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Interlisted Trading

Impact of Interlisted Arbitrage Volumes on the Canadian Marketplace

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Abstract

Interlisted arbitrage is a high frequency arbitrage strategy that takes advantage of mispriced stocks between the US and Canadian marketplaces. Fungible stocks are bought (sold) in the cheaper (more expensive) market and instantaneously sold (bought) in the more expensive (cheaper) market resulting in an arbitrage profit. Like most arbitrage strategies, the volumes traded are a function of liquidity and volatility rather than fundamental supply and demand.

The existence of arbitrage can generate artificial liquidity which one can not participate in. This paper will try to quantify the volume that can be attributed to interlisted arbitrage and the role it plays in overstating true liquidity in the Canadian marketplace.

We will discuss best practices on how to account for the overstated liquidity and debate the advantages/disadvantages of technologies designed to streamline interlisted trading (e.g. interlisted Smart Order Router)

Interlisted Arbitrage

Companies sometimes list their stocks in both the Canadian and US markets to generate greater interest in their securities. These securities are usually fungible between the two markets (ie underlying security is the same and interchangeable). There are approximately 250 such interlisted securities listed on the Canadian and US marketplaces. Since there is no regulatory trade-through requirement between the two countries, these securities can deviate in price from each other due to market movement and FX fluctuations.

Interlisted arbitrage is a high frequency arbitrage strategy that takes advantage of mispriced stocks between the US and Canadian exchanges. Fungible stocks are bought (sold) in the cheaper (more expensive) market and instantaneously sold (bought) in the more expensive (cheaper) market resulting in an arbitrage profit. This helps keep the two markets in line with each other.

While interlisted arbitrage provides a valuable service to the markets (by keeping them in line with each other), it has an unintended side-effect of generating 'phantom' liquidity… trading volume that is generated in one market and immediately offset in the other. This liquidity is not indicative of underlying fundamental supply/demand but is merely a transfer of liquidity from one market to the other.

The actual mechanics of the strategy have also evolved over the years. In the pre-automation, pre-decimalization era it wasn't uncommon for spreads to be $0.25 - $0.50. These days, only the most tech-savvy arbitrage operations can keep pace in an environment where spreads have shrunk to sub half penny.

Another development that will reduce the effect of interlisted arbitrage strategies is the advent of interlisted Smart Order Routers. These routers link liquidity between the US and Canadian marketplaces by automatically routing orders to the best market once FX has been factored in. As a consequence, interlisted arbitrage volumes will decline once the use of interlisted Smart Order Routers becomes common-place in the Canadian marketplace.

Overstated Liquidity

Liquidity gets overstated in marketplaces every time there is a market-neutral arbitrage trade that takes place. There are a number of such strategies that operate in the marketplace:

- Interlisted arbitrage
- ETF arbitrage
- Futures arbitrage
- Automated market making

This study specifically looks at the effect of interlisted arbitrage in the Canadian marketplace on interlisted stocks.

So what percentage of the liquidity in interlisted stocks is attributable to interlisted arbitrage? The short answer: 16.4%

Methodology

We looked at the average 20 day volumes of interlisted stocks in the S&P/TSX60 preceding a US holiday and compared them to the trading volumes on the US holiday since Feb 2001. We then factored out the 'holiday effect' (ie overall reduced trading volumes when US markets are closed) by looking at the decline in volumes on non-interlisted stocks in the S&P/TSX60. We attributed the difference between the two declines to interlisted arbitrage volumes.

While most of the names had a significant decline in volume, there were a couple of outliers, BCE (interlisted) and SAP (non-interlisted), that actually had a net increase in volumes traded during US holidays. This can be attributed to news items coming out on US holidays which resulted in abnormal volume days skewing trading patterns (e.g. BCE and OTPP entering into final agreements on July 4, 2008). If we remove the two outliers, the difference between the declines in interlisted vs non-interlisted increases to 17.1%.

It is also interesting to note that names that have a greater skew of trading in the US markets (e.g. RIM, POT) have greater declines in volumes in Canada on US holidays thus highlighting the effect of interlisted liquidity.

Interlisted Stocks

	Decline in volume		Decline in volume
ABX	65%	MFC	41%
AEM	69%	MG.A	64%
AGU	73%	NXY	53%
BAM.A	56%	PCA	53%
BCE	-2%	POT	73%
BMO	25%	PWT.UN	50%
BNS	38%	RCI.B	48%
BVF	58%	RIM	61%
CCO	63%	RY	33%
CM	40%	SJR.B	55%
CNQ	62%	SLF	47%
CNR	63%	SU	63%
CP	45%	T	43%
ECA	59%	TA	36%
ENB	46%	TCK.B	51%
ERF.UN	47%	TD	32%
G	69%	THI	51%
GIL	58%	TLM	42%
IMO	50%	TRI	46%
K	63%	TRP	43%
MDS	40%	YRI	65%
Total (volume weighted)			**49.92%**

Non-Interlisted Stocks

	Decline in volume		Decline in volume
AER	57%	L	47%
AET.UN	31%	MRU.A	33%
BBD.B	35%	NA	44%
COS.UN	45%	POW	42%
CTC.A	36%	SAP	-64%
FM	46%	SC	44%
FTS	23%	SNC	5%
HSE	27%	WN	55%
IMN	37%	YLO.UN	17%
Total (volume weighted)			**33.57%**

Time period: **Feb 2001 - March 2009**

Consequences and Best Practices

We believe that the true liquidity in the Canadian marketplace is overstated for interlisted names due to the presence of interlisted arbitrage strategies. The overstated liquidity creates a few challenges in trading in the Canadian marketplace.

Erroneous data

Trading models that factor in average daily volumes (ADVs) to calculate market impact estimates tend to underestimate the true market impact since they assume a greater amount of liquidity than what is actually present in the Canadian marketplace.

Pre-trade and cost estimation models should be cognizant of the 'phantom' volume generated by interlisted arbitrage activity and should account for this, similar to how block trading volumes are normalized for swap related trades.

Algorithms

Algorithms can be thrown off and behave erratically due to the interlisted arbitrage effect. Consider a volume participation algorithm that tries to participate at 20% of volume in each market. Volume participation algorithms are generally aggressive in nature and cross the spread to keep pace. If the algorithm does not utilize an interlisted Smart Order Router with consolidated quotes, it can end up trading against an interlisted arbitrage strategy which in turn hedges the trade in the other market. The hedging trade then creates additional volume in the second market resulting in the volume participation orders in the second market to keep pace. This creates a positive feedback loop where trading volumes feeds itself and ends up increasing market impact. What is intended to be 20% of volume in both markets, ends up being a much higher percentage due to the phantom liquidity generated by interlisted arbitrage strategies.

Traders utilizing algos should be mindful of trading in both markets and reduce their participation levels to account for the overstated liquidity.

Implicit costs

One of the hidden costs of such arbitrage is actually unrelated to liquidity but rather the implicit data/technology tax imposed on the rest of the street. Like most arbitrage strategies, interlisted arbitrage generate an intense amount of message traffic since their actual fill to order ratios are extremely low. This results in a great amount of 'quote flickering' which increases vendors' and dealers' bandwidth and storage requirements for their operations. From experience, we can estimate that arbitrage strategies account for the majority of quote changes on the exchanges.

To mitigate this, some exchanges have tried to introduce an incremental fee for extremely low fill to order ratios in order to prevent arbitrage machines from chewing up valuable bandwidth and storage.

Keeping things in order

On the flip side, interlisted arbitrage is a strategy that serves a valuable purpose in the marketplace by helping create more efficient markets. Not all participants in the marketplace have access to interlisted Smart Order Routers and thus can enjoy the benefits of accessing interlisted liquidity by paying the small arbitrage fee (which we estimate to be in the ballpark of $0.0025/sh) to gain access to the interlisted liquidity. They help create more efficient markets by transferring liquidity between the exchanges and minimize any price discrepancy between the markets.

While usage of interlisted Smart Order Routers can help mitigate the effect of overstated liquidity (by directly accessing liquidity in the other marketplace), it comes with its own set of issues. There is an opportunity cost of managing orders in both markets and actively managing such orders can result in losing order priority in the book as orders get transferred from one market-book to the other. Latency is also increased in time critical strategies as there are extra hops on an interlisted Smart Order Router as opposed to going direct to an exchange.

Conclusion

Interlisted arbitrage serves a valuable purpose by helping create more efficient markets by transferring liquidity between the North American marketplaces. However, one should always be mindful of the unintended side effects of arbitrage strategies in overstating liquidity on exchanges.

We believe that the true liquidity in the Canadian marketplace is overstated by about 16% for interlisted names due to the presence of interlisted arbitrage. The overstated liquidity creates a few challenges in trading interlisted stocks in the Canadian marketplace such as overstated ADVs resulting in erroneous trading models, algorithms inadvertently driving markets, and other implicit costs of trading.

We always enjoy engaging in thoughtful debate of any market related issues. If you have any questions or comments on this piece or any market microstructure issues please give us a call.

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