark pools to prey upon market microstructure inefficiencies.

We will highlight a recent uptick in HFT flow in dark pools. The graph below highlights the dramatic increase in an HFT friendly broker's (Broker A) marketshare on Match Now in the last month. Incidentally, TMX's new Quantum feed, designed to be a super-low latency bare essentials quote feed, went into production on April 18th 2011. Match Now also moved their crossing engine from NY to Canada around the same timeframe to improve order latency. As a result, we see a significant change in marketshare composition in Match Now which we believe is directly attributable to new HFT entrants trading on Match Now (in notional terms the uptick is about $1.5 billion a month).



While the new entrants definitely improve the liquidity within the dark pool and make it an attractive venue to trade on, we have to be cognisant of the quality of liquidity on offer and a thorough post-trade process needs to be in place to evaluate the liquidity profile of any trading venue.

So why trade in the dark? There are a number of reasons why an HFT would trade in the dark and we want to reiterate that not all are necessarily bad (or even cause adverse trade selection):

1) Offset position risk by paying up to get ahead of the queue. This can also potentially signal how the HFT is positioned since the HFT is paying a premium (taker fees + improving spread if applicable) in order to trade and would not engage in this type of trade if it wasn't offsetting risk (or had an informed arb or momentum trade as discussed below).

2) Momentum trading is another reason why HFTs might decide to trade in the dark in order to step ahead of the queue on the visible marketplaces. HFTs can build out a map of repetitive/systematic orders placed by algos and determine short term momentum in order to step ahead of the trade. We have argued in the past that this type of HFT activity is harmful to the marketplace.

3) HFTs can arb the fee structure within the marketplace by passively trading in a lit market that provides a healthy rebate and turning around and offsetting the order in a darkpool that provides price improvement to the active order and has a cheaper take rate. HFTs have to map out dark pool liquidity prior to engaging in this practice since the strategy only works if HFTs can offset risk in the dark pool. We will illustrate this arbitrage through an example:

    - NBBO on ABX is \$46.00 x \$46.01. HFT has detected that there is a buyer in a dark pool that is paying up 2/10ths of the spread. HFT places passive orders at \$46.

    - HFT gets hit by a participant that is not checking the dark pool and as a result goes long ABX @ \$46. HFT immediately sends a sell order of ABX to the dark pool at \$46 and gets a fill at \$46.002.

    - HFT has made a guaranteed profit of \$0.0040 for the round trip (\$0.0030 rebate from lit market + \$0.0020 price improvement from the dark pool - \$0.0010 active trading fee on the dark pool.

    We suspect that this might be the primary strategy being employed by HFTs in dark pools that provide price improvement and as a result open themselves up to fee arbitrage. This strategy also highlights information leakage from dark pools that cater towards smaller order sizes.

4) Arbing the latency between a dark pool and the visible market. This point is of great concern to us since it implies uninformed client orders routing through a dark pool getting a sub-optimal fill on the pretext of price improvement. Let us demonstrate by example on a hypothetical "at the touch" dark pool:

    - NBBO on ABX is \$46.00 x \$46.01 and HFTs peg outside the market at \$45.99 x \$46.02.

    - Client puts an order in to buy ABX @ \$46.01 into a router that checks the dark pool before going to the marketplace.

    - While the dark pool is being checked, the market moves to \$45.99 x \$46.00. This is undetected by the dark pool using the slower, consolidated NBBO feed but in the meantime the HFTs with faster feeds move their pegged orders to \$45.98 x \$46.01 in order to reflect the change in the dark pool. As a result, a trade occurs in the dark pool at $46.01 between the client and the HFT who then turns around and buys back the position in the market at $46.00 making a guaranteed profit of $0.01/sh.

This is a clear cut case of a trade-through that has occurred due to the small latency difference between the quote being used by the dark pool and the broader marketplace.

While it can be argued that the client order, not having seen the updated quote, would have gone to buy the shares at $46.01 anyway, the visible marketplace would have provided the better fill (@ $46.00) regardless of what quote the client saw at the time.

We recommend that dark pool operators, at a minimum, utilize the fastest quotes available by the markets in order to avoid latency arbitrage in their pool as well as provide efficient networks to access their pool.

5) Arbing “hidden limit” orders is another reason why HFTs will trade in the dark. This strategy actually does not rely on quote latencies but simply an information asymmetry. HFTs tracking “hidden limits” by monitoring the tape can map out hidden limits on stocks and then take advantage of this information asymmetry. Again, let’s use an example to illustrate.

- NBBO on ABX is $46.00 x $46.05. Client A has a “hidden limit” to sell at $46.02 should the bid get there.
- Client B wants to avoid “walking up the quote” in order to buy ABX and will lift the offer directly at which point the HFT will sell the stock @ $46.05 and instantly bid for it at $46.02 in the visible marketplace to get a fill from client A resulting in a profit of $0.03/sh.

Smarter algorithms will use this information asymmetry to their advantage and decide to bid for stock in the visible marketplace rather than cross spreads where they have mapped out a hidden limit order. This allows for potential price improvement opportunities for orders that would have otherwise crossed the entire spread.

Welcome to the Dark Side - Incorporating Dark Trading into the mix

We have highlighted the pros and cons of trading in the dark. We feel that, if used properly, dark trading can be an essential part of any trader's toolkit and can help minimize trading costs when accessing liquidity.

We recommend that brokers change their Smart Order Router preferences based on the quality of fills being received by the various venues. This is where post-trade analytics can be extremely useful in determining whether trading on particular venues is having an adverse impact on prices. In particular, it's important to measure the reversions after trade completion and use the results to tweak routing profiles regularly.

Algorithms need to optimize the use of dark trading where it makes sense and dynamically stop accessing venues where predatory flow is detected. We look forward to utilizing interesting/unique new dark order types that help achieve our best execution obligations.

Dark pools also need to utilize and upgrade to the fastest available data feeds to prevent arbitrage opportunities in their pools and outright ban predatory/gaming flow should it appear on their dark pool. We would also suggest that trading fees should not be geared to encourage fee arbitrage strategies. While almost every dark pool operator will agree with our suggestions, we would encourage operators to provide greater disclosure of their participant mix and anti-gaming logic employed.

We commend the regulators for paying attention to the evolving nature of dark pools in Canada and encourage them to keep up vigilance on the trading practices encouraged by the various rules and regulations in place.

Conclusion

Dark pools are definitely here to stay in Canada and provide a different avenue to trading in lit markets. We welcome innovative new dark pools in Canada and look forward to utilizing them to access liquidity where it makes sense.

When used properly, dark pools can help reduce market impact and hide trading footprints. However, not all dark pools are equal and can have varying characteristics in their participant mix. Some can be exploited outright by market participants as we have illustrated.

We feel that the dark pools that will survive the test of time will be the ones that add genuine value to investors vis-à-vis innovative order types, anti-gaming logic, ease of use, and non-predatory participant profiles.

As always, questions/comments are welcome!

Rizwan Awan, CFA
Benjamin Chiu
Jeremy Dietrich
Andrew Ng
Andrew Karsgaard
Nikhil Kanwar