CSA/ACVM Canadian Securities Administrators Autorités canadiennes en valeurs mobilières

CSA Consultation Paper 21-403
Access to Real-Time Market Data

November 10, 2022

Item 1 – Introduction

Real-time market data (**RTMD**) plays a key role in providing vital information about securities markets, including information about price and liquidity. The Canadian equity markets have evolved over time from a structure in which trading in a particular security was concentrated on a single listing exchange, to one in which multiple marketplaces, both exchanges and alternative trading systems (**ATSs**), compete for trading in the same securities. In this context, information about orders and trades for the same securities is fragmented across multiple trading venues and may lead to inefficiencies, including impacts on access to RTMD.

Globally, regulators have sought to ensure the accessibility of RTMD by regulating marketplace fees for order and trade information and by mandating the availability of market data at a reasonable price. They share the view that access to consolidated RTMD is key for market participants, investors, and their advisors to make informed investment, routing, and execution decisions.[1]

Despite a renewed regulatory focus,[2] concerns remain about the accessibility and cost of RTMD in an environment where trading activity is fragmented across multiple trading venues. In this context, we note that regulators in the United States (**US**) and Europe (**EU**) are currently undertaking regulatory reform or have policy initiatives underway relating to the access to and cost of consolidated RTMD. In addition, the International Organization of Securities Commissions (**IOSCO**) undertook a consultation and published a paper focused on understanding the market data environment in participating countries.

Given the importance of RTMD to the securities markets and as a result of both global initiatives and the concerns raised by Canadian market participants, Staff of the Canadian Securities Administrators (**CSA Staff** or **we**) have undertaken a fact-finding review of the issues associated with access to RTMD, including its cost, for exchange-traded securities other than options.

This Consultation Paper is the outcome of our review. It sets out the current regulatory regime for RTMD in Canada, including the regulation of equities marketplace direct feeds and consolidated data, describes the concerns raised by Canadian market participants, and articulates a number of initial and longer-term options that could alleviate some of these concerns.

We are seeking feedback on the overall feasibility and effectiveness of the proposed options, in addition to the specific questions outlined below pertaining to each of the proposed options. Any regulatory proposal resulting from this Consultation Paper and comments received will be published for comment in the normal course.

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[1] CSA Staff Consultation Paper 21-401 Real-Time Market Data Fees at pg. 1, available at https://lautorite.qc.ca/fileadmin/lautorite/consultations/valeurs-mobilieres/2012nov08-21-401-conspubl-en.pdf.

[2] For more of this history of the regulation in this area, please see "Data fees and access to data," available at https://www.osc.ca/en/industry/market-regulation/market-structure-initiatives.

Item 2 – Purpose and Scope

The purpose of this Consultation Paper is twofold:

1. to present the results of our fact-finding review and the concerns raised by Canadian market participants in relation to accessing RTMD, and

2. to seek feedback on proposed initial and longer-term options that, if undertaken, could potentially alleviate some of the inefficiencies introduced by fragmentation and other concerns raised by market participants in relation to accessing RTMD.[3]

Our fact-finding review included both a quantitative and a qualitative review. Our quantitative review considered marketplaces with at least an aggregate market share of one percent across their trading books. The information we collected and assessed from marketplaces included the fees charged by marketplaces for access to and the take-up of RTMD and related services by market participants, as well as the nature of marketplace expenses and revenues. We also used publicly available information to compare the fees charged to market participants in Canada against those charged in the US and other global markets.

The qualitative review included interviews with more than 40 market participants, including dealers, marketplaces, and both data and access vendors about how their businesses have evolved over time, how they access and use RTMD, the cost of using that data (if available), and any issues or concerns. With respect to the participants interviewed, the sample included small, medium, and large dealers, institutional investors, and proprietary trading firms. We interviewed individuals from multiple business lines, including full-service retail and discount brokerage, wealth advisory, institutional, proprietary, as well as compliance.

Overall, the fact-finding review considered:

1. changes in core marketplace revenues (i.e., trading, access, and market data revenues), which helped us to identify changes and trends in how marketplaces make money and identify areas of concern;

2. those fees that impact the costs incurred by market participants that access and use RTMD in consolidated and non-consolidated form. Specifically, we observed the evolution of the following fee categories: (i) professional and non-professional display fees, (ii) distribution fees, and (iii) non-display fees. We also observed changes in other fees (see footnote 2) that were not the focus of this Consultation Paper;

3. the need to access Level 2 consolidated RTMD versus Level 1 consolidated RTMD from listing markets only; and

4. the fees charged to market participants in Canada compared to those charged in the US and other global markets on an individual and consolidated basis.

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[3] This Consultation Paper does not address issues with respect to accessing derived data products (e.g., index and benchmark data products) or historical data products. This Consultation Paper also does not extend to issues associated with accessing real-time market data provided by third-party service vendors because we do not have jurisdiction over such vendors (i.e., data and access vendors, telecommunications service providers, and/or data centre operators).

The results of our fact-finding review are provided at Appendix A to this Consultation Paper.

In developing the proposed options, we considered:

1. the statutory mandate of investor protection and fostering fair, efficient, and competitive capital markets and confidence in those markets,[4]

2. the present state of the equities market, including key elements of the "ecosystem" for equities, such as the regulatory environment and the needs of market participants,

3. the attributes of an ideal market (i.e., transparency, price discovery, liquidity, transaction costs)[5] and the impact of the potential inefficiencies introduced by fragmentation on these attributes, and

4. the results of our fact-finding review and the feedback received from the interviews with market participants.

The potential initial options for addressing the results of our review as proposed in this Consultation Paper focus on ensuring the regulatory regime facilitates fair access to RTMD for both direct marketplace and consolidated RTMD feeds, including using standardized terminology to describe RTMD products and how those products are accessed. The longer-term options involve proposing an overhaul of the regulatory regime for accessing consolidated RTMD.

Item 3 – Current State of Market Data in Canada

3.1 What is Real-Time Market Data?

RTMD refers to order and trade information that is distributed immediately after an order has been entered, amended, or cancelled or a trade has been executed. Pre-trade RTMD provides details of orders entered on a marketplace and generally identifies the price and volume associated with each order for a particular security. Post-trade RTMD provides details of a trade and generally includes the price at which the trade was executed and the volume for a particular security.[6]

Marketplaces are the sole producers of RTMD relating to the orders placed and trades executed on their own facilities. By and large, marketplaces offer RTMD market data via feeds (also known as marketplace direct feeds) that include both pre- and post-trade information, and generally fall into the following two categories:

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[4] This mandate is generalized across the CSA. We acknowledge that not every securities regulatory authority has a competition mandate, for example.

[5] Based on characteristics viewed as being essential to an efficient market outlined in both in the 1997 TSE *Report of the Special Committee on Market Fragmentation: Responding to the Challenge*, and subsequently in a June 22, 2006 report entitled, *Ideal Attributes of a Marketplace*, by Eric Kirzner; Task Force to Modernize Securities Legislation in Canada, *Canada Steps Up, Volume 4 -- Maintaining a Competitive Capital Market in Canada*.

[6] CSA Staff Consultation Paper 21-401 Real-Time Market Data Fees at pg. 3, available at https://lautorite.qc.ca/fileadmin/lautorite/consultations/valeurs-mobilieres/2012nov08-21-401-conspubl-en.pdf.

1. Top-of-book or Level 1 (**Level 1**), which is made up of information, for each security, consisting of last sale, the best bid and offer, and the aggregate volume available for purchase or sale at those prices;[7] and

2. Depth-of-book or Level 2 (**Level 2**), which consists of information on all visible orders in the marketplace (price and volume) and all trades.[8]

RTMD is also available in consolidated form (**Consolidated RTMD**). Consolidated RTMD refers to the consolidation of either pre- or post-trade RTMD across multiple marketplaces trading the same securities. In Canada, consolidated RTMD (and consolidated feeds) may consist of RTMD from every equity marketplace or may be composed of only some marketplaces' RTMD, such as those that achieve protected status under the Order Protection Rule (**OPR**).[9]

RTMD is distributed either directly by marketplaces in the form of direct feeds or indirectly by the information processor (**IP**)[10] or third-party data vendors (whether at the individual marketplace level or on a consolidated basis).

Currently, the consolidated RTMD products distributed by the IP and approved by CSA Staff include the following:

1. Consolidated Best Bid and Offer (**CBBO**) – includes information about aggregated volume at the best price across all marketplaces from continuous trading on a protected and non-protected basis.[11]

2. Consolidated Last Sale (**CLS**) – includes information about executed trades that allows market participants to identify the nature of the trade (e.g., as a particular cross-type or as a closing auction trade).

3. Consolidated Depth of Book (**CDB**) – includes information about aggregated volume at each price level, identifying each contributing marketplace, and offered on a protected and non-protected basis.

4. Consolidated Data Feed (**CDF**) – the Level 2 feeds of each marketplace distributed in a single format by the IP.

When consolidated RTMD is distributed by a third-party service data vendor, it may be disseminated in a format and composition that is at the discretion of such vendor or in a customized form at the request of the purchaser of the data. In either of these cases, the price and the format

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[7] Level 1 RTMD can also be offered through requests for quotes, whereby a market participant requests the Level 1 information for a specific security.

[8] In Canada, Level 2 RTMD feeds are often offered on a market-by-price and market-by-order basis, with the former representing a feed with orders aggregated at each price level, and the latter representing a feed with order-by-order information.

[9] See Part 6 of *Regulation 23-101 respecting Trading Rules*, available at https://lautorite.qc.ca/fileadmin/lautorite/reglementation/valeurs-mobilieres/23-101/2017-04-10/2017avril10-23-101-vofficielle-en.pdf.

[10] Please see section 4.3 below for more information on the IP.

[11] "Protected" basis contains only protected markets, while "non-protected" basis contains all markets.

of consolidated RTMD is not subject to regulatory review as we do not have jurisdiction over vendors.

3.2 Different Uses of RTMD

RTMD is generally used by dealers and their clients, both retail and institutional, to make informed investment and trading decisions, and is also used by dealers to meet regulatory obligations when handling and routing orders.

What data is necessary to make investment and trading decisions and to route orders varies based on any number of factors. These include the specific activity being performed, user needs and objectives, and the means of consumption and use (human or display use versus machine, as in black box or algorithmic trading). These differences can affect the depth, breadth, and granularity of data needed, as well as whether the data needs to be real-time or can be delayed.

For example, some users rely on access to Level 1 consolidated RTMD and last sale information from listing markets only for indicative pricing purposes.[12] Our fact-finding review indicated that many retail and wealth advisory dealers are provided with Level 1 consolidated RTMD feeds from the listing markets only.[13] Other market participants, who are responsible for routing and execution decisions, indicated that they need a consolidated view of all volumes and prices across all marketplaces.

All participants interviewed expressed the view that the use of RTMD should be tailored to a participant's needs and that not all participants need access to the same RTMD to conduct their business.

3.3 Understanding Marketplace RTMD Fees

Marketplaces charge a variety of fees for access and use of RTMD. These fees may vary based on how RTMD is accessed (i.e., directly from the marketplace or indirectly through a data vendor or the IP), whether the RTMD is redistributed (either internally or externally), the nature of the end-use/end-user (e.g., human versus machine), and the depth of the RTMD received or used (i.e., Level 1 or Level 2). In the case of RTMD feeds, how the feed is accessed may impact the fees charged and who is responsible for those fees. For example, marketplaces may charge the same or different rates for RTMD feeds depending on whether they are accessed and consumed directly from the marketplace or indirectly from a data vendor. Where consumed indirectly from a data vendor, the fees may be charged by the marketplace directly to the end recipient or may be the responsibility of the data vendor, which may then pass on the fees (with or without a mark-up) or bundle them into the vendor's offering with fees being charged on an aggregate basis.

A marketplace may also charge *distribution fees* depending on whether the recipient of a RTMD feed intends to redistribute the data feed received and/or the underlying content, either within the

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[12] Where the user relies on the prices on the listing market for a particular security as being indicative of the pricing available for that same security across all markets.

[13] Please see Appendix A, Figures 32 and 33. While out of scope for this Consultation Paper, we note that in some cases, this access might be limited to delayed data, depending on the nature of the dealer service offering. One such example is where a retail investment advisor is servicing a client base that does not actively seek to buy or sell individual stocks through their advisors. A dealer might also provide its retail investors with delayed data where the provision of RTMD may be costly – for example, to update client watch lists or for presenting the client with intra-day value of held positions.

firm (i.e., internal distribution) or to its clients or other individuals outside of the firm (i.e., external distribution). In some cases, the distribution fee covers both a license to redistribute and the charge for accessing the feed itself.

The nature of the end-use of the data also affects how and what fees are charged. For example, end-use by human users that consume data via display products will typically result in *user display fees*. There are generally two types of display users: (i) professional, and (ii) non-professional users. Professional users are generally individuals that consume RTMD for business purposes (e.g., dealer or buy-side traders). Certain marketplaces may further segment the professional user category to allow for different charges for *retail professional users*, a category of professional user that services retail investors, specifically retail investment advisors (**RIAs**), a type of registered representative.[14] Non-professional users are individuals that use RTMD for personal trading or investing purposes (i.e., retail investors).

If the RTMD is consumed and used by a machine, the use of that data may attract *non-display fees*. These fees may be charged where data is consumed by trading systems and not displayed for the purposes of routing, analysis, and/or algorithmic trading.

RTMD fees will also depend on the depth of the RTMD consumed. Receipt, distribution, and use of Level 2 data will cost more than receipt, distribution, and use of Level 1 data as Level 2 feeds include more information.

Lastly, there may be other fees and charges incurred by participants associated with how they connect to and their consumption of RTMD. For example, there are fees and costs associated with co-location for participants seeking to reduce data and trading latency. Access and data vendors may also charge administration fees, product fees, or general mark-ups on the data-related products and services offered to their clients.

Item 4 – Regulation of Market Data in Canada

4.1 Regulatory Requirements that Impact Access to RTMD

There are a number of regulatory requirements in place that impact whether and how market participants access RTMD. OPR, which is found in Part 6 of *Regulation 23-101 respecting Trading Rules* (**Regulation 23-101**), imposes requirements on marketplaces and dealers to establish, maintain, and comply with policies and procedures reasonably designed to prevent the execution of an order at a price that is inferior to better-priced orders displayed on protected Canadian marketplaces.[15] Compliance is typically managed through algorithms and smart order routers that rely on RTMD from all visible markets, i.e. those that display pre-trade data, including unprotected visible markets.

Best execution requirements set out in the Universal Market Integrity Rules (**UMIR**) of the Investment Industry Regulatory Organization of Canada (**IIROC**) require dealers to have policies and procedures that specifically address achieving best execution[16] for their clients. The policies and procedures for achieving best execution are required to consider a number of factors, including

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[14] At present, only NEO Exchange offers an RIA user category for professional RTMD subscribers.

[15] Dealers are subject to these OPR obligations when entering "directed-action orders."

[16] "Best execution," as defined in section 3119 of the IIROC Dealer Member Rules means "obtaining the most advantageous execution terms reasonably available under the circumstances."

price, speed, certainty, and the overall cost of execution to the client. While the best execution obligations do not mandate that participants and their employees have access to RTMD from all marketplaces,[17] the general view expressed in interviews by those responsible for trading (both manual and electronic) was that consolidated RTMD from all marketplaces was necessary for the purposes of achieving best execution for their clients.[18]

Compliance with both OPR and best execution requirements intersects in a way that is often misunderstood by market participants. Best execution requires policies and procedures, not pre-trade monitoring on a transaction-by-transaction basis. Dealers must review the effectiveness of the policies and procedures and identify where changes may be required. While OPR is also based on reasonable policies and procedures, those procedures typically rely on RTMD for routing decisions.

4.2 Current Regulatory Regime for Marketplace RTMD Fees

Regulation 21-101 respecting Marketplace Operation (**Regulation 21-101**) and Regulation 23-101 (together, the **Marketplace Rules**) provide the framework under which marketplaces in Canada carry on business. Part 3 of Regulation 21-101 sets out the information reporting requirements for marketplaces. Specifically, section 3.1 sets out the initial information to be submitted with an application for recognition as an exchange or authorization as an ATS and section 3.2 sets out the ongoing filing requirements, including with respect to changes to RTMD fees.

All marketplace fee changes, including those relating to RTMD, are subject to regulatory review and approval. Proposed fee changes are generally not subject to a public comment process unless they might have a significant impact on stakeholders or raise public interest concerns.

Proposed fee changes are generally evaluated based on the fair access requirements set out in subsections 5.1(1) and (3) of Regulation 21-101. These requirements provide that a marketplace must not unreasonably prohibit, condition, or limit access by a person to services offered by it, permit unreasonable discrimination, or impose any burden on competition that is not reasonably necessary and appropriate. This means that when setting or changing their fees, marketplaces must do so taking into consideration several factors, including, but not limited to, the amount of fees charged by other marketplaces for similar services in the context of the Canadian market, or, where introducing a new fee, international comparisons may also be considered. Applying a comparative approach can be difficult because different marketplaces offer products and services that may not have the same informational content or offer the same value for the fee charged.

For professional user fees, compliance with the fair access requirements is also assessed using the Data Fee Methodology (**DFM**), which the CSA formalized in 2016. The DFM is applied on an annual or ad-hoc basis to review the professional user fees charged by marketplaces for access to Level 1 and Level 2 feeds in Toronto Stock Exchange (**TSX**)-, TSX Venture Exchange (**TSXV**)-, and Canadian Securities Exchange (**CSE**)-listed securities. It relies on pre- and post-trade metrics

[17] IIROC Dealer Member Rule 3121(2)(iv) identifies "how order and trade information from all appropriate *Marketplaces*, including unprotected *Marketplaces* and *foreign organized regulated markets*, is taken into account" as a factor that must be specifically addressed in a dealer's policies and procedures for best execution of client orders in "listed securities" and "foreign exchange-traded securities."
[18] Please see Part 4 of *Policy Statement to Regulation 23-101 respecting Trading Rules* for regulatory guidance on this issue.

to establish a permissible fee range for each marketplace. This range attempts to reflect each marketplace's contribution to price discovery and trading activity. The range is estimated based on a domestic reference that takes the data fees charged by each marketplace and aggregates them into a single pool, which is then re-allocated based on the ranking models.[19] If the fee being charged is beyond the range, the marketplace is required to decrease its professional user fees.

In addition, marketplaces are also subject to a "review protocol" that establishes a process for the review, publication, and approval process of marketplace changes, including changes to RTMD fees. This protocol is administered by the Ontario Securities Commission (**OSC**) for all equities marketplaces in Canada other than the TSXV. Through TSXV's Recognition Order, the British Columbia Securities Commission (**BCSC**) and Alberta Securities Commission (**ASC**) administer the protocol for TSXV. The BCSC also administers the review protocol for the CSE, together with the OSC.

Marketplaces may be required (for example, under the review protocol) to submit additional information in support of their fee proposal for our consideration. Some examples of this information are an analysis of the potential impact of the fee change on market structure or market participants, the methodology used to develop the fee, and the reasonability of the amount proposed relative to the marketplace's share of market-wide activity levels.[20]

4.3 Current Regulatory Regime for Consolidated RTMD Fees

To mitigate the effects of fragmentation of information that arises in a multiple marketplace environment, the CSA introduced transparency requirements for marketplaces and mandated a central party to consolidate and publicly disseminate RTMD (the **equity IP**). Pursuant to the transparency requirements set out in Part 7 of Regulation 21-101, transparent marketplaces must provide to the equity IP all orders and trades, whereas dark marketplaces must provide only trades.

The regulatory requirements applicable to the equity IP are set out in Part 14 of Regulation 21-101 and include provisions relating to the collection, processing, and dissemination of RTMD, as well as requirements to provide prompt and accurate order and trade information to all market participants. The consolidated and non-consolidated RTMD feeds disseminated by the equity IP and described earlier in this Consultation Paper, are approved by the CSA. Any changes to these products are subject to public comment and approval by the CSA.

In 2009, TSX became the IP for exchange-traded securities other than options (**TMX IP**), which ensured that there would be at least one source of consolidated data that met regulatory standards.[21] At the time of TMX IP's approval as the equity IP, the CSA did not have statutory powers to create a regulatory regime governing fees for consolidated data from the IP, including the underlying data content. As a result, the fees charged by the IP for the consolidated and non-consolidated RTMD feeds rely on what is referred to as a "pass-through model."

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[19] When the DFM was first introduced, there was some discussion about developing a benchmark or reference point for its application. However, given the developments in other jurisdictions, this was not feasible, and instead we have embarked on this consultation instead.

[20] The review protocol is imposed on exchanges via their recognition orders and on ATSs via Commission order. See https://www.osc.ca/en/securities-law/orders-rulings-decisions/candealca-inc-et-al for the current review protocol applicable to ATSs. Please see section 6 for a list of factors we will consider when assessing fee changes.

[21] CSA Staff Notice 21-309 Information Processor for Exchange-Traded Securities other than Options, available at https://www.osc.ca/en/securities-law/instruments-rules-policies/2/21-309.

Under this model, subscribers access consolidated RTMD from the equity IP subject to the terms and conditions set by each individual marketplace in relation to that marketplace's data that is included in the consolidated data product, including both the contractual terms and the fees. To access consolidated and non-consolidated RTMD feeds, subscribers must contract with each individual marketplace that has data included in the product they are purchasing and based on the use of RTMD feeds, pay an amount equal to the aggregate of the fees charged by each marketplace. Where applicable, TMX IP also charges an administration fee on top of these marketplace fees, which is subject to review and approval by the applicable securities regulatory authorities (**SRAs**).

Item 5 – Regulation of Market Data in Other Jurisdictions

The issues relating to access to RTMD are complex and not unique to Canada. Access to RTMD has also been an area of regulatory discussion and reform in several jurisdictions, including the US and EU. In addition, IOSCO has issued a Final Report, "Market Data in the Secondary Equity Market," examining this issue from a global perspective. Each of these developments is outlined below.

5.1 United States

In the United States (**US**), the Securities and Exchange Commission (**SEC**) has taken several steps to update and modernize the regulatory system for the collection, consolidation, and dissemination of certain core market data. The US regulatory system for core market data was developed in the late 1970s and so the SEC undertook three separate initiatives related to the provision of core data.

First, the SEC approved amendments to Rule 608 under Regulation National Market System (**Regulation NMS**) to require that fees proposed by the national market system plans (**NMS plans**) must be published for comment and approved by the SEC.[22]

Second, in May 2020, the SEC issued an order requiring equity exchanges to submit a new national market system plan (**NMS plan**) relating, in part, to the consolidation of equities order and trade data that would consolidate the three existing NMS plans[23] into one and impose certain governance requirements on the new NMS plan (the **Governance Order**).[24] The objectives were to address inefficiencies in the existing three-plan structure, as well as the conflicts of interest arising between the exchanges' business interests in their proprietary data offerings and their responsibilities for consolidated data under the NMS plans. The resulting NMS plan proposal, filed by the exchanges in response to the Governance Order, was published for comment in October 2020.[25] An order

[22] Rescission of Effective-Upon-Filing Procedures for NMS Plan Fee Amendments, Securities Exchange Act Release No. 89618 (Aug. 19, 2020), 85 FR 65470 (Oct. 15, 2020)

[23] The three NMS plans disseminate consolidated data for equity securities as follows: Tape A for securities listed on the New York Stock Exchange (**NYSE**); Tape B for securities listed on exchanges other than NYSE and Nasdaq; and Tape C for securities listed on Nasdaq. For more information about the NMS plans, please see pages 4-8 of the Governance Order, available at https://www.sec.gov/rules/sro/nms/2020/34-88827.pdf.

[24] The Governance Order is available at https://www.sec.gov/rules/sro/nms/2020/34-88827.pdf.

[25] See SEC, "Joint Industry Plan; Notice of Filing of a National Market System Plan Regarding Consolidated Equity Market Data," available at https://www.sec.gov/rules/sro/nms/2020/34-90096.pdf.

approving the proposal, with modifications, was issued in August 2021 but has not been implemented yet.[26]

Third, in December 2020, the SEC approved rules that improve the existing model for data collection, consolidation and dissemination (**Market Data Infrastructure Rule**).[27] The Market Data Infrastructure Rule expands the content of core data that will be made widely available in the NMS and modifies the way such data is collected, consolidated, and disseminated. These changes sought to expand the breadth and depth of consolidated data covered by the NMS plans to "[assure] 'the availability to brokers, dealers, and investors of information with respect to quotations for and transactions in securities' that is prompt, accurate, reliable, and fair."[28]

The Market Data Infrastructure Rule also introduces competition to the consolidation and dissemination function by allowing for multiple "competing consolidators" for all applicable market data. The intention is that this competition will facilitate the opportunity for participants and investors to be better served by more flexible, consolidated data products, improved technology and infrastructure, and reduced latencies relative to consolidated data provided under the existing centralized consolidation model. The goal of this rule is to help reduce costs for those obtaining data from both the NMS plans and via proprietary exchange market data feeds by providing the opportunity for reduced reliance on exchanges' proprietary market data and introducing competition.

The Market Data Infrastructure Rule became effective in June 2021, but has a transition schedule for implementation. As part of the initial phase of implementation, certain filings have been made by the current NMS plans to effect necessary changes, including in relation to the fees to be charged for consolidated data products under the new regime.[29]

While not specific to market data, it is also worth noting that in 2019, the SEC's Division of Trading and Markets published staff guidance on exchange fee filings. This guidance outlines SEC Staff's expectations as to what exchanges should consider when demonstrating how a proposed fee change addresses the requirements of the Exchange Act for fees, including market data fees, to be reasonable, equitably allocated, not unfairly discriminatory, and not an undue burden on competition.[30]

5.2 European Union

There is currently no equity IP-type entity in Europe. Marketplaces are required to make both pre- and post-trade data available on a reasonable commercial basis to ensure that participants have

[26] The approval order, available at https://www.sec.gov/rules/sro/nms/2021/34-92586.pdf, was subsequently challenged by a number of the NMS plan participants.

[27] See final rule at https://www.sec.gov/rules/proposed/2020/34-88216.pdf.
[28] See SEC, "Market Data Infrastructure Rule" available at https://www.federalregister.gov/documents/2021/04/09/2020-28370/market-data-infrastructure.
[29] For the filings relating to proposed fee changes, see https://www.sec.gov/rules/sro/nms/2021/34-93625.pdf for the CTA and CQ plans, and https://www.sec.gov/rules/sro/nms/2021/34-93618.pdf for the UTP plan.
[30] See SEC, "Staff Guidance on SRO Rule Filings Relating to Fees," available at https://www.sec.gov/tm/staff-guidance-sro-rule-filings-fees.

access in a non-discriminatory manner.[31] They must also make this data available for free 15 minutes after publication.[32]

After the implementation of the Markets in Financial Instruments Directive II (**MiFID II**), the European Securities and Markets Authority (**ESMA**) determined that the approach to market data, particularly consolidated market data, needed to be reviewed. As a result, ESMA commissioned a study on the creation of a consolidated tape for securities trading in the EU (the **CT Study**)[33] and launched a consultation (the **ESMA Consultation**).[34]

The CT Study discussed the importance of making consolidated data accessible in Europe and recommended the creation of an exclusive data consolidator run as a utility. This recommendation was taken up by ESMA in the ESMA Consultation, which also sought input on making changes to ESMA's supervisory guidance to standardize publication format and key terminology and legislative proposals to better understand whether market data is provided on a reasonably commercial basis. The ESMA Consultation closed on January 11, 2021 and the final guidelines were published on June 1, 2021.[35]

The final guidelines, which became effective on January 1, 2022, set out expectations applicable to all national competent authorities, trading venues, approved publication arrangements, consolidated tape providers, and systematic internalisers.[36] These guidelines, while not regulatory requirements, cover a number of topics, including but not limited to, the need for clear and easily accessible market data policies, the standardization of certain key terms such as "professional customer" and what constitutes "display data," the provision of data on the basis of costs, provision of free market data 15 minutes after publication, unbundling of market data rates, per-user based fees that would allow for a single charge for use of the same data when received from different providers, and transparency obligations in relation to market data policies and fees.

5.3 IOSCO

In December 2020, IOSCO published a consultation report on access to market data citing market participant concerns arising in multiple jurisdictions about the content, costs, accessibility, fairness, and consolidation of market data (**IOSCO Consultation Report**).[37] The IOSCO Consultation Report solicited feedback on a number of issues and potential ways to address them and resulted in approximately 40 comment letters being received.

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[31] See Articles 13, 15(1), and 18(8) of MiFIR and 64(1) and 65(1) and (2) of MiFID II.
[32] See Article 13(1) of MiFIR and Article 64(1) and 65(1) of MiFID II.
[33] See http://www.marketstructure.co.uk/wp-content/uploads/Full-Report--The-Study-on-the-Creation-of-an-EU-Consolidated-Tape.pdf?utm_source=%27newsletter%27&utm_medium=%27email%27&utm_campaign=%27EU+Consolidated+Tape+Report+Published+Today+%7C+Market+Structure+Partners%27.
[34] See https://www.esma.europa.eu/press-news/consultations/consultation-paper-guidelines-mifid-ii-mifir-obligations-market-data#TODO.
[35] See ESMA, "Final Report: Guidelines on the MiFID II/MiFIR obligations on market data," available at https://www.esma.europa.eu/sites/default/files/library/esma70-156-4305_final_report_mifid_ii_mifir_obligations_on_market_data.pdf.
[36] Systemic internalisers are proprietary trading firms that execute client orders away from trading venues on a frequent and systematic basis.
[37] See IOSCO, "Market Data in the Secondary Equity Markets: Consultation Report," available at https://www.iosco.org/library/pubdocs/pdf/IOSCOPD667.pdf.

On April 28, 2022, IOSCO published its final report: *Market Data in the Secondary Equity Market: Current Issues and Considerations* (**IOSCO Report**).[38] The IOSCO Report provides a summary of the comments received and highlights three considerations for regulators when reviewing RTMD provided by trading venues and in over-the-counter markets, as follows:

1. Pre- and post-trade data contain important information that promotes transparency of trading and, as a result, regulators should consider the needs of different types of market participants to make informed investment, order routing, and trading decisions;

2. Fair access to such data by market participants is important, given that market data is not interchangeable in all cases. In this context, regulators should consider the extent to which access to free or delayed data may meet the needs of market participants; and

3. Consolidation of market data may be useful in reducing the cost of access, identifying liquidity, and comparing execution quality in jurisdictions where fragmentation of liquidity is an issue.

Item 6 – Discussion, Analysis, and Staff Considerations

Similar to our global counterparts, we analyzed our regulatory regime to identify any gaps and/or potential ways to improve our approach to regulating the access to and use of both direct marketplace RTMD feeds and consolidated RTMD.

In addition, our fact-finding review aimed to understand the evolution of the cost of access to and use of RTMD by market participants, such that we could identify potential approaches to better facilitate access to consolidated and non-consolidated RTMD. In this section, we discuss our findings and outline considerations regarding potential approaches that will then be further discussed in the subsequent section of the Consultation Paper.

6.1 Impact of Regulatory Requirements – OPR and Best Execution

Participants raised concerns about the impact of regulation, specifically OPR and best execution, on the need to obtain data from each marketplace. Most market participants are of the view that they must acquire RTMD from all marketplaces to comply with both OPR and best execution. They argue that whether purchased directly from marketplaces or indirectly from data and access vendors, the aggregate cost of such data is high. In addition, given that the equity IP operates on a pass-through model, the cost of purchasing consolidated data products through it is similarly viewed as being high.

The results of our interviews with market participants suggest that the introduction of the OPR threshold has not had any meaningful impact on the use and sourcing of consolidated RTMD by market participants. We understand that a contributing factor to the lack of change in behaviour may have been that the upfront costs to accessing the visible unprotected markets and consuming their RTMD were already absorbed[39] by the time that the OPR threshold was introduced.

[38] See IOSCO, "Market Data in the Secondary Equity Market: Current Issues and Considerations," available at https://www.iosco.org/library/pubdocs/pdf/IOSCOPD703.pdf.

[39] At the time of the implementation of the OPR threshold in October 2016, a total of five visible trading venues were deemed to be unprotected for the purpose of OPR. Two of these (TSX Alpha and NEO-N) had lost protection because of the application of a speedbump. Of the remaining three (the below-threshold markets), two (CSE and NEO-L) lost protection for trading in securities other than their own listed securities. The last was Lynx ATS, a

Participants were also relatively consistent in their views that maintaining access and trader visibility into the liquidity available on those venues was necessary to either provide best execution to their clients or to avoid the prospect of having to defend their ability to achieve best execution.

We also note that issues and concerns associated with the costs of accessing RTMD in a multiple marketplace environment are not unique to jurisdictions with an OPR requirement as in Canada and the US. Similar concerns regarding the costs of accessing consolidated and non-consolidated RTMD in a multiple marketplace environment are present in Europe and other jurisdictions where there is no OPR requirement. These shared issues across non-OPR jurisdictions support the view that concerns regarding RTMD would exist in the current multiple marketplace environment regardless of OPR. We also heard this view echoed in the interviews we conducted.

CSA Staff consideration 1: Given the expected limited impact on access to RTMD and the feedback obtained in the interviews, we do not think that amending OPR or best execution will address the industry's concerns around access to RTMD but seek feedback on this consideration further on in this Consultation Paper.

6.2 Impact of the Current Regulatory Approach for RTMD Fees

(a) Use of the DFM to Regulate Professional User Fees

The current regulatory review and approval processes for RTMD fees has had limited impact on these fees overall.[40] While the DFM has helped manage the growth of professional user fees for some, but not all, marketplaces, ultimately any cost savings from a reduction by one marketplace were offset over time by increases by others whose calculated fee range allowed for an increase.[41] As a result, the effectiveness of the DFM has decreased with each passing year. This long-term effect reflects challenges in the application of the DFM, particularly with respect to the current baseline reference points (i.e., benchmarks) used to establish the pricing for consolidated data to allocate marketplace data fees.[42]

In addition, feedback received from certain market participants indicated that transparency of the calculated DFM fee ranges on an annual basis would be helpful to better explain observed changes in marketplace professional subscriber fees.

Our review of other RTMD regulatory regimes indicated that Canada is an outlier with respect to the application of a methodology to directly regulate professional user fees. We are not aware of another jurisdiction that applies a DFM or similar formula to assess professional RTMD user fees. As a result, if we were to continue to use and apply the DFM, we would need to address its main weakness, which is the lack of appropriate reference points.

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sister market to Omega ATS, which lost protection because it did not meet the threshold. See https://www.osc.ca/en/securities-law/instruments-rules-policies/2/23-316/csa-staff-notice-23-316-order-protection-rule.

[40] Fees for all marketplaces except the TSXV are subject to review and approval by the OSC. The BCSC and ASC review and approve TSXV fees.

[41] Please see Appendix A, Figures 11 and 12 for the trend in professional subscriber fees and each marketplace operator's contributions to those trends.

[42] In past discussions of the baseline reference points we also referenced the concept of a "benchmark." In this paper we have used the term reference points to encapsulate both concepts.

CSA Staff consideration 2: Retain external assistance, such as a consultant, academic, or industry expert, to review the DFM and its relevance in the context of domestic and international developments in equity markets. The review should include an examination of the reference points used by CSA Staff to allocate the share of fees chargeable by marketplaces under the DFM.

CSA Staff consideration 3: In the interim, consider whether to publish the calculated fee ranges.

(b) Current Approach to Regulate Fees Other than Professional User Fees

The DFM is only applied to professional subscriber fees. All other fees relating to RTMD are subject to the review standards discussed previously. The effect of this approach has been sharp increases in the cumulative total fees as each facility introduces fees charged by others, at similar rates, with the result, in some cases, being a doubling or tripling of cumulative fees over the identified period.[43] Given the nature of these fee changes, they are often not published for comment. We are of the view that further transparency of these fee changes would benefit both stakeholders and the regulatory review process.

CSA Staff consideration 4: Enhance transparency of any fee proposals related to RTMD, including fees pertaining to non-professional subscribers, by requiring marketplaces, as part of the regulatory review and approval process, to publish the proposed changes prior to approval.

(c) Current Approach to the Regulatory Model for Consolidated RTMD

As described earlier, market participants that access RTMD through the equity IP and some vendors are subject to a pass-through fee model. In terms of the use of the consolidated and non-consolidated RTMD feeds from the equity IP, we noted that:

1. few domestic dealers consume consolidated and non-consolidated RTMD feeds directly from the equity IP. Rather, most rely on data and/or access vendors or consolidate RTMD feeds themselves (**self-consolidate**);

2. access vendors need direct feeds to facilitate trading access and will also self-consolidate, but may use the equity IP to obtain certain non-consolidated RTMD feeds, usually from the smaller marketplaces;

3. some data vendors use the consolidated RTMD feeds from the equity IP to avoid the costs of developing and maintaining consolidated RTMD products themselves;

4. those that access RTMD through the equity IP are more likely to purchase the non-consolidated feeds rather than the consolidated ones; and

5. the effect of the pass-through model was commonly identified as a factor that has impeded the take-up of the consolidated RTMD feeds from the IP, both because of the cost, but also because of the administrative burden involved in signing contracts with each individual marketplace.

[43] Please see Appendix A, Figures 9 and 10, which show sharp increases in data distribution and data license revenue.

Given these findings and considering some of the other concerns regarding access to consolidated RTMD generally, we are of the view that we need to revisit our data consolidation regime to better facilitate access to RTMD.

CSA Staff consideration 5: Improve access to consolidated RTMD by either leveraging the current equity IP model or introducing a new model for data consolidation.

6.3 Increasing Costs for Accessing Consolidated RTMD

(a) Costs of Accessing Market Data Have Continued to Increase with the Number of Marketplaces

Since the introduction of the Marketplace Rules in 2001,[44] the Canadian market has expanded from two regulated exchanges[45] trading only their own listed securities, to 15 markets or facilities[46] operated by ten marketplace operators[47] trading securities listed on TSX, TSXV, CSE, and NEO.[48] The launch of new marketplaces and the introduction of RTMD fees by marketplaces – for example, for data receipt, distribution, and use – has had a cumulative effect on costs. The impact of this on any one participant will vary based on the extent to which the fees are borne at the use/user level versus the firm level, and how costs are shared amongst business lines. For data and access vendors, the impact will depend on the extent to which the costs are absorbed by the vendor or passed on to the clients. Appendix A provides several examples of the extent to which the cumulative increases for those consuming data from multiple marketplaces impacts their cost of access to and use of RTMD.

Since 2001, the evolution of technology and the automation of many business activities has led to changes in how RTMD is used for making trading and investment decisions. There has been a noticeable shift from manual to automated trading and an increased use of smart order routers, algorithms, and artificial intelligence for routing and trading decisions. Dealers also offer increasingly sophisticated and data-rich applications to their clients to make trading easier and simpler. The resulting changes in how market participants consume and use RTMD have led marketplaces to introduce new fees that align with these new uses. An example of this is the non-display fees for the use of RTMD in trading or analysis applications. These fees also have a cumulative effect that can be observed in Figures 28 through 31 of Appendix A.

[44] The purpose of the Marketplace Rules was "to create a framework that permits competitive operation of traditional exchanges and [ATSs], while ensuring that trading is fair and transparent." Please see "Alternative Trading System Proposal," available at https://www.osc.ca/sites/default/files/pdfs/irps/rule_20000728_atsproposal.pdf.

[45] Being operated by the Toronto Stock Exchange Inc. and Canadian Venture Exchange Inc. (now TSX Venture Exchange Inc.).

[46] Commonly known as TSX, TSXV, Alpha, CSE, Nasdaq CXC, Nasdaq CX2, Nasdaq CXD, NEO-L, NEO-N, NEO-D, Omega ATS, Lynx ATS, MATCHNow, Liquidnet, and ICX.

[47] Alpha Exchange Inc., CNSX Markets Inc., Instinet Canada Cross Ltd., Liquidnet Canada Inc., Nasdaq CXC Limited, NEO Exchange Inc., Tradelogiq Markets Inc., TriAct Canada Marketplace LP, TSX Inc., and TSX Venture Exchange Inc.

[48] TSX-listed securities and TSXV-listed securities are eligible to trade on every Canadian marketplace. CSE-listed securities are currently eligible to trade on twelve trading venues and NEO-listeds are currently eligible to trade on seven trading venues.

We also understand that increased retail investor trading activity over the past few years has led to higher quote-usage, contributing to an increase in market participants' RTMD costs, especially where such participants are not otherwise able to manage these costs.[49]

(b) Effect of Competition on RTMD Fees

There are questions as to the degree to which competition for orders can impact RTMD fees. Most are of the view that because RTMD is not interchangeable (i.e., the specific data from one marketplace cannot be substituted with data from another), there is a lack of competition resulting in an absence of downward pressure on RTMD fees.

Competition can have a positive impact on some marketplace fees. For example, Figures 4 and 5 of Appendix A highlight how trading fees changed in response to increased competition between marketplaces for trading activity. In contrast, we do not see similar outcomes for RTMD or for other fees. This is particularly valid for display, non-display, and distribution fees, which, as we noted above, are not subject to the DFM. Our fact-finding review demonstrates that as each marketplace has begun operating or introduced similar data fees, there has been no subsequent competitive response for market data fees from those already charging such fees. This outcome confirms that there is limited competitive pressure on market data fees.

However, our fact-finding review also identified several circumstances where marketplaces reduced their fees, either as a result of market participant pressures or as a result of perceived competitive pressures. Specifically, we noted the following:

- TSX reduced its professional subscriber rates for Level 1 RTMD in 2012 over 2010 from \$38 to \$30, although it did increase other fees over the same time period;[50]
- TSXV reduced non-professional subscriber rates for RTMD in 2013;
- TMX introduced various enterprise pricing programs that may have resulted in lower effective per user rates for non-professionals; and
- Nasdaq Canada introduced the "Nasdaq Basic Canada" program, offering a potentially lower-cost alternative to those only requiring indicative pricing for Canadian equities.

In addition, some may argue that delays in the introduction of certain common fees or a lack of increases in stated rates over a long period of time might also suggest the existence of competitive pressures.[51]

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[49] Dealers may provide delayed data in certain circumstances to manage these costs, or where offered by a marketplace and accessible to the dealer, may enter into "enterprise arrangements" through which the dealer may pay a set lump fee or be subject to tiering of lumped fees, that cover all usage, or usage up to a specified level.
[50] Some would argue that this reduction was not a response to competition, but rather was a response to dealer and industry pressure, including pressures that arose from the findings of a study commissioned by the Investment Industry Association of Canada, entitled *An Economic Study of Securities Market Data Pricing by Canadian Trading Venues* (June 2011), available at https://iiac.ca/wp-content/themes/IIAC/resources/1580/original/SLCG-Canadian-Market-DataJune%207.pdf.
[51] Figures 16 through 27 of Appendix A show both CSE and Tradelogiq not introducing data distribution fees until 2017 and 2019, respectively, despite each having been operating marketplaces for more than ten years. Similarly,

(c) *Costs may have Implications for the RTMD made Available to Users*

Market participants indicated that, in certain circumstances, decisions regarding the level of access to RTMD made available to users depend on cost. We understand that retail clients, wealth advisors, and RIAs are often only provided with top-of-book RTMD from the listing markets because the incremental costs of providing access to full depth-of-book RTMD from all markets represents a barrier to such access. Many portfolio managers are in a similar situation. We understand these users are often using quote information for indicative pricing purposes.

Market participants also indicated that the level of access to RTMD (i.e., top-of-book RTMD from listing marketplaces only versus consolidated RTMD for all marketplaces) depends on the needs of each user. In this context, market participants stated that some users seek access to best price information only, whereas others may also need information about the volume available at the best price to determine the best way to trade (i.e., whether to place a marketable or a non-marketable order).

To assess the extent to which listing market data is sufficient to observe best price, we performed a quantitative analysis which indicates that access to top-of-book RTMD from listing markets only appears to be sufficient in most cases where users seek access to best price information, apart from TSX-listed exchange traded funds (**ETFs**).[52] For these ETFs, we noted a higher probability of best price information being available on away markets, meaning that investors looking to obtain best price information would be better served by access to consolidated RTMD.

We also assessed the extent to which RTMD from listing markets might be sufficient where a user needs information about the volume available at the best price – for example, where the volumes at best price might influence a retail client's decision to trade, and the order type they would choose to effect a trade.[53] We noted that for low value orders (e.g., orders with a value of $1,000 or less), access to the volume available at the best price on listing markets only may be sufficient.[54] However, as the order value increases, the likelihood that the investor is missing relevant information about the size available at the best price across all markets increases. For these users, our analysis indicates that in many cases, top-of-book RTMD from the listing market may be insufficient, particularly where the order value is above $10,000.[55]

We acknowledge that providing access to consolidated RTMD for these users could be costly, both in terms of the marketplace fees and any additional surcharges by display vendors. From a regulatory perspective, we believe that these users would be better served by having access to consolidated RTMD to make informed decisions. The principles of transparency suggest that regulatory action to facilitate more cost-effective access to consolidated RTMD for these users is appropriate.

CSA Staff consideration 6: Any options considered for addressing RTMD cost issues should sufficiently incentivize market participants to provide consolidated RTMD to their clients where

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Figures 28 through 31 of Appendix A show Nasdaq Canada and Tradelogiq only introducing fees for non-display use in 2019 and CSE not yet charging those fees.

[52] See Tables 1 to 3 of Appendix A.

[53] For example, a retail client's decision to participate with a market order, marketable limit order, or non-marketable limit order might be influenced by both the observed price and volume.

[54] For the purposes of the Consultation Paper, we considered access to best price and volume to be sufficient if a market participant was able to access and have visibility into two thirds of the listing market RTMD.

[55] See Figures 34 through 39 of Appendix A.

such provision is voluntary or should help offset the explicit cost impacts if the provision of such information was to be mandated.

(d) Other Notable Cost Effects – Administrative Burden

Market participants have also raised concerns about the increasing costs and inefficiency of managing and administering contractual relationships with multiple marketplaces to gain and maintain access to consolidated and non-consolidated RTMD. These concerns stem from the increasing number of contracts required for each additional marketplace.[56] In addition, participants raised concerns about the variation in the language of data access contracts and the differences in interpretation of similar language. Inconsistencies in definitions of key terms (for example, definitions of "professional" or "non-professional"), in the application of data policies (for example, in terms of non-display use), or in the application of product bundles and packages, can have implications for costs and the data that is selected.[57] Inconsistencies are commonplace both between marketplaces and also within the same marketplace from year to year.

CSA Staff consideration 7: Creating mandated standardized key terms, such as definitions of professional and non-professional clients and non-display use, would likely reduce barriers to accessing consolidated RTMD.

CSA Staff consideration 8: Overall, in the context of the above discussion on increasing costs for accessing consolidated RTMD, regulatory options should be focused on facilitating access to consolidated RTMD such that consolidated RTMD is accessible to all at a reasonable price.

Item 7 – Proposed Options

The CSA Staff considerations outlined in the preceding section are the basis for the proposed options set out below. Given the complexity of the issues, the polarized views of those that provided feedback, the approaches proposed in other jurisdictions, and the particularities of the Canadian market, we are considering both initial and longer-term options, as follows:

Initial Options for Addressing Staff Considerations (1 to 2 years)	**Longer-term Options for Addressing Staff Considerations (Over 2 years)**
1. Enhance transparency of the fee changes proposed by marketplaces	1. Improve access to consolidated RTMD by leveraging the current IP model
2. Retain external assistance to review the use of the DFM and the reference points used to allocate fees, as well as improve transparency	2. Introduce a new model for data consolidation to improve access to consolidated RTMD

[56] Whether the participant is consolidating data itself or in receipt of a consolidated data product sourced from the TMX IP as the TMX IP relies on a pass-through fee model.

[57] For example, we understand that differences in the definitions of "professional" versus "non-professional" may lead retail dealers to apply the narrowest definition of "non-professional" to a particular client for all data provided to that client. Where this approach leads to the client being defaulted to "professional," this may impact the dealer's costs or result in the dealer limiting that client's access to RTMD by providing delayed data only.

of the DFM by publishing each marketplace's fee ranges	
3. Create an industry group to help standardize key terms and definitions for access to and use of RTMD between marketplaces and market participants	

While some of these options are either-or, many of them can be implemented together. We are seeking feedback on all of the proposed options, and, as outlined above, any regulatory changes proposed as a result of the feedback received would be published for comment in the normal course.

7.1 Initial Options

(a) Enhance transparency of any fee proposals related to RTMD by requiring marketplaces, as part of the regulatory review and approval process, to publish proposed changes when they are filed for approval.

Currently, marketplace fee changes are published for public comment where, in Staff of the SRA's view, they may have a significant impact on the marketplace, its market structure, members, issuers, investors, or the Canadian capital markets or otherwise raise regulatory or public interest concerns and should be subject to public comment.[58] In these cases, fee changes are generally published for 30 days. If the SRA decides to approve the changes, the marketplace must respond to any comments received as part of its Notice of Approval of the fee changes, which is published by the SRA.

This option involves replacing the current process with a requirement for marketplaces to publish for comment all their proposed changes to RTMD fees as part of the review and approval process. The process would impose discipline on marketplaces to publicly justify any changes to fees and/or fee models.

The information to be published about the proposed RTMD fee change would include the following:

1. How the proposed fee changes comply with the regulatory requirements set out in subsections 5.1(1) and 5.1(3)(a) of Regulation 21-101 (also known as the **fair access requirements**) and in Part 10 of the exchange recognition criteria, where applicable, including reasonability, fairness, appropriateness, and transparency;

2. A description and analysis of the proposed fee change that includes the current information submitted with a proposed fee change including, but not limited to:

    a. A description of the fee change being proposed,

    b. The expected date of implementation,

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[58] This reflects the practice in Ontario.

c. The rationale for the proposed fee change and any analysis in support of it,

d. A description of the methodology used to set the proposed fees,

e. An analysis of the impact on stakeholders,

f. An overview of any alternatives considered,

g. Any analysis conducted to determine how the proposed fee compares to fees charged for similar services by other marketplaces in Canada and abroad, and

h. The costs of producing the product or service, where relevant.

The mechanism by which marketplaces would make these proposals public may involve a dedicated page on the applicable SRAs' and/or applicable marketplace's website where the proposal and accompanying details would be publicly available for review by interested parties. Approval would not be granted for at least 30 days after the proposal has been made public, or longer where warranted based on the complexity of the proposal. This timing would allow interested parties to provide feedback for consideration by the SRAs. There would be no requirement for the marketplaces to respond publicly to any feedback received, but Staff of the SRAs would consider this feedback as part of their regular review process.

QUESTION #1: Please identify any potential unintended consequences at the industry, marketplace, or firm level if we pursue this option.

QUESTION #2: Would this approach satisfy the need for more transparency in relation to proposed fee changes and their review process? If yes, please indicate what benefits this approach would offer. If no, please explain why and whether other requirements should be considered.

(b) Retain external assistance to review the DFM and its relevance in the context of domestic and international developments in equity markets. The review should include an examination of reference points that could be used by CSA Staff to allocate the share of fees chargeable by marketplaces under the DFM. The fee ranges assigned to each marketplace should be made transparent.

As outlined above, the DFM has helped slow the growth of professional subscriber fees charged by marketplaces, but its effectiveness has decreased over time due to issues associated with the current reference points and how the DFM is applied. This option involves retaining an external party to review the DFM with the goal of setting appropriate reference points for the RTMD fees for consolidated data and addressing some of the other issues around its application.

It may not be feasible or desirable to apply the DFM across all current and future data fee categories, particularly those that are less associated with data use where pre- and post-trade metrics used in the DFM may be less relevant – e.g., distribution fees or "feed fees." To do so would require the creation of reference points for each of the targeted fee categories. The ability to extend the DFM to additional data fee categories may also be limited by the definitions and fee models used by marketplaces to charge for those categories (e.g., non-display use fees), unless there is greater standardization in RTMD key terms and definitions. As a result, the application of the DFM may remain limited to professional subscriber fees, but it could be extended to non-professional subscriber fees.

This option also involves considering whether to publish the fee ranges calculated under the DFM in order to increase transparency and accountability and to provide for a more level playing field amongst marketplaces. All marketplaces and market participants that consume RTMD could then have a better understanding of why certain marketplaces may have been permitted to increase their professional and potentially non-professional RTMD fees.

<u>QUESTION #3: What are your concerns, if any, with continuing to use the DFM? If the DFM were to continue to be used, what changes are necessary?</u>

<u>QUESTION #4: Is the application of the DFM appropriate for both senior and venture market data?</u>

<u>QUESTION #5: Should the application of the DFM be extended beyond subscriber fees? For example, should the DFM be applied to non-display and distribution fees (whether internal and/or external distribution fees) given the potential challenges noted above?</u>

<u>QUESTION #6: What are the potential benefits or risks of making the fee ranges calculated under the DFM transparent? Should there be greater transparency of other inputs to the DFM (e.g., reference points or key input metrics)? If so, please comment on the potential benefits and risks.</u>

<u>QUESTION #7: Should we consider adopting a methodology for non-professional subscriber fees? If yes, what should be factored into such a methodology? If not, why not?</u>

(c) Create an industry group to help standardize key terms and definitions for access to and use of RTMD between marketplaces and market participants.

This option involves creating an industry group that includes data experts from market participants (including vendors, dealers, buy-side, etc.) that need access to and use RTMD as well as marketplace staff with expertise in administering RTMD contracts. The goal of this group would be to identify and standardize those key terms and definitions (for example, definitions of "professional" and "non-professional" users) that are confusing and difficult to understand, maintain, and audit in the context of the access to RTMD feeds.

Standardization would help to remove certain frictions and barriers to access consolidated RTMD that can result from different interpretations of the terms and definitions associated with RTMD, as discussed earlier. To that end, this industry group could also develop use cases to ensure that the fees charged for access to and use of RTMD apply to users in a consistent manner. Consideration would then be given to mandating the adoption and implementation of standardized terms and definitions in relation to accessing consolidated and non-consolidated RTMD feeds that could potentially lay a foundation for the long-term options focused on improving access to consolidated RTMD described in the next section.

For clarity, mandating the adoption and implementation of standardized terms and definitions does not mean that marketplaces must charge fees in each category. For example, a marketplace may continue to choose to not charge end-use data subscribers but would be required to use the standardized terms and definitions if those fees were to be introduced.

Further, the intent would be to limit the standardization exercise to key terms and conditions directly related to the receipt and use of RTMD which we understand have introduced frictions and barriers for accessing consolidated RTMD. At this time, defining standard language for contract terms that are more commercial in nature, such as indemnity provisions, would not be considered. In-scope terms and definitions could include the definitions and restrictions on use for:

1. End-use categories (e.g., professional and non-professional subscribers);
2. Non-display use categories;
3. Internal versus external distribution; and
4. Real-time versus delayed data.

QUESTION #8: Should standardized key terms and definitions, such as professional and non-professional users, be developed for the access to, receipt, distribution, and use of RTMD products? If yes, please explain what the benefits of such an approach would be. If not, please explain why not.

QUESTION #9: What other key terms and definitions should be standardized? What factors or industry legacy issues should be considered in standardizing such terms?

QUESTION #10: Would this approach help address market participants' concerns with respect to the administrative burden related to the access to and use of consolidated RTMD? Please explain your answer.

QUESTION #11: What would be the unintended consequences, if any, of standardizing these types of key RTMD terms and definitions?

7.2 Longer-term Options

(a) Leverage the current IP model by introducing a TIP+ Model.

Under the current regulatory framework for consolidated RTMD, both marketplaces and the equity IP must comply with certain requirements in relation to consolidated RTMD under Regulation 21-101. The IP collects, normalizes, consolidates, and disseminates marketplace order and trade data to its subscribers, but the fees and contractual terms for use of the data are set by each marketplace under the pass-through model described above. As a result, the equity IP's functions are those of a technical information processor (**TIP**), meaning that it serves a purely consolidation and distribution function, but does not play an administrative role.

Under this option, we would mandate an enhanced TIP model (**TIP+ model**) that could address concerns about the cost of access to and use of consolidated RTMD by imposing a cap on fees charged by marketplaces for marketplace order and trade data that is consumed through the consolidated products distributed by the TIP – currently, the CBBO protected, CBBO all markets, CLS, CDB protected, and CDB feeds. The caps would be established by the CSA. For example, the CSA could consider imposing caps by restricting marketplaces from charging more than a set percentage of their stated fees for marketplace data consumed through the TIP. The caps could apply to both display and non-display use fees as well as distribution fees.

To establish the caps for the consolidated products distributed by the TIP, we could consider a number of factors, including, but not limited to:

1. the extent to which consolidated TIP products offer a comparable degree of granularity and/or content to individual marketplace feeds; and

2. how trade-offs between a consumer's needs and the cost of RTMD might reflect greater value of the consolidated data for end-users.

Another way to establish the caps could be to set reference prices for various uses of each consolidated TIP product, with the DFM then being used to determine what each marketplace is permitted to charge for the RTMD they contribute to consolidated TIP products.

We could also establish how the revenue derived from the TIP's consolidated products would be allocated to each marketplace based on a number of considerations, including the informational value of each marketplace's incremental contribution to consolidated data products.

Under this model there could be a single TIP or multiple TIPs.

Mechanisms may also be needed to ensure the continued viability of a TIP. For example, in the absence of one or more entities choosing to become and act as the TIP, there may be a need to mandate that marketplaces contribute to the creation and viable operation of a TIP to carry out the technical consolidation functions.

<u>QUESTION #12: Would caps on fees charged by marketplaces for their RTMD consumed through the consolidated TIP products affect the consumption and use of consolidated RTMD? If so, how? If not, why not, and are there alternatives that should be considered?</u>

<u>QUESTION #13: Under this approach, do you believe data vendors would begin to offer TIP-based products and pass cost savings on to the end user? If not, what drivers would be necessary to encourage this? Do you envision any potential unintended consequences under this approach?</u>

<u>QUESTION #14: What means of establishing caps and what factors for establishing cap levels should be considered?</u>

(b) Introduce a new model for data consolidation through the use of an Admin IP.

The second option contemplates the creation of a new model for the distribution of consolidated RTMD in Canada that could be designed to address several issues in relation to the access to and use of consolidated RTMD. This new model contemplates the creation of an Administrative IP (**Admin IP**) that would be responsible for establishing and managing the components of the model in relation to the access to and use of consolidated RTMD products (i.e., products, fees, and revenue sharing). The CSA would mandate the creation of the Admin IP and set clear requirements for its governance, involving representation from both marketplaces and dealers. Under this approach, one or more TIPs could be charged with the collection, normalization, consolidation, and distribution of the consolidated RTMD products as defined and required by the Admin IP. Whether one or multiple TIPs should be considered under this structure is discussed in the next section.

(i) Admin IP

The key responsibilities of the Admin IP would include:

Product definition - design, describe, and standardize the key consolidated RTMD products to be available for access and use by market participants, subject to any regulatory requirements or guidance from the CSA.

Fee setting - set the fees for the consolidated RTMD products distributed by the TIPs. This would include fees for the access to and use of consolidated RTMD feeds, both display and non-display, and the fees charged for the distribution of such data, as well as any connectivity fees associated with the access to such feeds. Should the Admin IP, rather than an independent TIP, be responsible for the distribution of consolidated RTMD products, then it would also set the fees associated with the collection, normalization, consolidation, and distribution of consolidated products to its subscribers.

Contractual terms setting - develop, set, and maintain standardized contractual terms and conditions that would govern access to, receipt, distribution, and use of consolidated RTMD products from the TIPs and, if applicable, the Admin IP. The contractual standardized terms should be developed by the Admin IP through a consultative process with industry experts and, before adoption, would be subject to regulatory approval.

Revenue sharing - design, implement, maintain, and administer, subject to regulatory approval, a revenue sharing model to allocate the net revenues earned from the sale of the consolidated RTMD feeds to the contributing marketplaces.

The Admin IP's responsibilities may present conflicts of interests between the producers and consumers of consolidated RTMD, specifically marketplaces and market data customers. To ensure that the Admin IP meets its regulatory obligations, it must have a strong governance structure in place with adequate breadth of representation from both the producer and consumer categories. The governance mechanism must be able to facilitate the adoption of optimal solutions that will incentivize the access to and use of consolidated RTMD products by market data consumers. While additional details would be included in any resulting future proposal, the administrative functions and governance structure of an Admin IP may not be dissimilar from those outlined in the finalized SEC's Governance Order and Market Data Infrastructure Rule.

QUESTION #15: What are your views on the appropriateness of an Admin IP model for Canada? What would be the key benefits and challenges and how could any challenges be addressed?

QUESTION #16: What are the unintended consequences or risks that should be considered?

QUESTION #17: Are there any other key responsibilities that should be considered for an Admin IP model?

QUESTION #18: What governance model could be introduced that would be fair and help overcome conflicts such that the Admin IP could achieve its regulatory obligations?

(ii) Single vs. Multiple TIPs under an Admin IP Model

The key responsibilities of any TIP are expected to be similar to those applicable under the current IP model – i.e., the collection and normalization of marketplace order and trade data to create and disseminate consolidated RTMD products. We are considering the following approaches in relation to the operation of the TIP under an Admin IP model:

1. allowing for a single TIP that could either be operated by the Admin IP or by an entity that is independent from the Admin IP, or

2. creating a competitive TIP structure under which marketplaces would be mandated to provide order and trade information to multiple TIPs exclusively for the purpose of consolidating and distributing such data, under terms established by the Admin IP.

Allowing multiple TIPs to operate may boost competition in the consolidated data distribution space, which may contribute to lower latency through innovation in technology, creativity in service offerings, and potentially streamlined contractual terms. Competition could also drive TIPs to provide customized services to consolidated market data users. The existence of multiple TIPs could also help reduce the "single-point-of-failure" risk that could result from a single TIP ceasing operations (whether because the entity is no longer a going concern or is unable or unwilling to continue to provide the consolidated RTMD products).

The primary challenge with a multiple TIPs model is that there may not be enough of an incentive for multiple parties to create and act as TIPs – i.e., there would need to be sufficient commercial opportunity for multiple IPs to take on the costs and any additional responsibilities associated with acting as a TIP.

Under either a single or multiple TIP approach, there is a risk that no entity chooses to become a TIP due to the lack of a sufficient commercial opportunity. In such a case, as suggested earlier, there may be a need to mandate that marketplaces contribute to the creation and viable operation of a TIP to carry out the technical consolidation functions.

<u>QUESTION #19: Based on the size and scale of the Canadian market, should the CSA consider allowing for multiple TIPs to operate under the Admin IP approach?</u>

<u>QUESTION #20: Alternatively, should there only be a single TIP and, if so, should it be operated independently of the Admin IP?</u>

<u>QUESTION #21: If there is only a single TIP, should it operate as a for profit business or as a not-for-profit entity? Please explain your answer.</u>

7.3 General Questions

<u>QUESTION #22: With respect to Staff Consideration 1, do you think that our review of RTMD costs and accessibility should consider the impact of regulatory requirements, such as OPR and best execution? What could drive changes in consumer behaviour (such as disconnecting from marketplaces that offer little benefit to the market compared with the costs or unprotected marketplaces)? What changes could impact the competition among data producers? What could incrementally increase consumer bargaining power? And ultimately, could any of these suggestions impact fees? Please explain your answer.</u>

<u>QUESTION #23: Would any of the options outlined above assist dealers with moving retail orders to other marketplaces during a marketplace outage?</u>

<u>QUESTION #24: Are there any other options to address industry's concerns about the access to and cost of RTMD that we have not considered? Please explain your answer.</u>

Item 8 – Conclusion

The issues concerning access to RTMD are complex and there are many different views as to how they can be addressed. We intend to consider the feedback received on this Consultation Paper to determine next steps. Any policy changes or rulemaking will be subject to publication for comment in accordance with the usual process.

Item 9 – Comments and Submissions

We invite participants to provide input on the issues outlined in this public consultation paper. You may provide written comments in hard copy or electronic form. The consultation period expires February 10, 2023.

Certain CSA regulators require publication of the written comments received during the comment period. We will publish all responses received on the websites of the Autorité des marchés financiers (www.lautorite.qc.ca), the Ontario Securities Commission (www.osc.ca), and the Alberta Securities Commission (www.albertasecurities.com). Therefore, you should not include personal information directly in comments to be published. It is important that you state on whose behalf you are making the submission.

Please submit your comments in writing on or before February 10, 2023.

Address your submission to all of the CSA as follows:

British Columbia Securities Commission
Alberta Securities Commission
Financial and Consumer Affairs Authority of Saskatchewan
Manitoba Securities Commission
Ontario Securities Commission
Autorité des marchés financiers
Financial and Consumer Services Commission, New Brunswick
Superintendent of Securities, Department of Justice and Public Safety, Prince Edward Island
Nova Scotia Securities Commission
Office of the Superintendent of Securities, Service NL
Northwest Territories Office of the Superintendent of Securities
Office of the Yukon Superintendent of Securities
Nunavut Securities Office

Deliver your comments **only** to the address below. Your comments will be distributed to the other participating CSA regulators.

Ontario Securities Commission
20 Queen Street West
19th Floor, Box 55
Toronto, Ontario M5H 3S8
Fax: 416-593-2318
comments@osc.gov.on.ca

Item 10 – Questions

If you have any comments or questions, please contact any of the CSA Staff listed below.

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Appendix A
Quantitative Analysis – Review of Access to RTMD in Canada

Item 1 – Introduction

In addition to a regulatory gap analysis, we also conducted a quantitative fact-finding review to develop the initial and longer-term options proposed in the Consultation Paper. The scope of the quantitative fact-finding review was to observe:

1. Overall changes in the market data environment by understanding changes to core marketplace revenues (i.e., trading, access, and market data revenues);

2. Specific changes in the key RTMD fee levels in Canada by focusing on those fees that impact the costs incurred by market participants that access and use RTMD in consolidated and non-consolidated form. Specifically, we observed the evolution of the following fee categories: (i) professional and non-professional display fees; (ii) distribution fees; and (iii) non-display fees. We also observed changes in other fees (i.e., access fees, fees for delayed data, historical fees), to better understand the impact of all fees on market participants;

3. The need to access Level 2 consolidated RTMD versus Level 1 consolidated RTMD from listing markets only; and

4. The fees charged to market participants in Canada compared to those charged in the US and other global markets on an individual and consolidated basis (i.e., TSX fees versus similar fees charged in the EU, US, and Australia, for instance).

To conduct our quantitative analysis, we collected information from selected equity marketplace operators with respect to their core revenues and certain user count information.[59] The revenue information that was expressed in US dollars (because the fees collected were billed in US dollars) was normalized and presented on an FX-adjusted basis in our analysis.[60] We also used publicly available information about trading activity and fees to conduct the international comparisons and information obtained from IIROC to assess the need for accessing consolidated information versus market data from listing markets only.

Our fact-finding review covered a 13-year period, between 2006 and 2019. Where possible, our observations cover the entire period under review (**13-year period**) and also outline observations between 2014 to 2019 (**latter 5 years**) if data for 2006 was not available for all marketplaces.

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[59] Information was only requested from equity marketplace operators with at least an aggregate market share of one percent across the operator's trading venues, representing all trading venues other than those operated by Instinet Canada Cross Ltd. and Liquidnet Canada.

[60] USD revenue was normalized into CAD for each of 2014 and 2019 using the effective FX rate for 2006. That is because changes in FX rates can have a significant impact on market data revenue, where marketplaces may charge/bill subscribers in either CAD or USD. For example, there was a significant change in FX rates between 2014 and 2019 that would have resulted in a compound annual growth rate (**CAGR**) of 3.4 percent over the latter 5 years versus the 2.5 percent reflected above. We note there was no impact on trading and access revenue as all trading fees and almost all access fees were billed in CAD.

Item 2 – Core Marketplace Revenue and the Market Data Environment

We consider core marketplace revenue to be the revenue collected by marketplaces from the fees charged for:

1. access to the marketplace, including connectivity (e.g., logical connectivity for data access and order entry and physical connectivity), colocation, membership, and other fees (e.g., smart order router);

2. trading; and

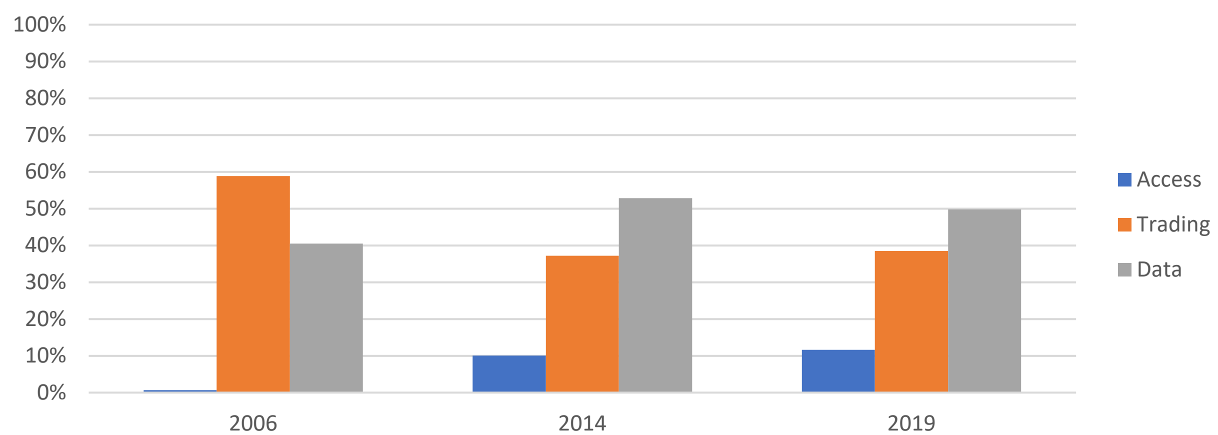
3. market data.[61]

2.1 General Observations

We observed that both the level and the composition of core marketplace revenue has changed since 2006. Marketplace revenues have grown at a compound annual growth rate (**CAGR**)[62] of approximately 1.6 percent over the 13-year period and 2.5 percent over the latter 5 years.[63]

We note that the proportion of core marketplace revenue attributable to market data and access has grown over the 13-year period. In 2006, trading revenue represented almost 60 percent of core marketplace revenue versus 39 percent in 2019, whereas market data represented 40 percent in 2006 and increased to almost 50 percent in 2019. Access revenue has also grown by 12 percent over the same 13-year period (shown in Figure 1).

Figure 1 - Change in Distribution of Core Marketplace Revenue



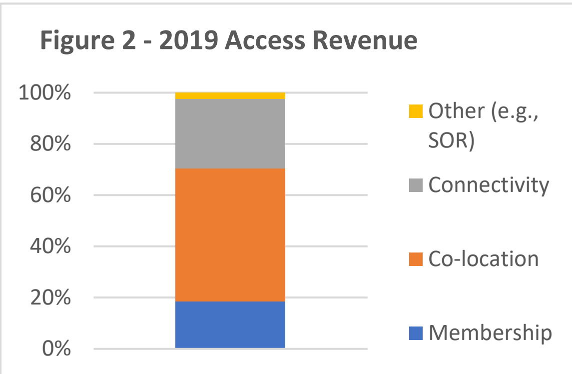
2.2 Change Drivers

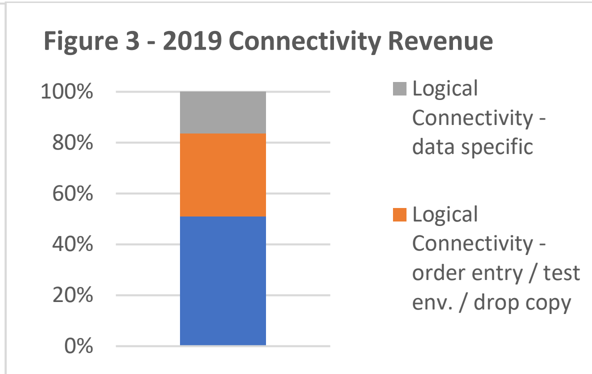
(a) Access Revenues

In 2019, access revenue included the following:

[61] Data revenue excludes audit recovery revenue, which may reflect recovered revenue spanning multiple years.
[62] Rates are simple CAGR measured as the compound annual growth rate between the beginning and end points.
[63] Comparatively, inflation as measured by the average annual Canadian Consumer Price Index grew at a CAGR of 1.7 percent for each of the 13-year and latter 5 years periods.

1. membership revenue - which has increased with more marketplaces;
2. colocation revenue - primarily attributable to TMX as the other marketplace operators do not generally manage their own colocation facilities; and
3. physical and logical connectivity revenue - which has also increased as a result of additional venues and the introduction of new fees.





The primary contributor to the growth of access revenue, aside from the increase caused by the membership revenue, is the revenue earned by marketplaces from connectivity fees. Data-specific logical connectivity fees, reflected in Figure 3, have increased as a result of the introduction of such fees by two marketplace operators. Of note, however, is that marketplaces may choose to recoup any costs associated with data-specific connectivity differently, which means that charges for any data-specific connectivity may not always be explicit. For example, some marketplaces may attempt to recover logical connectivity costs for data through their distribution fees, where such fees are charged by feed and by source, or they may be broadly absorbed through a variety of data offerings. This adds complexity to any attempt to compare and contrast connectivity and data offerings.

(b) Trading Revenues

We observed that trading revenue decreased from 2006 to 2014, and then recovered slightly in 2019. This decrease occurred despite continued growth in trading volumes (see Figure 4).[64]

The main drivers for the decrease in trading revenue are the increasingly competitive environment for trading fees that has resulted in a decrease in the effective fee yield per share traded, as well as the increase in the proportion of trading associated with low-priced/lower-fee stock.[65]

The significant decrease in trading revenue occurring between 2006 and 2014 was also highlighted by the decline in the effective net fee per share traded earned by marketplaces[66] (see Figure 5).

[64] All-in effective net fee per share based on total trading revenue from marketplace matching (e.g., continuous trading, opening and closing auctions, special trading sessions). Trading volumes obtained from IIROC.
[65] We observed that a higher percentage of continuous traded volume in 2019 was in stocks priced under $1.00 relative to 2014.
[66] See Figure 5, for All-in effective net fee per share. The "ex-intentional crosses and auctions" effective net fees per share for 2014 and 2019 were estimated after adjusting revenues and volumes to exclude opening and closing auctions and intentional crosses, with further adjustments to revenue to add back estimated payouts for "payment for cross" programs (2006 not included due to insufficient granularity of trading revenues and volume information).

This decrease was the effect of changes to fee models and fee levels implemented in response to competitive pressures from US markets for interlisted trading volumes, and from increased competition within the domestic marketplace environment resulting from the increase in the number of trading venues.

Figure 4 - Trading Revenue vs. Effective Net Fee per Share Traded
(index basis - 2006 base year)

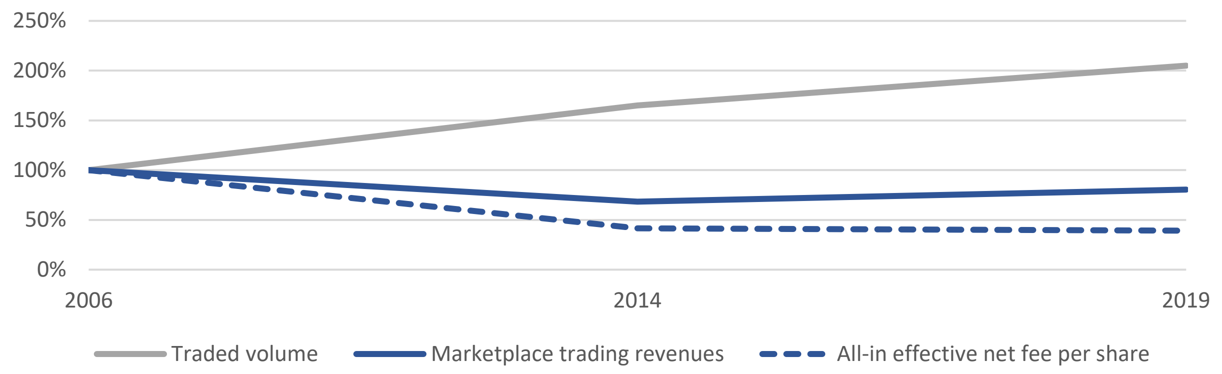
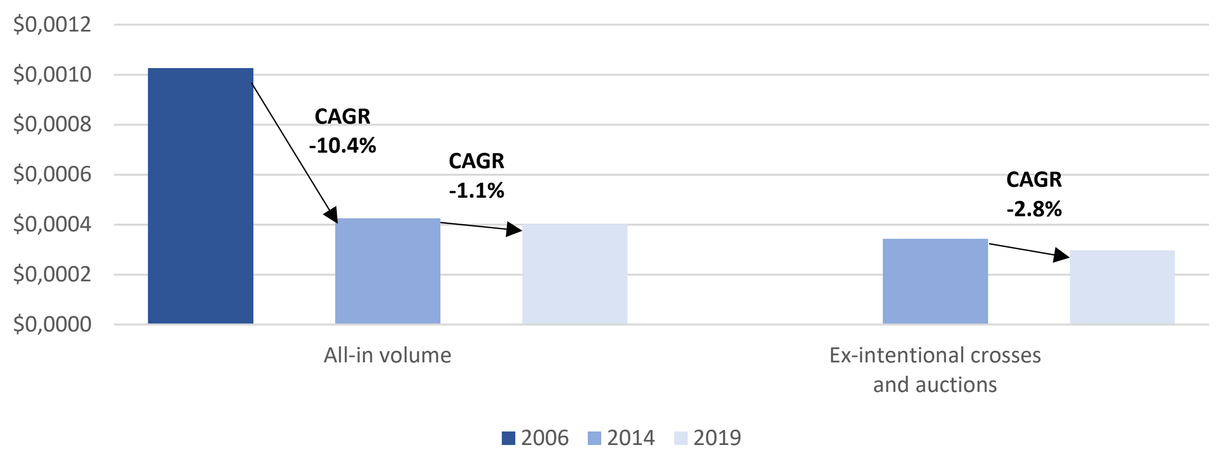


Figure 5 - Change in Effective Net Fee per Share Traded



(c) *Market Data Revenues*

We consider market data revenue to be the revenue collected by marketplaces from the fees charged for:

1. the use of Level 1 and Level 2 RTMD feeds by professional and non-professional users – the discussion below uses the term *data subscriber* when referring to the revenue earned by marketplaces from these fees;

2. the use of quotes by non-professional subscribers – the discussion below uses the term *quote usage* when referring to the revenue earned by marketplaces from these fees;

3. distribution/feed licenses – the discussion below uses the term *distribution/feed fees* when referring to revenue earned by marketplaces from these fees;

4. *data license*; and
5. *historical data*.

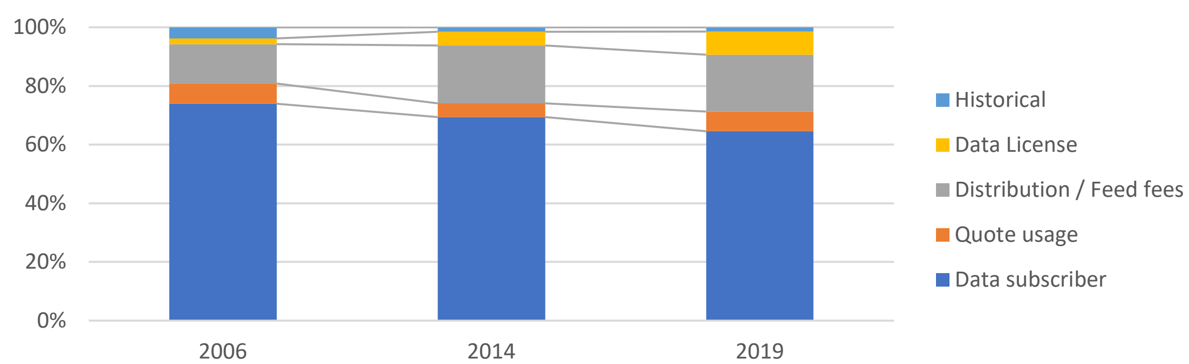
Data subscriber and quote usage revenues are also referred to as display revenue.

In 2019, the revenue from market data represented 50 percent of core marketplace revenue. This revenue has grown at a CAGR of 3.2 percent over the 13-year period and 1.4 percent over the latter 5 years.

Since 2006, display revenue[67] has represented the most significant component of marketplace data revenue. However, over the 13-year period, the contribution of display revenue to overall data revenue has decreased from approximately 80 percent in 2006 to approximately 72 percent in 2019. Over that same period, the proportion of data revenue from distribution/feed and data license fees has increased (see Figure 6).

To understand the drivers behind these trends, we looked at the evolution of the largest three contributors to market data revenues, specifically (i) data subscriber, (ii) data distribution, and (iii) data license revenues.

Figure 6 - Change in Composition of Marketplace Data Revenue



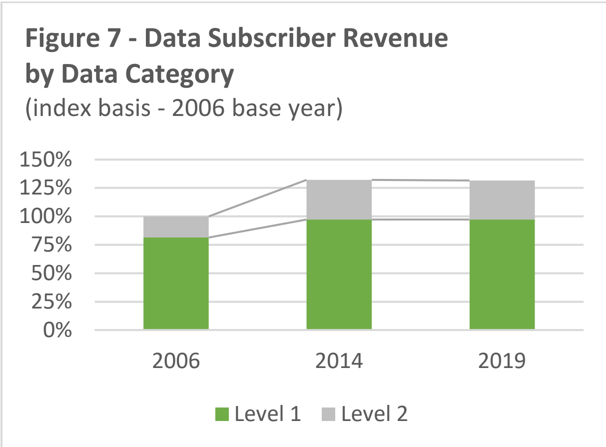
(i) Data Subscriber Revenue

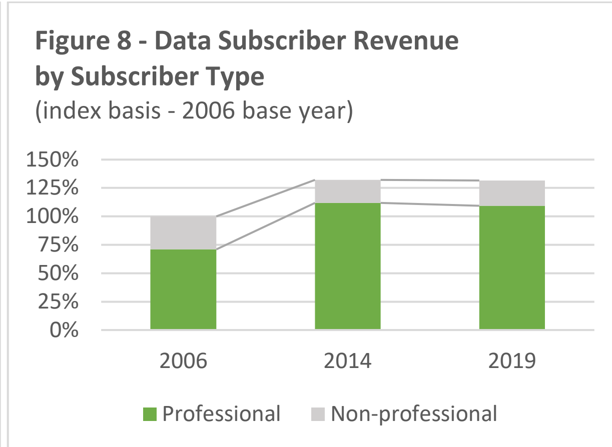
Data subscriber revenue represents money earned from subscribers that use display services. In 2019, this revenue represented an estimated 65 percent of marketplace data revenue and an estimated 32 percent of core marketplace revenue. By comparison, trading revenue was approximately 38 percent of core marketplace revenue in 2019. This makes data subscriber revenue the second largest category of revenue after trading revenue.

Over the 13-year period, data subscriber revenue increased by an estimated 23 percent. It has grown by a CAGR of 2.1 percent over the 13-year period and was virtually flat over the latter 5 years. In the latter 5 years, there has been little change between the proportion of data subscriber

[67] The display revenue included an estimated allocation of the amounts earned by marketplaces from data enterprise pricing programs, with the allocation based on the split between the relationship related revenue line-items arising from the related data products.

revenue that is earned from Level 1 versus Level 2 subscribers (see Figure 7), or from professional versus non-professional subscribers (see Figure 8).





The key drivers supporting the increase in data subscriber revenue between 2006 and 2014 appear to be both an increase in the number of venues charging for data and a net increase in user levels. For the latter 5 years, data subscriber revenues remained relatively flat. The flattening of subscriber revenues appears to have been a function of further increases in venues charging for data being offset by decreases in net user levels, particularly in relation to the level of professional data subscribers.

(ii) Data Distribution Revenue

Data distribution revenue represents money earned by marketplaces from fees charged to data recipients for the redistribution of RTMD feeds (i.e., Level 1 and Level 2 feeds), internally (i.e., to users within the data recipient), and/or externally (i.e., to subscribers outside the data recipient).[68] It generally includes distribution fees that some marketplaces refer to as *feed fees*.

In 2019, data distribution revenue represented approximately 19 percent of marketplace data revenue. We note that between 2006 and 2014, this revenue grew at a CAGR of 6.2 percent, whereas for the latter 5 years, the CAGR was 1.0 percent (see Figure 9).[69]

We observed that the primary drivers for the increase in data distribution and feed fee revenues were changes to and/or the introduction of these fees by additional marketplaces, with changes in use levels and product mix also contributing.

[68] Data distribution/feed fee revenue may also reflect some portion of revenue collected for connectivity costs associated with accessing the feed itself. See access revenue discussion.
[69] We distinguish between the distribution of RTMD feeds (i.e., Level 1 and Level 2 feeds) and the distribution of other feeds, such as last sale and other mixed private/public feeds.

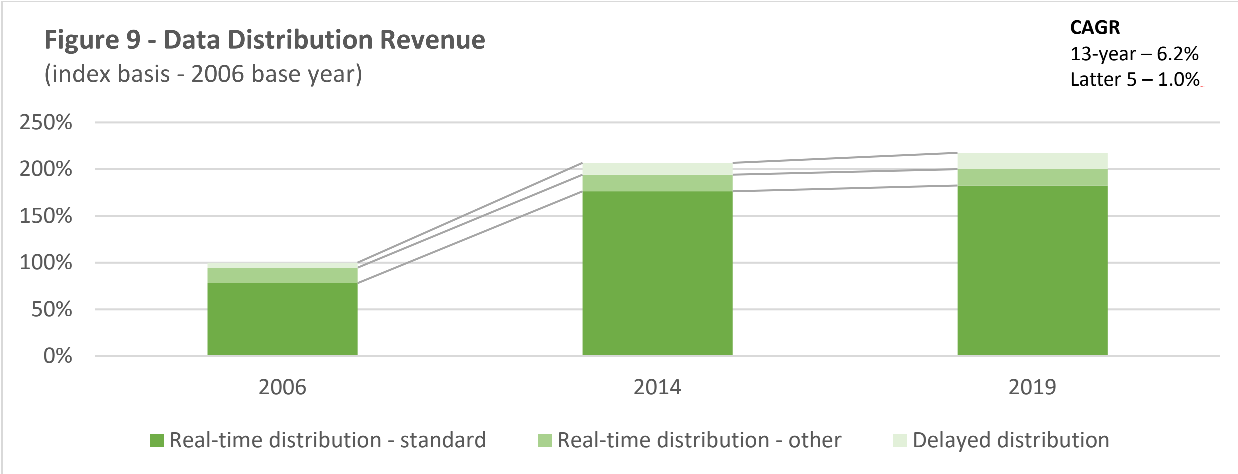


Figure 9 - Data Distribution Revenue
(index basis - 2006 base year)

(iii) Data License Revenue

Data license revenue represents money earned by marketplaces from license fees relating to the receipt and use of RTMD for particular use cases – most commonly in relation to non-display use involving the receipt and use of RTMD for analysis programs or order generation/trading applications (including use for smart order routing and algorithms). Other uses for which license fees might apply include the use of data for creating and distributing derived data or proprietary indices, or where the data is being stored for historical reference purposes.

In 2019, data license revenue represented approximately eight percent of marketplace data revenue. We note that between 2006 and 2014, data licence revenue grew at a CAGR of 14.9 percent and the latter 5 years at a CAGR of over 12.5 percent. The revenue earned by marketplaces from license fees seemed to have grown at the highest rate over the 13-year period (see Figure 10). However, data license revenue remains less than 10 percent of marketplace data revenue.

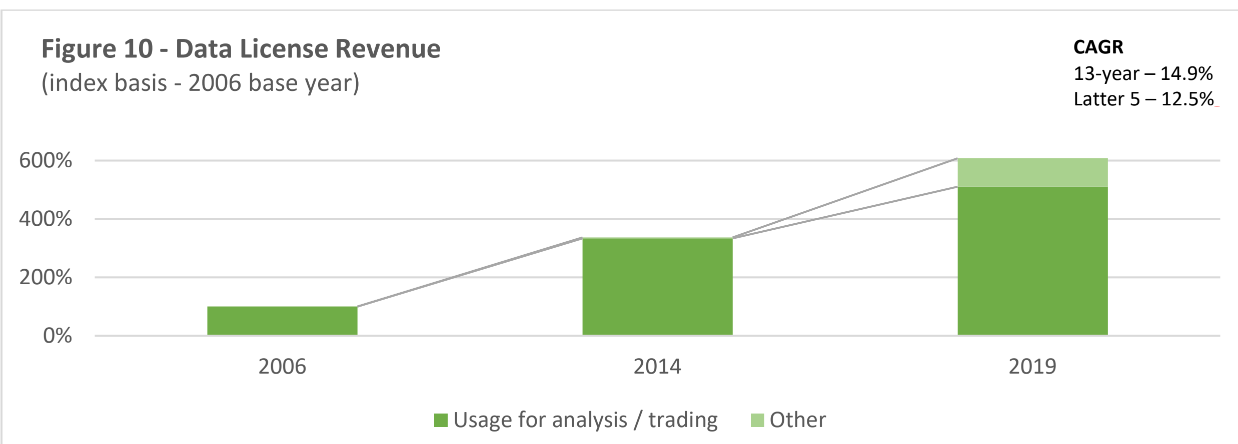


Figure 10 - Data License Revenue
(index basis - 2006 base year)

We observed that the drivers for this increase were changes to and/or the introduction of these fees by additional marketplaces.

Item 3 – Review of Changes in Key RTMD Fee Levels

The growth in the number of trading venues and/or the introduction of RTMD fees has had a cumulative effect on costs for those that need to access, use, or distribute RTMD from multiple trading venues. The impact on any one market participant will vary based on the extent to which the fees are borne at the use/user level versus the firm level, and how costs are shared amongst business lines. For data and access vendors, the impact will depend on the extent to which the costs are absorbed by the vendor or passed on to clients.

We observed the evolution of the following fee categories:

1. Display fees – professional and non-professional display fees;

2. Distribution fees – internal and external;

3. Non-display fees – trading and order generation; and

4. Other fees (i.e., access fees, fees for delayed data, historical fees),

in our efforts to better understand the impact of these fees on market participants.

To construct the figures in this section, we used OSC records of marketplace filings that included publicly available fee schedules of each marketplace over the 13-year period. We did not include any changes in fees between 2006 and 2011 due to challenges in accessing records. The amounts represent the fees charged as at year end based on stated rates by each marketplace family for their respective marketplace platforms in relation to access, use, and/or the redistribution of RTMD, expressed in Canadian dollars.

3.1 Display Fees – Professional, Non-professional, and Quotation Fees

(a) Professional Subscriber Fees

Professional subscriber fees are charged by marketplaces on a monthly basis to those end-users of RTMD (i.e., for the use of Level 1 and Level 2 feeds) that meet the marketplace's definition of professional subscriber. In general terms, a professional subscriber is a legal or natural person that uses RTMD for business purposes. It would generally include securities professionals or any individual who is not acting in his or her personal capacity.

We note that growth rates over the latter 5 years were lower than over the entire period reviewed. The drivers behind this lower growth were fewer marketplaces introducing these fees and the application of the DFM, which resulted in the reduction of fees by some marketplaces while allowing for an increase by others (see Figures 11 and 12).[70]

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[70] The Figures show the growth in cumulative monthly professional subscriber fees for an end-user that consumes Level 1 and Level 2 Market-by-Order data for all Canadian-listed securities, by marketplace family. Note that fees for Alpha Exchange/TSX Alpha are reflected as a dotted pattern in the same colour as other TMX marketplaces reflected in the chart. TMX acquired Alpha Exchange in 2012.

Figure 11 - Professional Subscriber Fees - Level 1
(all marketplaces for all Canadian-listeds, by marketplace family, as at year-end)

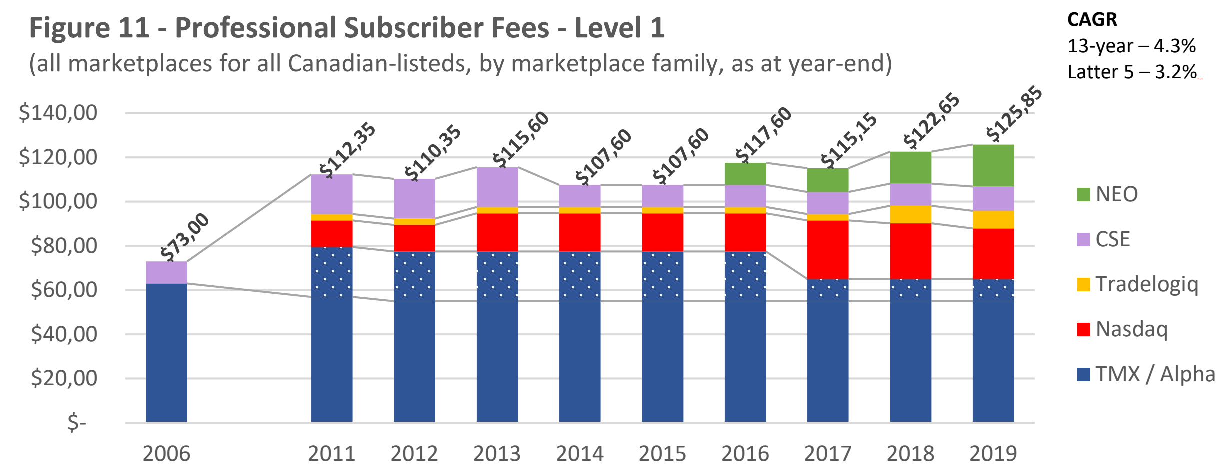
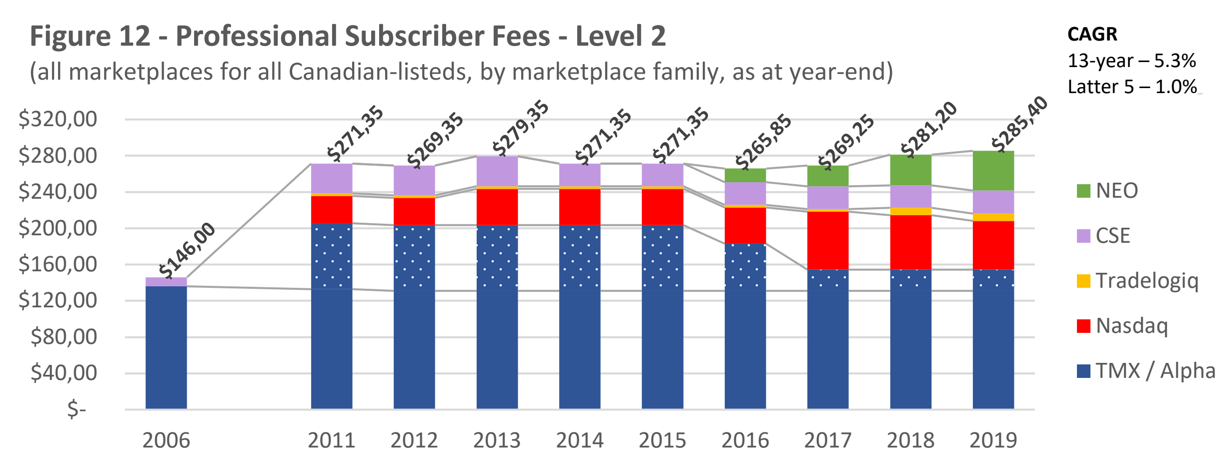


Figure 12 - Professional Subscriber Fees - Level 2
(all marketplaces for all Canadian-listeds, by marketplace family, as at year-end)



(b) Non-professional Subscriber Fees

Non-professional subscriber fees are charged by marketplaces on a monthly basis to those end-users of RTMD that do not meet the definition of professional subscriber. The information we gathered about the use of RTMD by non-professionals indicates that most see only data from the listing markets, and their dealers, in practice, typically incur only the fees charged by those markets.

We note that the cumulative monthly fees paid by a non-professional user decreased from a 2012 high as a result of reductions in the rates charged by TSXV post-2012. In addition, the effective monthly rate for a dealer that has a large base of non-professional subscribers may be lower than is reflected in the figures below if it consumes RTMD from marketplaces that offer enterprise pricing arrangements (see Figures 13 and 14).[71]

[71] The figures show the evolution of the cumulative monthly fees for non-professional subscribers that access RTMD from all marketplaces in Canada.

Figure 13 - Non-professional Subscriber Fees - Level 1
(all marketplaces for all Canadian-listeds, by marketplace family, as at year-end)

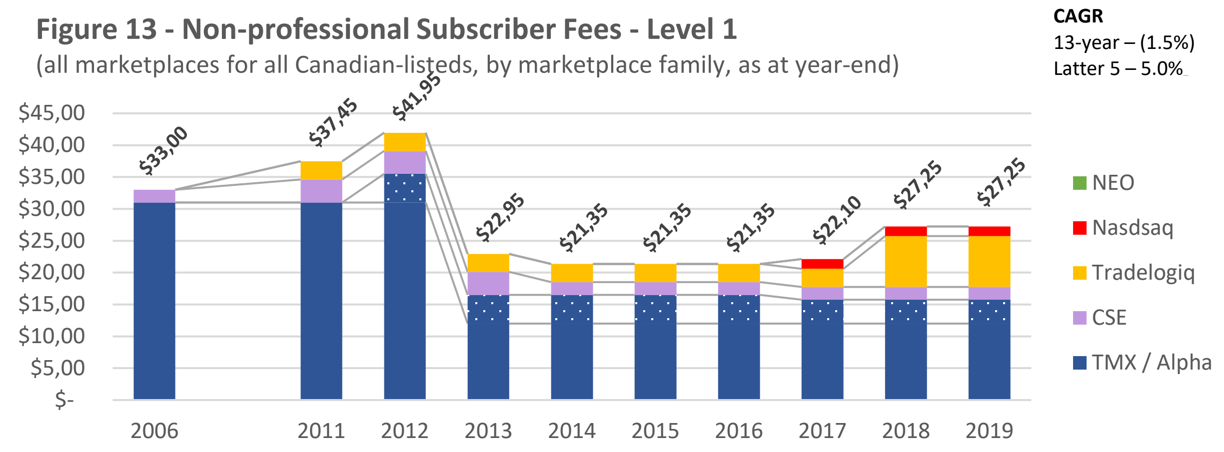
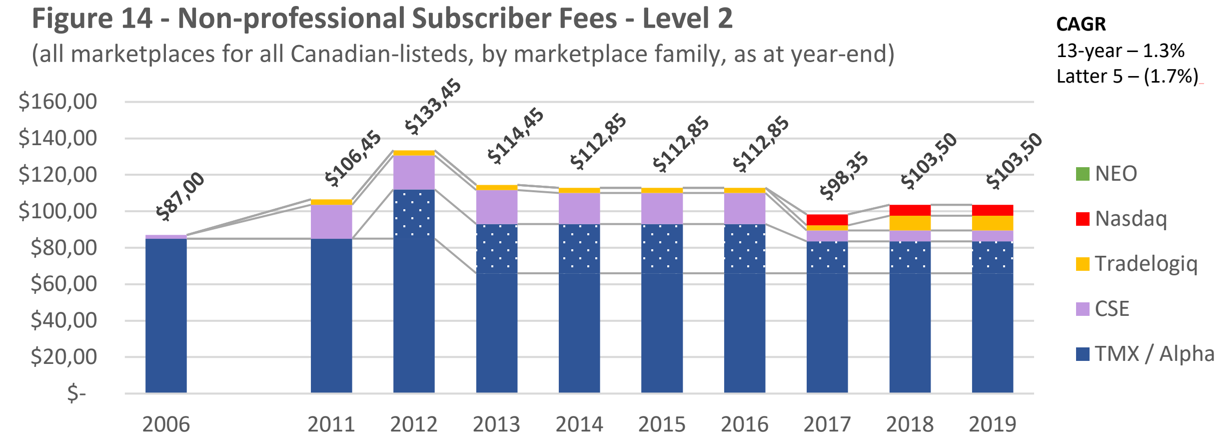


Figure 14 - Non-professional Subscriber Fees - Level 2
(all marketplaces for all Canadian-listeds, by marketplace family, as at year-end)



(c) Non-professional Quotation Usage Fees

We also found that the majority of non-professional users are provided with RTMD under fee models that contemplate a per quote charge. Certain marketplaces also cap per quote charges at the monthly rate. We note, however, that not all marketplaces offer quote-metred pricing, and this approach may create barriers to accessing consolidated RTMD on a per quote basis where the consumption of a single-quote might attract the monthly subscriber rate.[72] Further, the total amount spent for a non-professional subscriber may also be subject to enterprise agreements that can help to reduce the effective per quote fee.

If a non-professional subscriber wants to see the best quote for a stock across all marketplaces, they would be subject to each marketplaces' quote fees. However, in theory, a non-professional subscriber may choose to look at one marketplace at a time.

The revenue from quote fees grew at a CAGR of 3.3 percent over the 13-year period and at a CAGR of 5.8 percent over the latter 5 years (see Figure 15).[73] The driver behind this growth seems to be the addition of quote fees by marketplaces.

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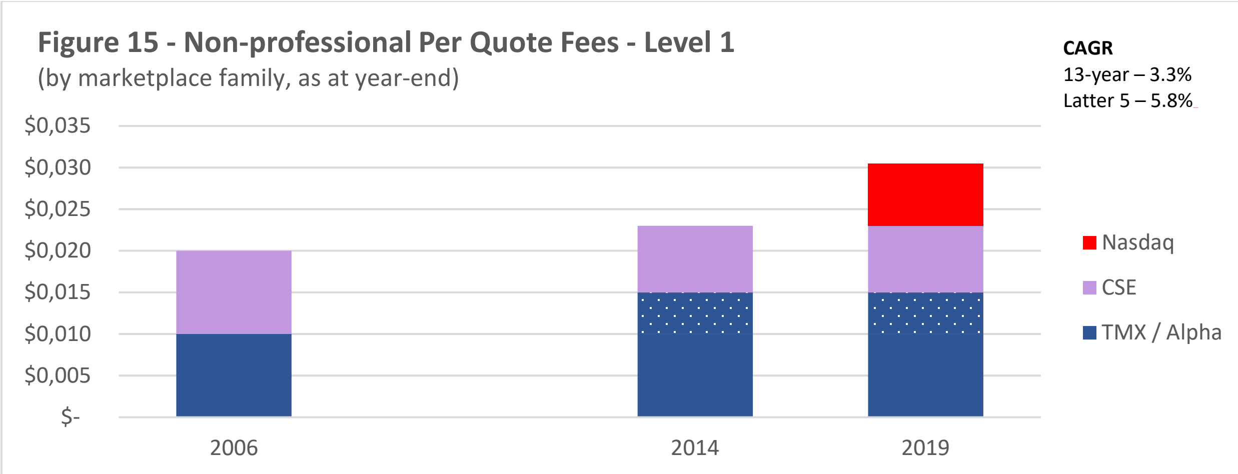
[72] TMX data policies do not allow professional users to pay on a per quote basis.
[73] Figure 15 illustrates the per quote fees for non-professional users only and only for those markets that offer quote-metred pricing.



3.2 Data Distribution Fees

Marketplaces may charge distribution and "feed fees" in connection with the internal and/or external redistribution of their RTMD feeds by market participants. The fees and fee models employed by marketplaces vary. For example, some marketplaces may include the inherent costs of connectivity in the stated distribution fee. Others may charge different amounts depending on whether the feed is obtained directly from the marketplace or indirectly from a third party (e.g., a data vendor). Some may provide discounted rates for additional instances of the feed being received or may charge tiered distribution rates based on the number of end-users serviced by a redistributed feed. As a result, there are many permutations of the resulting fees that a feed recipient might be charged for the redistribution of RTMD.

(a) Distribution Fees – External

We show, on the basis of a single instance received and redistributed, the growth rate of the redistribution fees charged in relation to RTMD received from all marketplaces for external redistribution (see Figures 16 through 19).[74] It is evident that the cumulative effect of each marketplace's (external) distribution fees when introduced has a significant impact on market participants from a cost of access perspective.

We also contrast distribution fees where the recipient is directly consuming a single instance of the applicable data feed from each marketplace for the purposes of distributing such data to a low versus a high number of external end users.[75]

[74] Figures 16 through 19 illustrate external redistribution fees for a single instance received directly from a marketplace. They capture all marketplaces for all Canadian listed securities, by marketplace family, as at year-end.
[75] The costs of directly consuming the feeds also include any logical connectivity costs explicitly associated with directly consuming a data feed for comparability given that inherent in the stated distribution fees of some markets are charges relating to logical connectivity.

Figure 16 - Level 1 - Low # End Users

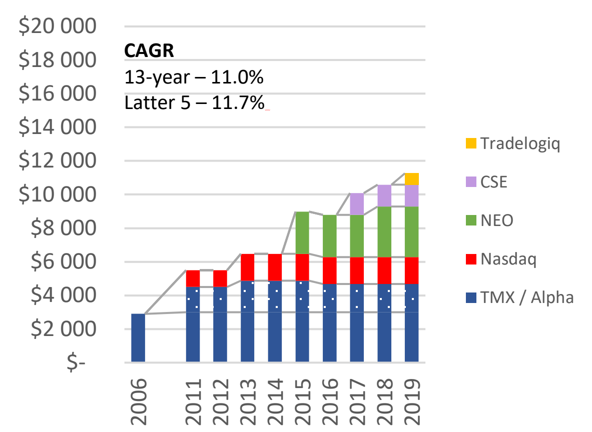


Figure 17 - Level 1 - High # End Users

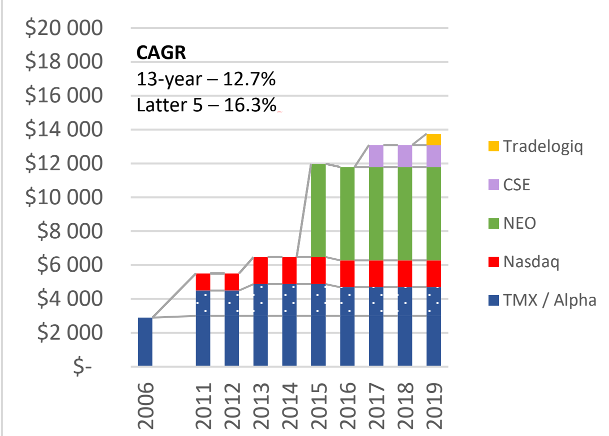


Figure 18 - Level 2 - Low # End Users

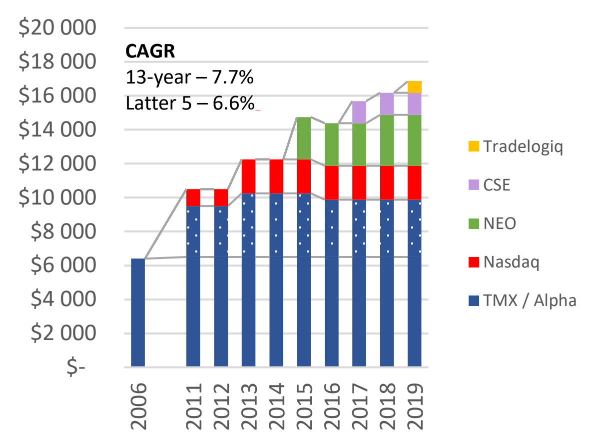
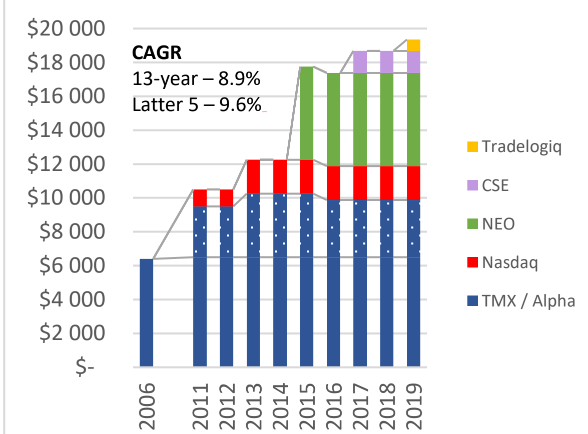


Figure 19 - Level 2 - High # End Users



We note that a market participant that redistributes RTMD might incur different costs if they choose to receive some or all of these feeds indirectly through another party and their "effective cost per feed" may vary depending on the number of instances of a feed they are consuming directly from a marketplace (see Figures 20 through 23).[76] In this case, the lower fees reflect the effect of receiving RTMD for redistribution through a third-party vendor or the absence of explicit logical connectivity charges associated with directly consuming the data. Where a data distributor chooses to consume directly from some marketplaces and indirectly from others, their monthly fees would fall somewhere between the two extremes.

[76] Figures 20 through 23 illustrate external redistribution fees for a single instance received indirectly from a marketplace (all marketplaces for all Canadian-listeds, by marketplace family, as at year-end).

Figure 20 - Level 1 - Low # End Users

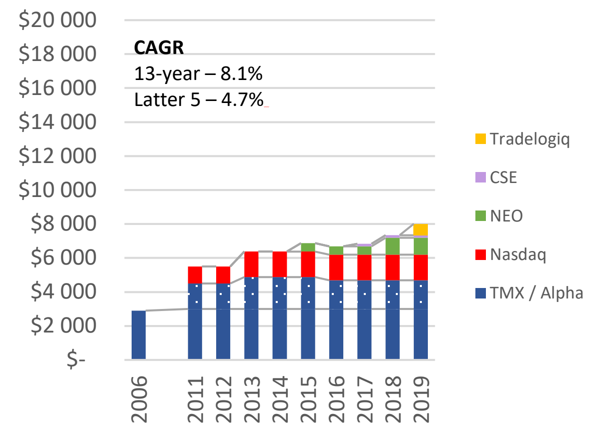


Figure 21 - Level 1 - High # End Users

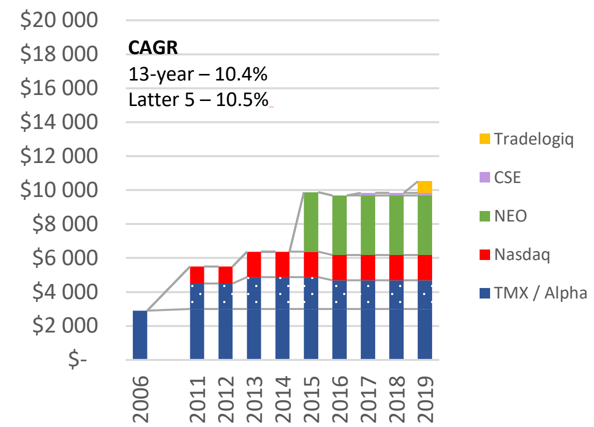


Figure 22 - Level 2 - Low # End Users

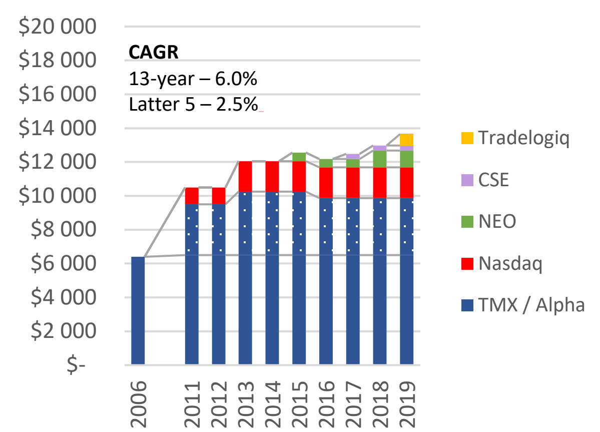
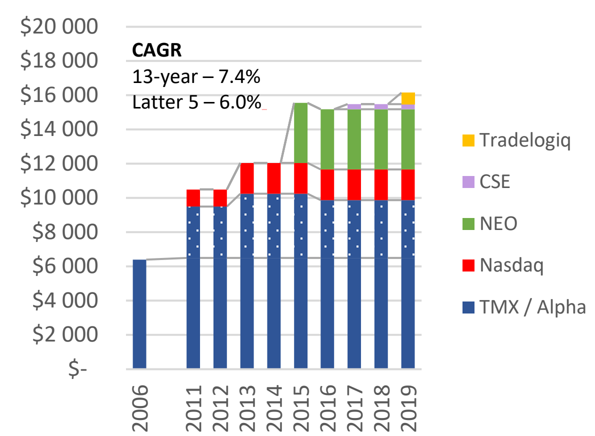


Figure 23 - Level 2 - High # End Users



(b) Distribution Fees – Internal

Similar to the section above on Distribution fees – External, we reviewed the growth rates of redistribution fees charged in relation to RTMD received from all marketplaces for internal redistribution by the data recipient (see Figures 24 through 27).[77] We also contrasted between a data recipient that is consuming data from all markets directly versus indirectly for internal redistribution only, so fees for such recipients may fall between the two extremes based on choices made regarding how the feed is consumed. In each case, we note the cumulative effect on the data recipient of each marketplace's fees when introduced.

[77] Figures 24 through 27 illustrate internal redistribution fees for a single instance received directly or indirectly (all marketplaces for all Canadian-listeds, by marketplace family, as at year-end).

Figure 24 - Level 1 - Direct

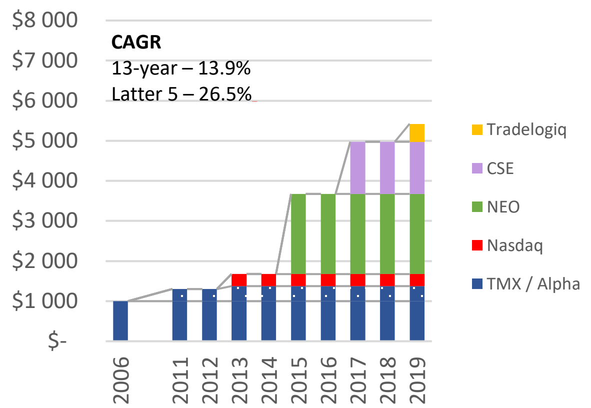


Figure 25 - Level 1 - Indirect

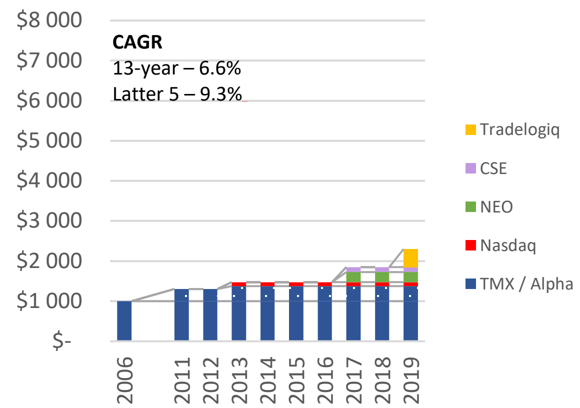


Figure 26 - Level 2 - Direct

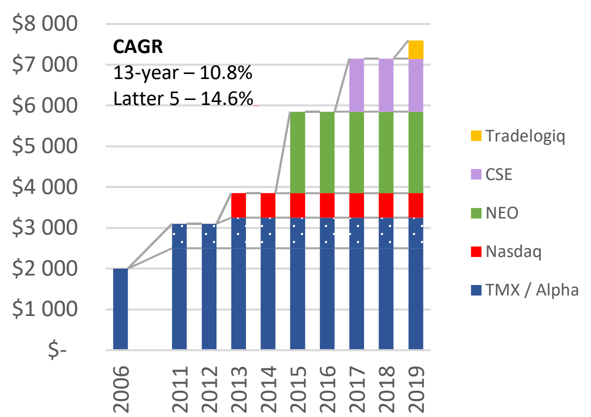
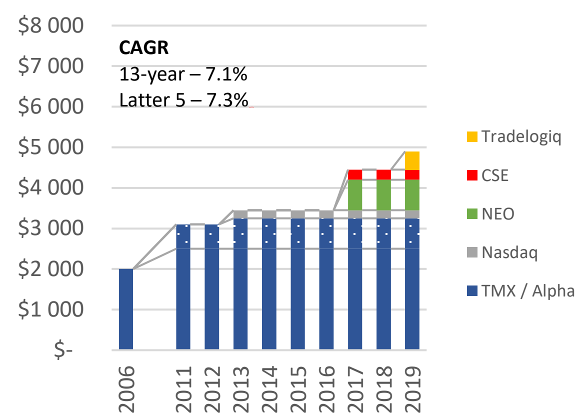


Figure 27 - Level 2 - Indirect



(c) Non-display Fees – Use of RTMD in Analysis Programs or for Order Generation/Trading Applications

Non-display fees are charged by marketplaces on a monthly basis for the use of RTMD for analysis programs or order generation and/or trading applications (including for smart order routing and algorithms). At the end of 2019, most marketplaces were charging separate, non-display fees for the use of their RTMD for analysis programs versus use for order generation and/or trading applications. One marketplace also provided for discounted rates for those paying for both use cases.

We note a significant growth in these fees for those data recipients that need to use RTMD from all marketplaces for these purposes (see Figures 28 and 29[78] for non-display fees for analysis programs and Figures 30 and 31[79] for non-display use for order generation), arising from the cumulative effect of each marketplace's fees when introduced.

[78] Figures 28 and 29 illustrate monthly fees for the use of RTMD for use in analysis programs (all marketplaces for all Canadian-listeds, by marketplace family, as at year-end).

[79] Figures 30 and 31 illustrate monthly fees for the use of RTMD for use in order generation/trading applications (all marketplaces for all Canadian-listeds, by marketplace family, as at year-end).

Figure 28 - Analysis Programs - Level 1

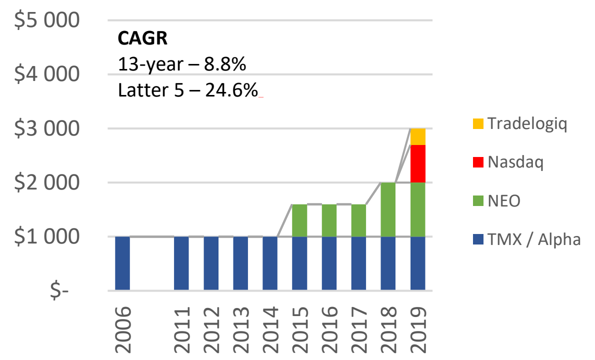


Figure 29 - Analysis Programs - Level 2

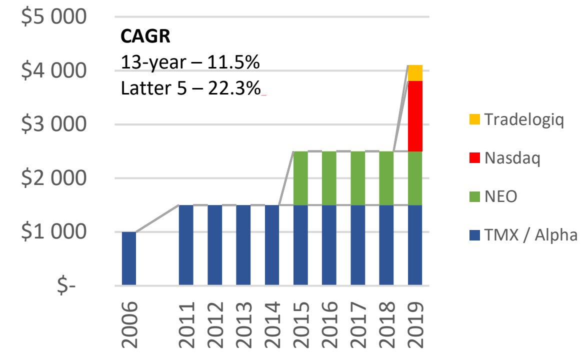


Figure 30 - Order Gen./Trading - Level 1

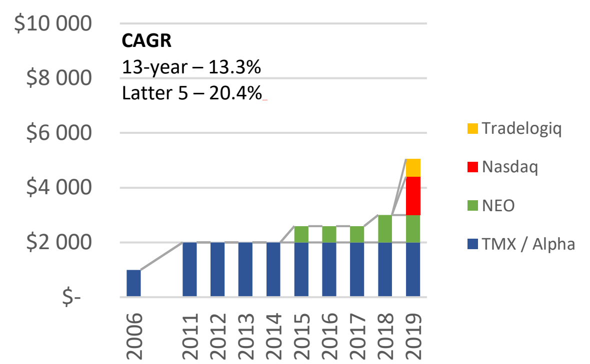
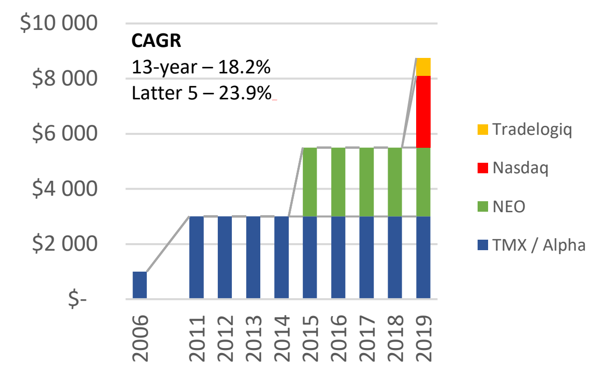


Figure 31 - Order Gen./Trading - Level 2



Item 4 – Review of Certain Indicators relating to Access to Consolidated Data by Professional and Non-professional Subscribers

Market participants indicated that, in certain circumstances, access to and use of Level 2 consolidated RTMD is only provided to those professional and non-professional users for whom the need for such data sufficiently outweighs the incremental costs of purchasing it (i.e., trading desks). This approach has raised questions related to whether providing access to and use of consolidated Level 1 and Level 2 RTMD based on cost constraints is aligned with the requirements of fair access and ensuring fair and orderly markets.

Market participants also indicated that fair access does not necessarily mean equal access and that mandating a vendor display rule in Canada, similar to the one in the US, would have a significant impact on the bottom line of those participants that would become subject to such a rule.

To understand whether this approach is reasonable or requires any regulatory action, we considered:

1. the take-up of consolidated data by professional and non-professional subscribers;
2. the need for consolidated RTMD beyond Level 1 consolidated RTMD from listing markets; and

3. the impact of the cost of providing professional and non-professional subscribers access to consolidated Level 2 RTMD.

4.1 Indicators of Take-up of Consolidated Data

(a) Professional Subscribers

To gauge the use of consolidated Level 1 and/or Level 2 RTMD by professional and non-professional users we reviewed their take-up of consolidated data. Most of the market participants that provide consolidated Level 2 RTMD to internal users and clients do so by purchasing it directly from marketplaces or indirectly from third-party vendors and less so from the equity IP. Consequently, we observed the take-up of consolidated RTMD from marketplaces only based on the information about subscriber counts for TSX-listed securities provided by each marketplace.

We estimated that in 2019, the number of professional subscribers to Level 2 RTMD was around a quarter of the estimated Level 1 professional subscriber population (for TSX-listeds). Similar ratios were observed for TSXV-listed securities. However, we expect that the ratios for CSE- and NEO-listed securities would be lower as the liquidity for these securities was less fragmented across multiple trading venues. Our assumption is also based on the lack of observed take-up where an away venue charged subscription fees for data on these listed securities.

Figure 32 highlights the difference in take up of consolidated Level 1 and Level 2 RTMD amongst professional subscribers.[80] We note the much lower take-up of Level 2 consolidated RTMD by professional subscribers. This seems to support the view that Level 2 consolidated RTMD is being used mostly by those professional subscribers that have trading responsibilities given that, in this case, the cost of access to and use of such data is justified by the specific activities being performed. It also seems to indicate that other professional subscribers, such as portfolio managers and RIAs, have access only to Level 1 RTMD from the listing markets for indicative pricing purposes because the scope of their activities is limited in relation to the services being performed.

Figure 32 - Comparison of Professional Subscriber Counts - TSX-listeds
(index basis - listing market Level 1 as base; as at December 2019, est.)

[80] Based on subscriber counts for TSX-listed data provided by the marketplaces. Listing market (TSX) is shown on an index basis to mask the number of subscribers. Away markets are in no particular order and the ordering of the away markets as presented between Level 1 and Level 2 has been randomized.

(b) Non-professional Subscribers

We also observed that non-professional subscribers are typically limited to accessing RTMD from the listing markets. Figure 33[81] indicates that perhaps one percent or less of non-professional subscribers have access to consolidated RTMD.[82]

We understand that the broader population of non-professional subscribers typically consumes data on a quote-metered basis and that user population would not otherwise be included in the subscriber counts reflected in Figure 33 above.[83] However, revenue data provided by marketplaces would suggest that virtually all non-professional subscribers accessing data on a quote-metered basis only have access to data from the listing markets.[84]

4.2 Assessing the Need for Consolidated Data beyond Level 1 Consolidated RTMD

As stated above, certain users of RTMD, such as RIAs and most retail investors, only have access to RTMD (or, in some cases, delayed data) in consolidated or non-consolidated form from listing markets and use this information for making trading and investment decisions or updating their investment portfolios. This type of access only provides, at best, indicative pricing information. We questioned whether this type of access is fair and aligns with each user's data needs (i.e., seeing best price versus a price that might at best approximate the best price) to make investment decisions and/or order type choices (i.e., marketable versus non-marketable limit order).

[81] See footnote 80 also applicable for Figure 33. Also incorporated in Figure 33 are the counts for non-professional subscribers included in the listing market's enterprise pricing program.

[82] We understand that many (if not most) of the non-professional subscriber counts for the listing market reflect retail users that were treated as "subscribers" as their quote-usage was subject to caps by the listing market at the amounts otherwise chargeable under the monthly subscription rates. This could have the effect of understating the indicated percentage of retail users that have access to consolidated data. However, as indicated in the subsequent commentary after Figure 33, the premise that most retail users do not generally have access to consolidated data was also supported by our analysis of marketplace quote-usage revenue.

[83] Aside from those non-professional subscribers that were quote users capped at the monthly subscription rates as described in footnote 82.

[84] Based on almost all aggregate revenue from quote-metered revenue being earned by the listing markets despite certain non-listing markets providing the option (and fees) for quote-metered access.

To evaluate whether having access to indicative pricing information is fair, we conducted a quantitative analysis of:

1. The extent to which access to Level 1 RTMD from listing markets is sufficient to observe best price by calculating the percent of time that the listing market had the National Best Bid (**NBB**) and the National Best Offer (**NBO**), and

2. The extent to which access to Level 1 RTMD from listing markets is sufficient to observe the full size available at the best price at each order size threshold by calculating the time weighted average size of the listing market versus market-wide.

(a) Analysis of Percent of Time that Listing Market has the NBB or the NBO

The analysis indicates that access to Level 1 RTMD from listing markets only appears to be generally sufficient in most cases where the user (either a retail investor, RIA, or portfolio manager) seeks access to best price information, other than for TSX-listed ETFs that are "highly-liquid" or "medium-liquid."[85] For example, the data indicated that for "highly-liquid" TSX-listed ETFs, the listing market was at the NBB/NBO for 90 percent of the time or greater for 64 percent of symbol/day NBB/NBO observations, and that for 16 percent of observations, the listing market had the best price for less than 75 percent of the day.

The analysis also indicates that a lower likelihood of seeing the best price occurs with "highly-liquid" or "medium-liquid" TSXV-listed securities when a subscriber has access to Level 1 consolidated RTMD from TSXV only. NEO-listed securities generally exhibited the highest percentages across the various categories, likely a result of the fact that only a limited number of marketplaces were offering trading in NEO-listed securities, with minimal loss of market share to NEO, resulting in less fragmented trading and quoting activity.

Tables 1-3 – Assessment of proportion of symbol/day NBB/NBO observations where the listing market percent of time at the NBB/NBO that fell within the identified percentage time buckets[86,87]

(Based on quote data for the month of September 2021)

[85] Symbols were classified as "highly-liquid," "medium-liquid," and "less-liquid" based on trade activity levels over the month, as follows:

"Highly-liquid" – average traded value > $1 million per day and average # of trades / day > 100;
"Medium-liquid" – average traded value > $50,000 per day and average # of trades / day > 50; and
"Less-liquid" – everything not considered "highly-liquid" or "medium-liquid."

[86] For each symbol/day observation, the listing market's percent of time at the NBB (and percent of time at the NBO) during continuous trading hours was determined for all time periods where there was a non-zero market wide NBB (NBO). The NBB (NBO) was determined based on all displayed prices (i.e., included protected and unprotected visible markets). The tables compile the number of observations of individual symbol/day NBB and symbol/day NBO observations whereby the listing market's percent of time at the NBB (NBO) exceeded the identified threshold.

[87] Calculations were based on individual marketplace quote messages for all ETFs and equities over the month of September 2021 available in the CSA MAP system (data provided to CSA MAP by IIROC). Equities category also includes rights, warrants, and preferred shares.

Table 1 – Observations for Highly-liquid[88] Equities and ETFs

	ETFs				Equities							
% time at NBB / NBO	TSX-listed		NEO-listed		TSX-listed		TSXV-listed		CSE-listed		NEO-listed	
Under 50%	330	5%	0	0%	57	0%	2	0%	1	0%	0	0%
50% to 74%	784	11%	0	0%	439	3%	99	5%	37	4%	0	0%
75% to 89%	1,377	20%	0	0%	1,458	9%	385	21%	116	12%	0	0%
90% and over	4,523	64%	42	100%	14,392	88%	1,362	74%	802	84%	126	100%
Total count	7,014	100%	42	100%	16,346	100%	1,848	100%	956	100%	126	100%

Table 2 – Observations for Medium-liquid[85] Equities and ETFs

	ETFs				Equities							
% time at NBB / NBO	TSX-listed		NEO-listed		TSX-listed		TSXV-listed		CSE-listed		NEO-listed	
Under 50%	736	13%	0	0%	52	0%	256	2%	70	1%	1	0%
50% to 74%	934	17%	9	3%	186	2%	753	5%	213	4%	5	1%
75% to 89%	1,108	20%	13	4%	383	3%	1,660	12%	439	7%	13	2%
90% and over	2,770	50%	272	93%	10,719	95%	11,126	81%	5,362	88%	613	97%
Total count	5,548	100%	294	100%	11,340	100%	13,795	100%	6,084	100%	632	100%

Table 3 – Observations for Less-liquid[85] Equities and ETFs

	ETFs				Equities							
% time at NBB / NBO	TSX-listed		NEO-listed		TSX-listed		TSXV-listed		CSE-listed		NEO-listed	
Under 50%	2,344	7%	36	1%	158	1%	1,680	3%	278	1%	23	1%
50% to 74%	1,708	5%	52	1%	150	1%	1,073	2%	147	1%	29	1%
75% to 89%	1,862	6%	51	1%	241	1%	1,454	2%	262	1%	27	1%
90% and over	25,944	81%	3,359	96%	26,983	98%	55,107	93%	20,382	97%	1,961	96%
Total count	31,858	100%	3,498	100%	27,532	100%	59,314	100%	21,069	100%	2,040	100%

(b) Analysis of Listing Market versus Market-wide Time-weighted Average Size (TWA)

This metric is a proxy for the extent to which users that only have access to Level 1 consolidated RTMD from listing markets are not seeing the full size available at the best price at each order size threshold. Access to size/depth information available at the best price is only relevant for those non-professional subscribers (i.e., retail investors) that intend to trade immediately. This information is important when deciding whether to post a limit order and wait, rather than cross the spread with a marketable order, if the displayed order size is less than the amount sought to trade, and the expected average fill price cannot be estimated without access to it. The size/depth the investor sees at the best price may also influence his or her decision to post at a price that is worse or better than what he or she believes to be the best price.

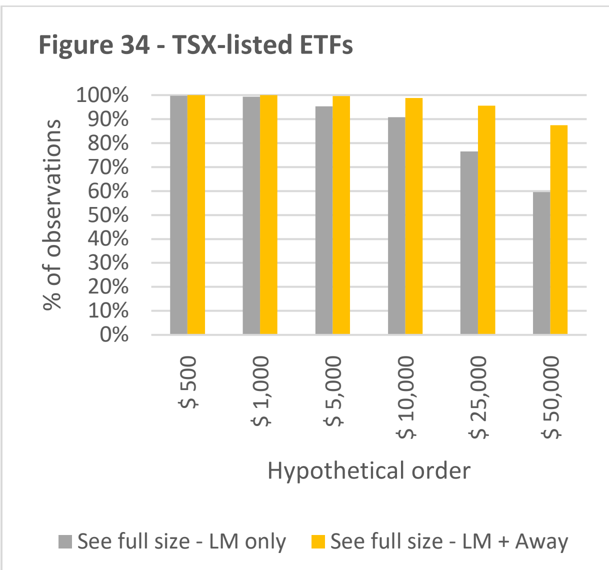
We examined the impact of accessing Level 1 consolidated RTMD from listing markets only versus Level 2 consolidated RTMD for several hypothetical typical retail order sizes and types (such as limit or marketable orders). Figures 34 through 39 show that the percent of observations where the TWA for the symbol/day NBB (NBO) was less than the threshold decreases as the hypothetical order size threshold increases. More notably, the gap between the results for the listing market (**LM**) size versus total market (**LM + Away**) size increases as the hypothetical order threshold increases.

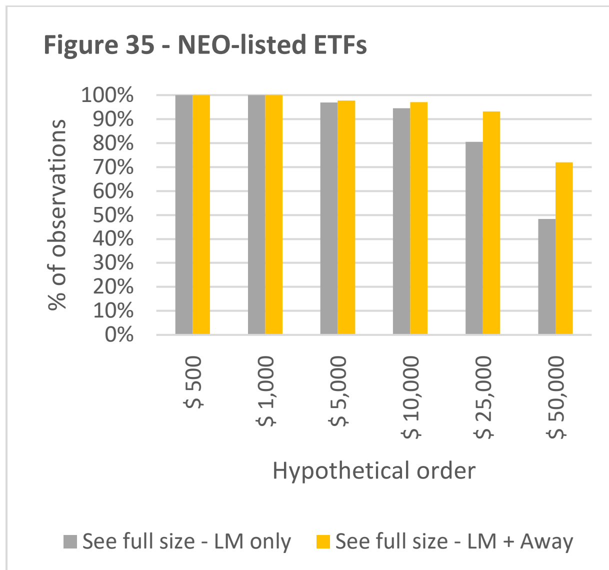
[88] See footnote 85 for definitions of "highly-liquid," "medium-liquid," and "less-liquid."

The gap begins to widen significantly for TSX, TSXV, and CSE-listed securities above the $1,000 hypothetical order threshold. For ETFs, the gap becomes more pronounced after the $10,000 threshold. In our view, this indicates that the likelihood that a retail investor is missing relevant information increases above these identified levels if it only has access to Level 1 consolidated RTMD from the listing market. The analysis also suggests that for low value orders (orders with a value of $1000 or less), access to Level 1 consolidated RTMD from the listing market only generally provides sufficient information about the available volume.

Figures 34 through 39 – Analysis of percent of symbol/day observations where time-weighted average displayed NBB/NBO size is greater than hypothetical retail customer order

(Based on quote data for the month of September 2021) [89,90]





[89] For each symbol/day observation, the TWA value at the NBB (and at the NBO) during continuous trading hours for each of the listing markets and market-wide was determined for all time periods where there was a non-zero market-wide NBB (NBO). The TWA value for each of the NBB (NBO) was determined based on size available on all visible marketplaces (i.e., including protected and unprotected visible markets). The charts reflect the percentage of the symbol/day NBB and NBO observations where the calculated TWA value for the observation exceeded the stated hypothetical order threshold.

[90] See footnote 87 for information about source of data and security type categories.

Figure 36 - TSX-listed Equities

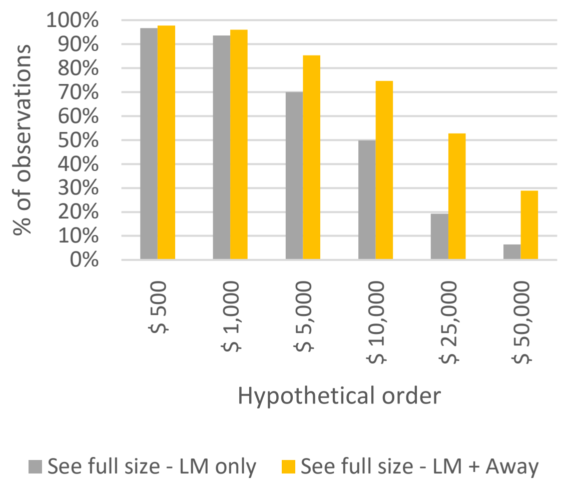


Figure 37 - TSXV-listed Equities

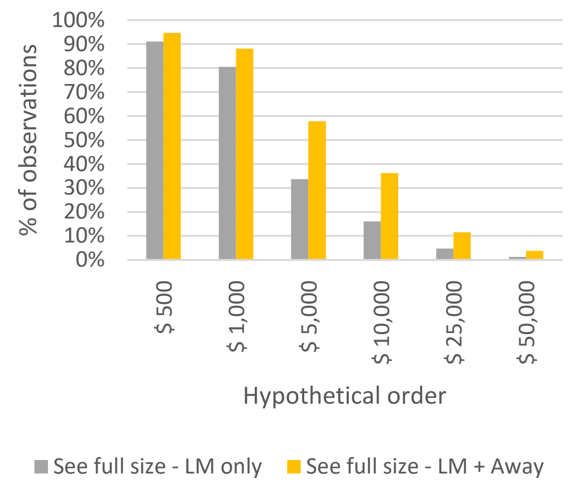


Figure 38 - CSE-listed Equities

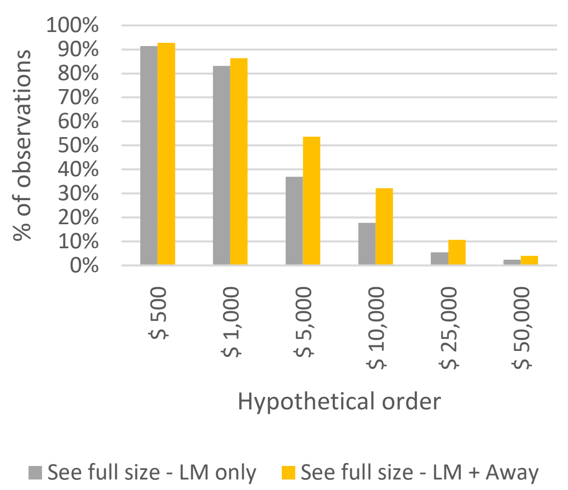
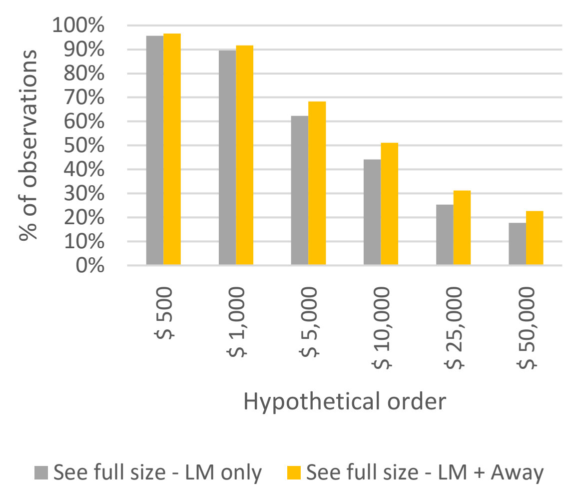


Figure 39 - NEO-listed Equities



4.3 The Impact of Cost on Providing Access to Level 2 Consolidated RTMD

Our understanding is that the decision to provide access to Level 2 consolidated RTMD is mostly based on cost and that such cost is not always justified by the needs of users. We also understand that dealers will often provide their retail clients and wealth advisors/RIAs with access to Level 1 consolidated RTMD from listing markets only based on needs, costs, or the trade-off between both. We were informed that the costs of providing access to Level 2 consolidated RTMD can be significant, particularly for those dealers with a significant number of retail clients. These cost concerns continue despite certain marketplaces providing reduced monthly subscriber fees for RIAs that service retail clients.[91]

[91] As at December 2019, only NEO Exchange offered reduced display fees for “retail-professional users” that would apply to wealth advisors/RIAs.

We observed that where costs are a deciding factor, providing access to Level 2 consolidated RTMD would as much as double, in many cases, the cost to consume data from all marketplaces as compared to only the listing markets[92](see Figures 40 through 43).

While the effect of enterprise agreements or similar arrangements can help to reduce the effective costs per user, not all marketplaces offer such programs. Some marketplaces will allow for a non-professional's quote usage charges in any given month to be capped at the amount otherwise charged for a monthly subscription, which could also help to limit overall costs. Regardless, the figures below suggest that a dealer with a large number of retail clients or a large number of RIAs deciding to provide access to Level 1 consolidated RTMD from all marketplaces would incur an immediate and significant cost impact from such a decision. The cost impact would be double should the same dealer provide access to Level 2 consolidated RTMD to all.

Figures 40 through 43 – Monthly subscriber and quotation fees for listing markets versus all markets[93,94]

(Based on pricing as at December 2019)

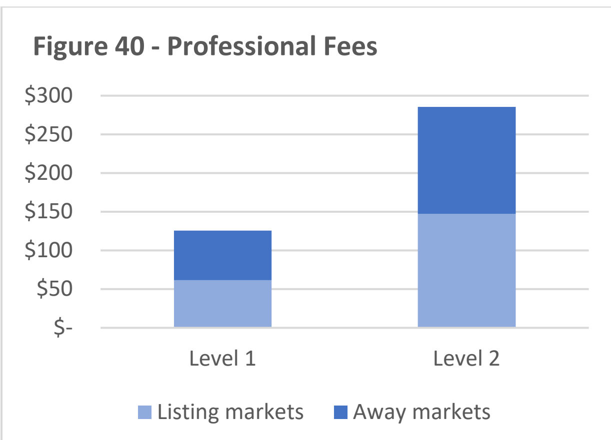


Figure 40 - Professional Fees

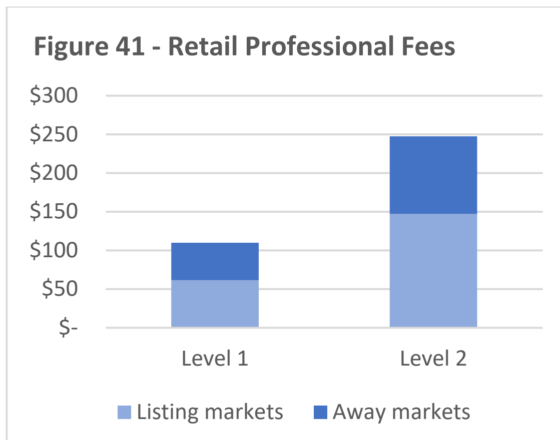
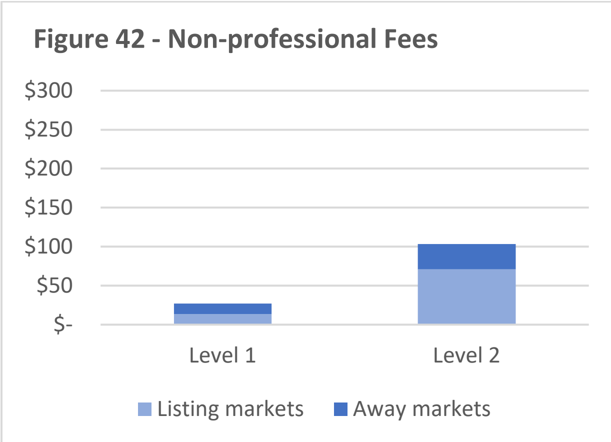


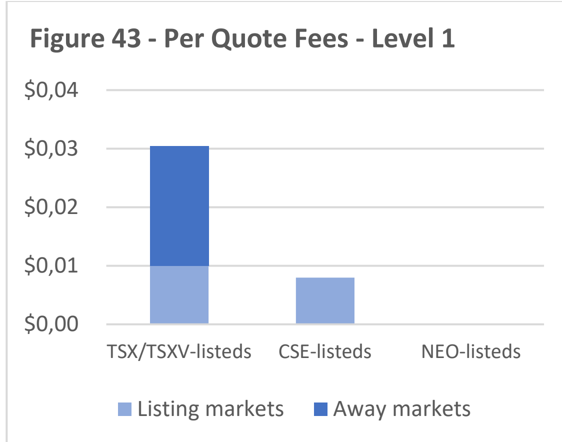
Figure 41 - Retail Professional Fees

[92] Not all marketplaces currently provide quote-metered pricing which may also mean that a dealer that provides consolidated data to its retail client based on a quote-metered basis might become subject to the monthly non-professional subscriber fee of any such marketplace by virtue of a client consuming a single quote during the month.

[93] Figures 40 through 42 represent monthly subscriber fees for listing market data only (TSX-listed, TSXV-listed, CSE-listed, and NEO-listed) versus the amounts charged to consume data on those listed securities by markets other than the listing market.

[94] Figure 43 includes only those marketplaces that offered quoted-metered pricing (including where the stated price was $0.) See footnote 92 for additional info on quote-metered pricing. As at December 2019, for TSX- and TSXV-listeds, there were no differences in the stated per quote rates; for CSE-listeds, the only other visible marketplaces that offered per-quote metered pricing were Nasdaq CXC and Nasdaq CX2; for NEO-listeds, no other visible marketplaces traded NEO-listeds.





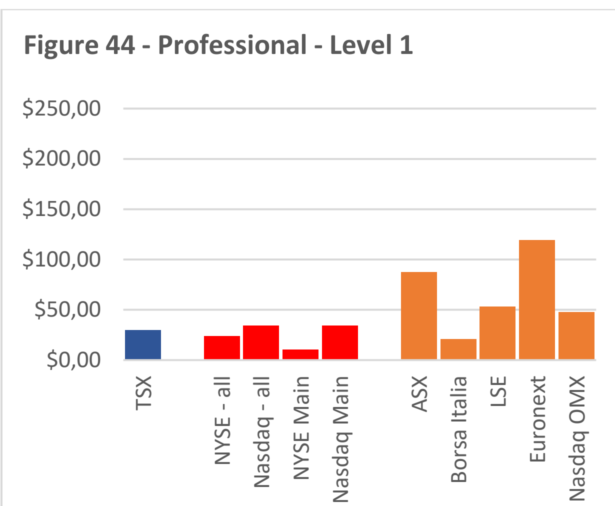
Item 5 – Comparison of Certain Data Subscription Fees Against Other Benchmarks

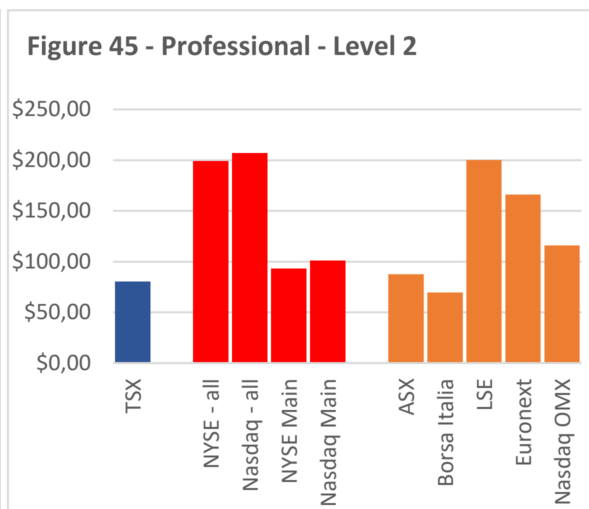
To further assess the level of RTMD fees charged in Canada relative to other international trading venues we compared subscriber fees charged by TSX against similar fees charged by key exchanges in the US, Europe, and Australia for benchmarking purposes.[95] We also compared the rate for consolidated data in Canada against rates available in the US.

5.1 Professional Subscriber Fees

(a) Professional – Comparison of TSX Fees against International Comparables

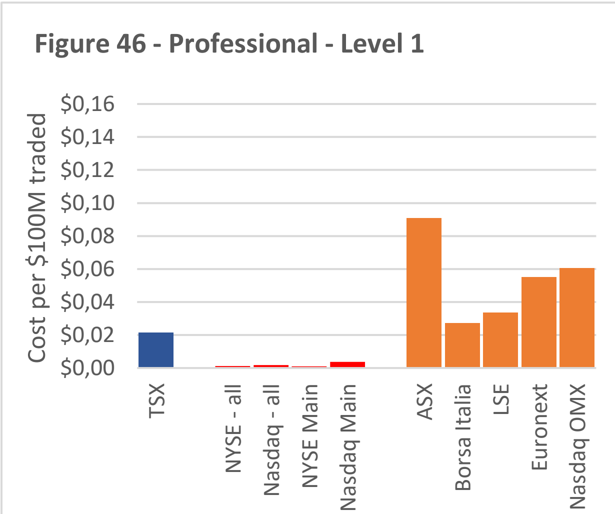
We note that, on an absolute dollar basis, TSX's professional fees appear to be comparable and/or favourable to those charged by US and international markets fees (see Figures 44 and 45).[96]

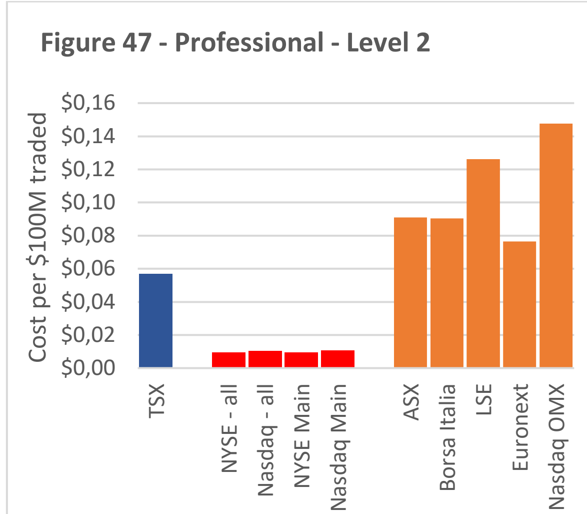




[95] Fees for non-Canadian markets used herein are sourced from publicly available fee schedules applicable as at December 2019 for the most comparable product and converted to CAD at prevailing foreign exchange rates.
[96] Figures 44 and 45 compare the monthly professional fees charged by TSX versus other exchanges on an absolute dollar basis (based on pricing as at December 2019, all figures converted to CAD).

On a relative value basis, however,[97] TSX's fees are significantly higher than those charged by US exchanges but appear to be favourable relative to those charged by exchanges elsewhere (see Figures 46 and 47).[98]





(b) Professional – Comparison of Consolidated Fees for Canada versus the US

We note that consolidated fees for Canada versus the US appear comparable on an absolute dollar basis but are significantly higher in Canada when compared on a relative value basis (see Figures 48 and 49).[99]

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[97] Relative value basis used herein normalizes each marketplace's fees to a per $100M monthly traded value by market, with both the fees and monthly value traded converted to CAD at prevailing foreign exchange rates. Monthly traded values for non-Canadian markets were sourced from publicly available information on US and EU exchanges' websites.

[98] Figures 46 and 47 compare the monthly professional fees charged by TSX versus others exchanges on a relative value basis (based on pricing as at December 2019, all figures converted to CAD).

[99] Figures 48 and 49 compare monthly professional fees of Canadian consolidated fees versus US consolidated fees (based on pricing as at December 2019, all figures converted to CAD).

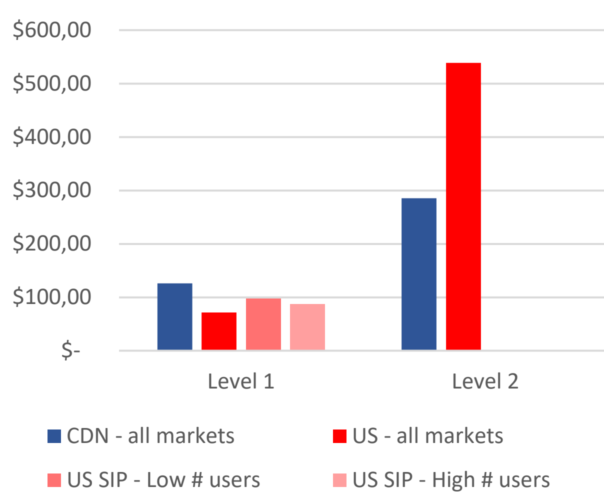


Figure 48 - Absolute $ Basis

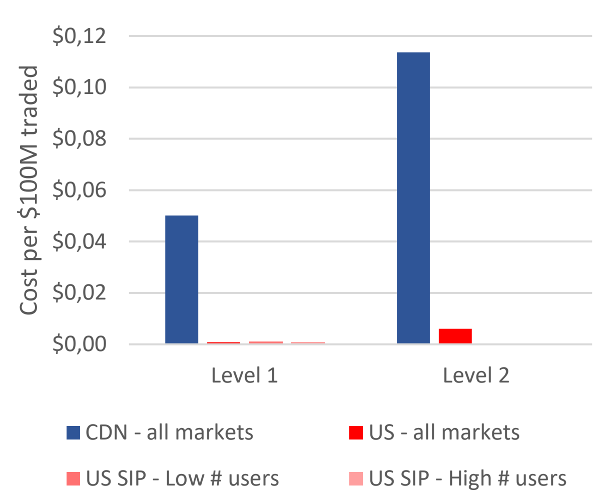


Figure 49 - Relative Value Basis

5.2 Non-professional Subscriber Fees

(a) Non-professional – Comparison of TSX Fees against International Comparables

We observed that, on an absolute dollar basis, TSX's non-professional fees appear to be high relative to most US and international exchanges. In the US, the non-professional fees charged by individual markets for access to Level 1 RTMD are likely constrained by the low rates charged by the regulated securities information processors (**SIPs**) for consolidated data (see Figures 50 and 51).[100]

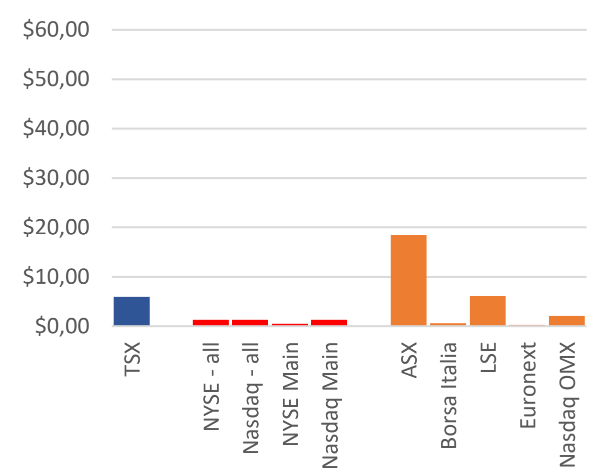


Figure 50 - Non-professional - Level 1

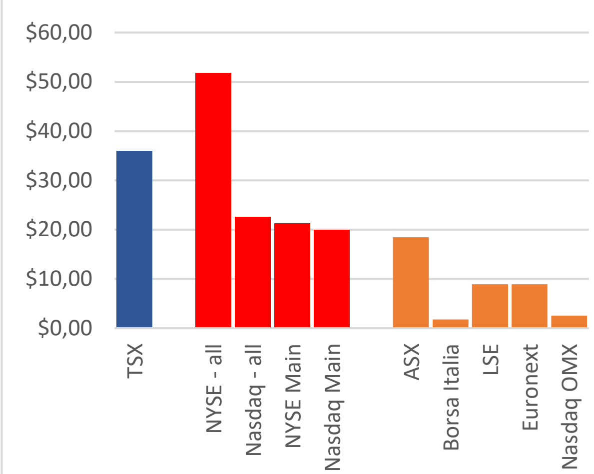
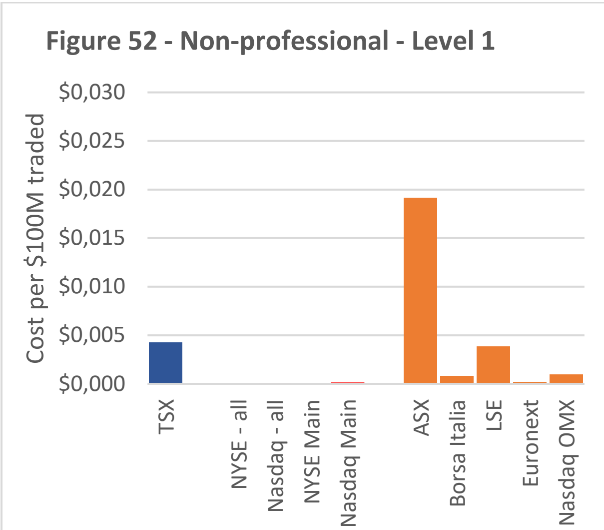
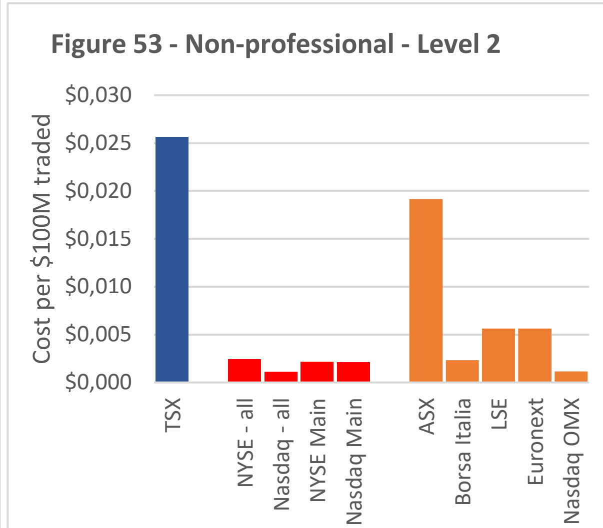


Figure 51 - Non-professional - Level 2

[100] Figures 50 and 51 show a comparison of the monthly non-professional fees charged by TSX versus other exchanges on an absolute dollar basis (based on pricing as at December 2019, all figures converted to CAD).

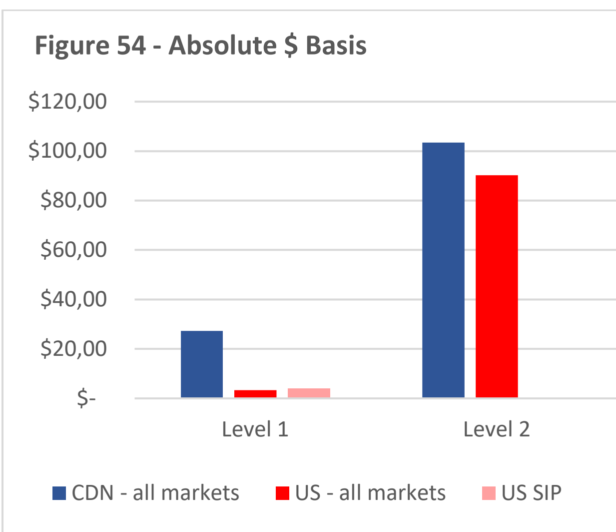
We also observed that when compared on a relative value basis (monthly fees per CAD $100M in monthly value traded), TSX's fees are significantly higher than those charged by US exchanges (Figures 52 and 53).[101]

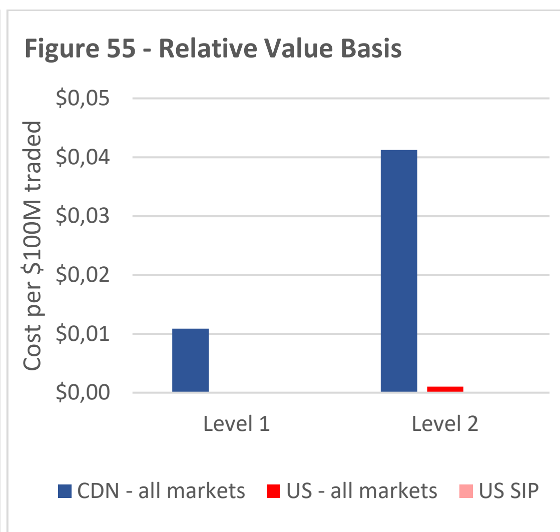




(b) Non-professional – Comparison of Consolidated Fees for Canada versus the US

We note that consolidated fees for Canada versus the US appear to be high on an absolute dollar basis but are significantly higher when compared on a relative value basis. As noted earlier, non-professional fees charged by the regulated SIPs in the US are constrained to considerably lower rates (see Figures 54 and 55).[102]

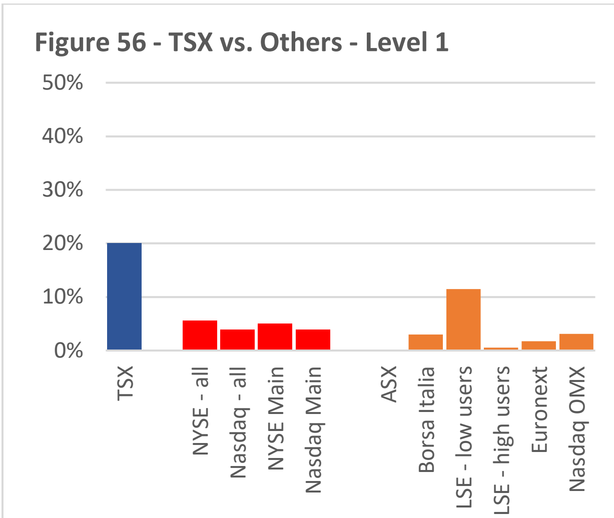


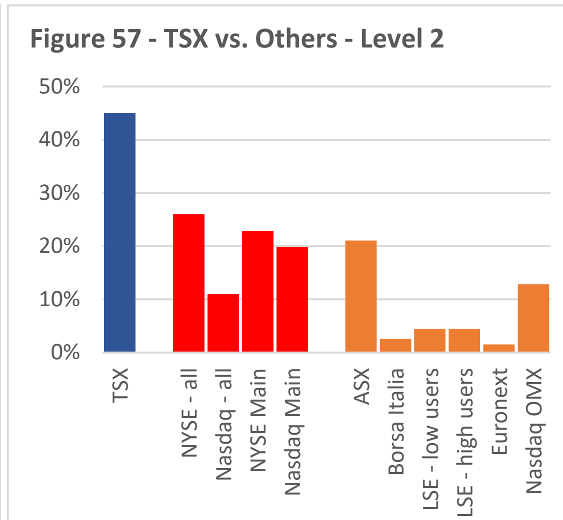


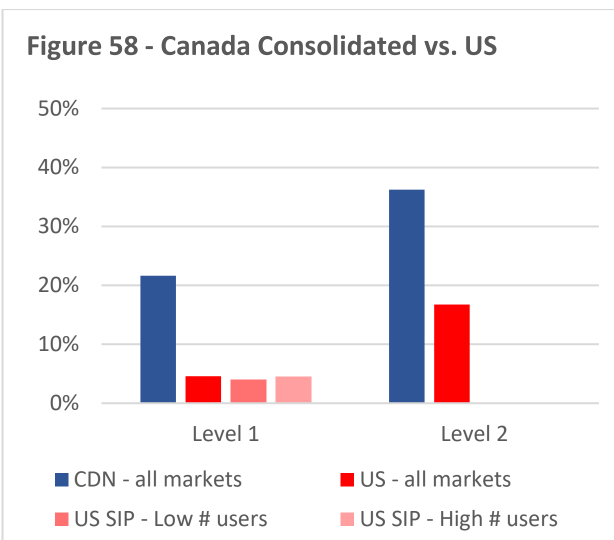
[101] Figures 52 and 53 show a comparison of the monthly non-professional fees charged by TSX versus other exchanges on a relative value basis (based on pricing as at December 2019, all figures converted to CAD).
[102] Figures 54 and 55 show comparisons of monthly consolidated non-professional fees charged in Canada versus the US (based on pricing as at December 2019, all figures converted to CAD).

(c) Non-professional as a Percentage of Professional Fees

We also examined non-professional fees as a percentage of professional fees on an absolute dollar basis as an additional means of assessing whether these fees might be high (see Figures 56, 57, and 58).[103, 104] We note that non-professional fees in Canada, when measured as a percent of professional fees, are considerably higher than elsewhere. This applies when comparing TSX to the US and international markets, or when comparing consolidated fees for Canada to the US.







[103] Figures 56 and 57 illustrate the monthly non-professional fees as a percentage of professional fees charged by TSX versus others (based on pricing as at December 2019). Non-professional fees as a percentage of professional fees are based on the stated non-FX adjusted rates for non-Canadian markets.

[104] Figure 58 illustrates the monthly non-professional fees as a percentage of professional fees in Canada versus the US (based on pricing as at December 2019). Non-professional fees as a percentage of professional fees are based on the stated non-FX adjusted rates for non-Canadian markets.