Appendix B

Cost-benefit Analysis
Proposed Trade-through Protection Rule

On April 20, 2007, the CSA and Market Regulation Services Inc. (now the Investment Industry Regulatory Organization of Canada or IIROC) published the *Joint Notice on Trade-Through, Best Execution and Access to Marketplaces* (Joint Notice).[1] In the Joint Notice, we said that we would prepare a cost-benefit analysis for the proposal and we asked for comments on what factors we should consider. We also invited interested parties to let us know if they would like to participate further in our analysis process.

We thank everyone who submitted comments. This paper outlines the qualitative cost-benefit analysis we conducted to aid in the policy making process. The analysis incorporates the comments we received.

Our economic rationale for proposing a trade-through protection rule, where the obligation falls on marketplaces, reflects the following economic realities:

- marketplaces are well positioned to take advantage of economies of scale and can implement the necessary technical infrastructure at a lower cost than if all participants were required to do so

- the incremental compliance costs for dealers will be modest because there is already a trade-through rule (UMIR Best Price Rule, defined below), and

- marketplaces are already adding order routing capabilities that can be used to comply with the proposed rule, both as a service to their participants and in anticipation of CSA rulemaking

We welcome your feedback on this cost-benefit analysis and are interested in any empirical data you can provide in support of your comments. As part of the next phase, we will be contacting those who expressed interest in participating further in the analysis.

Overview

The CSA does not address trade-throughs[2] or a best-price obligation[3] in any of its rules. These obligations are currently set out in UMIR Rule 5.2 *Best Price Obligations* (UMIR Best Price Rule). However, this rule only applies to investment dealers that are members of IIROC.

[1] (2007) 30 OSCB (Supp-3).
[2] A trade-through occurs when better-priced limit order is bypassed in favour of an inferior-priced limit order.
[3] A best-price obligation is an obligation to ensure that trades are not executed at inferior prices.

In the past, the UMIR Best Price Rule was sufficient to protect better-priced limit orders from being traded-through because only dealers had direct access to marketplaces. In addition, after the specialization of exchanges in 1999, individual securities were traded only on a single marketplace. The marketplace could then enforce price priority and avoid trade-throughs on an intra-market basis.

The introduction of multiple marketplaces trading the same security, including some marketplaces that allow direct access by non-dealers, has limited the effectiveness of the UMIR Best Price Rule. Multiple marketplaces increase the potential for trade-throughs because no one marketplace can enforce price priority on an inter-market basis.

In addition, the limited jurisdiction of UMIR means dealers and non-dealers that engage in similar trading activities[4] are operating under different regulatory requirements. As a result, non-dealers can trade-through better-priced orders without breaching any regulations.

When participants that conduct the same activity are subject to different regulatory standards, regulatory asymmetry occurs. This is a concern to the CSA because it can:

(a) impact competition

(b) adversely affect the broader market and its participants, and

(c) create "free-riders" in the market

(a) Impact on competition

The asymmetry in the regulatory treatment of dealers and non-dealers can affect how marketplaces compete for large transactions.

Institutional investors often want to limit the risks and costs associated with trading a block of shares by minimizing the potential for information leakage to the wider market. Institutional traders will not post a limit order for the full size of an order because the market could move against the trader, affecting the price paid and therefore the total cost of the transaction.

Instead, institutional traders will break a large order into smaller orders or trade on a less transparent marketplace where the risk of information leakage is reduced. For example, they may execute the trade:

- through a dealer in the "upstairs" market

- using hidden orders within a transparent limit order book (e.g. an iceberg order), or

[4] Although non-dealers are only able to participate on a principal basis

- on an ATS that does not have pre-trade transparency (i.e. a dark pool[5])

If a dealer is trading via an exchange or an ATS, it is required to honour all better-priced limit orders. However, an institution can trade-though better-priced orders by trading directly on an ATS. This can give non-dealer participants a competitive advantage over dealers. It can also give ATSs with non-dealer access an advantage over other marketplaces.

(b) Impact on broader market

Trade-throughs can negatively affect other market participants. Limit order traders are impacted when a trade-through causes the delayed or missed execution of a limit order. This represents a cost to the trader that posted the limit order. Imposing a cost on others without compensation is a form of market failure and is of particular concern of regulators.

Repeated trade-throughs could also affect the market as a whole by decreasing the value of posting a limit order. As trade-throughs become more common, more participants may feel that they are not being compensated for exposing their limit orders and that the market is becoming less fair. Traders might then post fewer limit orders, which could negatively affect price discovery and market quality.

(c) Free-rider issues

Regulatory asymmetry creates free-riders that benefit from market integrity without necessarily paying for it. Dealers have the obligation to prevent trade-throughs and bear the costs of meeting that obligation. An example is the cost of monitoring multiple marketplaces on a real-time basis. The market benefits from the resulting market integrity and perception of fairness. This in turn, encourages traders to post limit orders and fosters an efficient price discovery process.

However, because non-dealer participants do not have this same obligation they can benefit from participating in a robust market without incurring the associated costs or taking into account other market participants. In essence, non-dealers are free-riders.

Scale and scope

Over the past few years, the number of marketplaces for trading equity securities in Canada has increased. Today, there are seven marketplaces that trade TSX-listed securities. Four of the current marketplaces use a continuous auction trading model, while the others use call auctions or negotiated trading.

Two of these marketplaces (Blockbook and Liquidnet) are ATSs which operate as dark pools and allow non-dealers to trade directly. While the ATS market in Canada is still developing, we expect that Canadian institutional investors will increase their use of

[5] A dark pool is a marketplace that allows buyers and sellers to anonymously match stock orders without pre-trade transparency.

these marketplaces over time. However, we do not anticipate that these marketplaces will completely replace dealer intermediated trading by institutional investors.

For some insight on the likely extent of dark pool trading we can look to the U.S. market. The U.S. has seen considerable growth in the number of dark pools and their use by institutional investors, but dark pool trading still accounts for less than 7% of total market volume.[6]

Trading on Blockbook and Liquidnet has resulted in a number of trade-throughs by non-dealers. While these trade-throughs do not represent a significant proportion of total traded volume on Canadian markets, they have, to varying degrees, affected the traders whose posted limit orders were traded-through.

Objective and policy rationale

The CSA's objective is to promote competition, fairness, and price discovery in Canada's equity markets by updating market policy to reflect changes in market structure. This includes applying regulatory requirements consistently to participants engaging in similar activities.

Since IIROC has limited jurisdiction over non-dealer marketplace participants, it cannot enforce the UMIR Best Price Rule on these participants. Non-dealers have an economic incentive to trade-through better-priced orders if they can execute larger trades without the information leakage and costs associated with exposing their intent.

As a result, there is little incentive for non-dealers to voluntarily honour those better-price orders. We think that regulatory intervention is necessary to create a level playing field for market participants and to address the potential negative market impacts and free-rider issues associated with the current regime.

Policy alternatives

The status quo is not desirable because of the identified competitive issues and the potential negative effect on the market. We have considered the following three policy alternatives and evaluated each in terms of their anticipated impact on the market and its participants and the ability of each option to achieve our regulatory objective:

(a) create a participant-level best-price obligation for non-dealers

(b) remove the UMIR Best Price Rule, and

(c) create a trade-through obligation that applies to marketplaces (the Proposed Trade-through Protection Rule or the proposed rule)

[6] Rosenblatt Securities, "Let there be light, Rosenblatt's Monthly Dark Liquidity Tracker", May 22, 2008.

Costs and benefits

(a) Participant-level obligation

As noted above, dealers already have obligations under the UMIR Best Price Rule but non-dealers do not. One way to address the current regulatory asymmetry is to create a best price rule that applies to non-dealer participants as well as dealers. Requiring both dealers and non-dealers to take reasonable steps to prevent trade-throughs would address the competitive imbalance of the current environment. Non-dealers would no longer be able to free-ride on the activities of dealers.

This alternative would not impose any new requirements on dealers. Those that are complying with the existing UMIR Best Price Rule would not incur any additional compliance costs. However, non-dealers would have to implement policies and procedures to prevent trade-throughs. This would include building systems to monitor multiple marketplaces and route orders to the best available price. These costs could be significant.

To a large degree, these costs would be fixed costs and would not be proportional to the size of the firm. Large firms might be able to absorb these costs given their high volume of trading. However, smaller firms would face proportionally higher compliance costs because of the limited economies of scale.

The costs could discourage some non-dealers, especially smaller firms, from directly participating in the market. This could affect the ability of marketplaces whose niche is serving institutional investors to offer a competitive alternative to existing marketplaces. Fewer execution options for institutional investors could result, which is inconsistent with our objective of promoting competition.

(b) Remove the UMIR Best Price Rule

Removing the current UMIR Best Price Rule is, perhaps, the most controversial of the options. Some argue that a trade-through or best-price rule is not required.[7] However, industry commenters to the April 2007 Joint Notice generally supported the need for trade-through protection in the Canadian market.

Removing the UMIR Best Price Rule would eliminate the regulatory asymmetry present in the current regime and addresses the free-rider concern. There would be no additional compliance costs for dealers or non-dealers.

However, limit order traders and the broader market are affected if traders are allowed to trade-through better-priced orders. Without a best price rule, traders could choose which orders to trade against, subject to their best execution obligations. They would not take into account the impact on better-priced orders. Trading-through a better-priced order could result in a delayed or missed execution for posted orders. A decrease in the likelihood of execution represents an increase in trading costs for limit order traders. A

[7] For an overview of academic research in this area see Comerton-Forde, Carole and Bruce Robert Arnold, 2005, Literature Review: Best Execution and Trade-Though, Market Regulation Services Inc.

decrease in the value of exposing limit orders to the market could result in fewer limit orders being placed.

Having the UMIR Best Price Rule has meant that Canadian market participants are used to, and expect, a market with price priority. Removing that rule, and therefore price priority across marketplaces, could make Canada a less attractive market in which to post limit orders. Canadian marketplaces might find it harder to attract liquidity which could affect the efficiency of the Canadian market and its ability to compete. It is important to keep in mind that that the SEC's Regulation NMS does create a marketplace level best-price obligation in the U.S. market.

Removing the UMIR Best Price Rule could also reduce competition in the Canadian market. Attracting liquidity and traders away from the established marketplaces can be a significant barrier to entry for new marketplaces. A best price obligation results in orders being directed to the marketplace with the best price.[8] This lowers the barriers to entry for those new marketplaces that are able to offer competitive quotes. Without a best price obligation it could be more challenging for a new marketplace to compete.

Finally, to the best of our knowledge there has been no research on a market that has removed an entrenched best-price rule. As a result, there is little to indicate what the actual impact would be of removing the UMIR Best Price Rule.

(c) Create a marketplace level rule

These first two alternatives would address the regulatory asymmetry between dealers and non-dealers, however there could be significant negative impacts associated with each of them. Therefore, our analysis focuses on the Proposed Trade-through Protection Rule, which would apply to marketplaces rather than participants.

(i) Compliance costs for marketplaces

Imposing a trade-through rule at the marketplace level would result in costs for Canadian marketplaces trading equities. Marketplaces could have to:

- determine how to comply with the rule
- implement and maintain written policies and procedures to prevent trade-throughs
- train staff on the rule and their policies and procedures
- maintain and update the policies and procedures to ensure continued compliance with the rule
- acquire information and systems to monitor activity on all other protected marketplaces

[8] The current UMIR Best Price Rule contains a number of qualifications that are designed to restrict the benefits of the requirement to marketplaces that meet certain standards.

- update trading systems to be able to process the Inter-market Sweep Order (ISO) marker and identify other permitted trade-throughs, and

- implement polices and procedures relating to the identification of system malfunctions and the required communication to other marketplaces, regulation service providers and marketplace participants

The following is a summary of the most significant costs for marketplaces under the proposed rule.

Policies and procedure to prevent trade-throughs
The Proposed Trade-through Protection Rule intentionally includes flexibility for marketplaces and does not prescribe any one way in which a marketplace can meet its regulatory obligations.

Marketplaces would need access to real-time consolidated bid and offer information to identify possible better-priced orders. They could develop this information themselves, as many with order routers have done, or they may be able to buy the information from an information vendor or service provider.

However, trade-throughs could be prevented by choosing to reject orders that would result in a trade-through of a better-priced protected order. This logic would have to be programmed into the marketplace's trading system.

Or, a marketplace could redirect incoming orders to the better available price(s) by establishing linkages with other marketplaces. This could be done using in-house smart order routing technology or a service provider.

We recognize that implementing a smart order router could be costly. However, most existing Canadian marketplaces have added or plan to add order routing capabilities[9] through a smart order router or a third-party service provider. They are doing this as a value-added service and, possibly, in anticipation of the proposed rule creating a marketplace obligation. As a result, we anticipate that these marketplaces have already provided for these costs.

Compliance monitoring
Access to historical consolidated bid and offer information would be necessary to perform ongoing monitoring of a marketplace's policies and procedures. Marketplaces could compile this information from what is currently available or it may become available from a service provider. If marketplaces compile the information in-house and build their own historical database there would be associated, and possibly significant, costs.

[9] Either through the use of a smart order router or via a third-party service provider.

We do not anticipate that access to consolidated bid and offer information would be a significant incremental cost for marketplaces with a smart order router as such data would be needed for more than compliance with the proposed rule.

The other component to monitoring compliance is information about the trading activity on each marketplace. Marketplaces may already be storing such information for business purposes and so we do not anticipate material incremental costs as a result of the proposed rule.

Updated systems, policies, and procedures
Marketplaces would need to update their trading systems to incorporate the proposed ISO marker. Incorporating the ISO marker should involve minimal incremental costs because it is expected to evolve from the current bypass marker

(ii) Compliance costs for dealers
We anticipate that there would be compliance cost savings for dealers if the trade-through obligation is moved to the marketplace level.

Marketplace monitoring
Under the current regime, dealers need to monitor other marketplaces so as to identify better-priced orders and route their orders as necessary.

Some dealers have implemented monitoring and routing systems to address a business need as well as meet regulatory requirements. Firms that have high trading volumes and want to take advantage of low latency trading would arguably invest in this technology whether or not there is a trade-through rule. Because these firms are able to exploit the available economies of scale, the cost per-client or per-trade is expected to be reasonable.

Dealers that operate on a smaller scale or who trade lower volumes are faced with significant costs in order to comply with the current dealer level obligation contained in the UMIR Best Price Rule. These firms cannot take advantage of economies of scale and would find it difficult to realize a return on the necessary investment in infrastructure. We anticipate that the proposed rule would reduce the burden on these firms because they would no longer be subject to market monitoring and access requirements.

Updated systems, policies, and procedures
Dealers would need to update their trading systems to incorporate the proposed ISO marker. These costs could be higher for dealers with proprietary software than for dealers that use third-party systems. System vendors would presumably make changes for the benefit of all their clients, which would reduce the cost per client.

Incorporating the ISO marker should involve minimal incremental costs because it is expected to evolve from the current bypass marker. However, dealers would also have to develop and implement policies and procedures to ensure that the ISO order marker is used appropriately. This would include training staff on using the marker.

The ISO marker would also allow firms to benefit from any market monitoring and order routing technology that they have already invested in. There could be some degree of latency associated with a marketplace checking an incoming order against the quoted prices on other marketplaces. The ISO marker would allow dealers to avoid that latency if it duplicates the checks they already perform.

Dealers would also have to develop policies and procedures on using the ISO marker when dealing with systems failures or malfunctions experienced by a marketplace. They would have to document and keep records of the steps taken and notify the marketplace with the apparent system malfunction and the regulation service provider.

Dealers would have to be able to demonstrate compliance with the requirements relating to ISO markers and would have to access information about market conditions at the time an ISO order was routed.

Dealers may be able to access consolidated market data via a vendor[10] or choose to construct that consolidation themselves. Firms would have to access historical consolidated market data to demonstrate compliance on a post-trade basis. The cost of data storage could be significant because the proposed rule applies on a depth-of-book basis.

A data consolidator or other data vendor may make consolidated historical information available at a reasonable cost. In the United States, service providers and exchanges sell access to these databases. For example, Nasdaq's Market Replay, which allows users to display market conditions at a point in time, is available for a relatively modest cost.

(iii) Compliance costs for non-dealer market participants

Updated systems, policies, and procedures

Costs related to implementing the ISO marker would only be incurred by non-dealers that want to use the marker. Firms that choose to use the ISO order marker might have to update their trading systems. We anticipate that this cost would be higher for firms using proprietary trading systems. They would also have to develop and implement policies and procedures to ensure that the ISO order marker is used appropriately. This would include training staff using the marker.

Firms would also have to store certain information about market conditions at the time an ISO order was routed. As noted above, the cost of storing data in-house could be significant. However, we anticipate that a data vendor will be able to take advantage of economies of scale and make a database available at a reasonable cost.

Impact on trading

Transaction costs for certain types of trades (i.e. block trades) might increase for non-dealers because they would no longer be able to trade-through better-priced orders.

[10] TSX, "TSX Datalinx to launch consolidated Canadian data feed including data from ATSs", press release, October 31, 2007

(iv) Costs for other stakeholders

Market data vendors and other service providers would have to modify their systems to:

- process markers for ISOs, and
- identify marketplaces that are experiencing a system failure or malfunction

(v) Impact on competition

We expect the proposed rule to restore an appropriate competitive balance. Marketplaces would be required to have policies and procedures to prevent trade-throughs and, as a result, dealers and non-dealers would be subject to same trading constraints. These requirements would apply to all marketplaces. Those that permit non-dealer access would not have a regulation based advantage over other marketplaces in attracting order flow from institutional investors.

While there is some degree of flexibility in how marketplaces would meet their obligation to prevent trade-throughs, many would likely implement order routing capabilities. The costs associated with this could be a barrier to entry for new marketplaces. However, the actions of current marketplaces suggest that, regardless of the rules, order routing capabilities may be required to be competitive.

The proposed rule would require that prior to executing a trade, marketplaces check:

- displayed quotes on other marketplaces to ensure that there are no better-price orders, or
- ensure that the order is marked as an ISO

This step could increase the amount of time it takes to process a trade. However, since all marketplaces would have to conduct these checks, any increased latency should not affect how marketplaces compete with one another.

We do not anticipate that the proposed rule would have any other effects on competition. Marketplaces would still be able to compete in areas other than the quoted price while taking steps to prevent trade-throughs from occurring.

(vi) Impact on investors

The proposed rule would reduce the opportunity for trade-throughs to occur. This could promote the perception of fairness in the market and encourage market participation. It would also reduce the likelihood of investors being affected as a result of having an order traded-through.

Any increased transaction costs experienced by institutional investors will ultimately be passed on to the institutions' clients (e.g. pension plan members, mutual fund investors, etc.). On a per-client basis, the additional transactions costs are expected to be limited.

Conclusion

While all three policy options address the regulatory asymmetry, they also all have associated costs. In our opinion, the costs of creating a trade-through rule for non-dealers or of removing the UMIR Best Price Rule would not be proportionate to our objective. As a result, we think the Proposed Trade-through Protection Rule is the most balanced way to meet our objective.

Complying with the proposed rule would involve costs, particularly for marketplaces. We anticipate that current efforts to develop and implement smart order routers should limit the incremental cost of the rule. Most of the compliance costs would be fixed costs related to policies, procedures and systems. In our view, marketplaces are better positioned to take advantage of economies of scale in managing these costs than dealers and non-dealers.