Equity Research Desk

A Proposed Regulatory Approach to Accommodate Multiple Venues in Capital Markets

Comments Ahead of Public Hearing on ICVM 461

May 2020

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Index

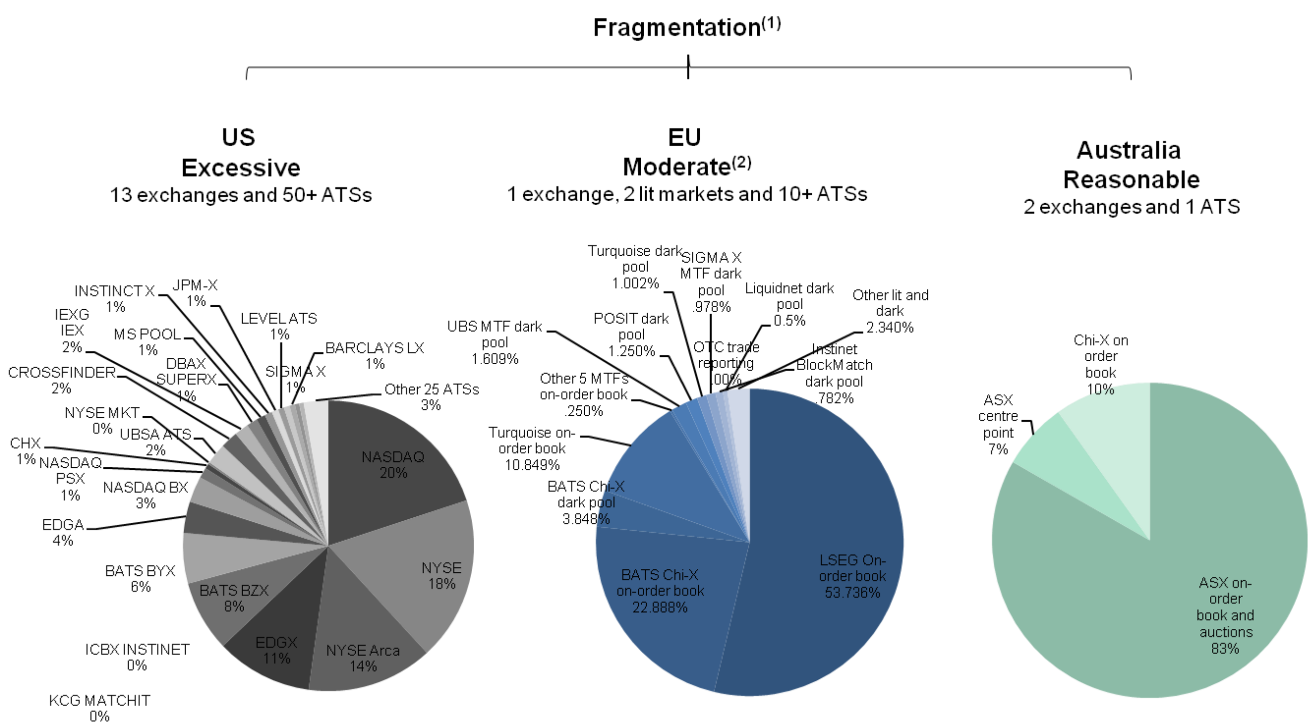
1. Executive Summary

Several capital markets, like the US, EU, Canada, and Australia, have introduced new rules that enabled competition among execution venues. While this led to multiple venues catering specific needs of different market participants, it has also created excessive fragmentation of liquidity, which has weakened price discovery and increased trading costs to intermediaries and investors.

CVM is currently drafting rules to accommodate multiple venues. In light of this, CVM published EDITAL SDM No. 9/19. We note that some articles of this proposed regulation will have significant impact on the market and its activity, and therefore CVM would benefit from drawing attention to some international experiences on the matter. In turn, this would allow Brazil´s capital markets to minimize the adverse effects of fragmentation experienced in other international markets, in order to assure that the benefits of competition surpass the incremental costs incurred by the industry.

In Canada, excessive fragmentation caused by rebates and the so-called Order Protection Rule (OPR) deteriorated domestic liquidity and the market expatriated even further to the US. Since Brazil is also vulnerable to expatriation of its capital markets, CVM should rather follow Australia's meticulous process to accommodate competition.

Chart 1: Fragmentation of US, EU and Australian Execution Venues



(1) Multilateral venues: Lit+Dark
(2) UK as representative of each European domestic market

Source: BATS, ASIC, Thomson Reuters

2. Introduction

In the US, the regulatory set up led to an explosion in the number of execution venues, driven by rebates and exacerbated by Regulation National Market System (Reg. NMS) order protection rule (OPR). The advantages of competition clearly depleted when the number of venues increased exponentially and brokers were required to connect to all of them. Nowadays, there is questioning if all 63 trading venues are really necessary.

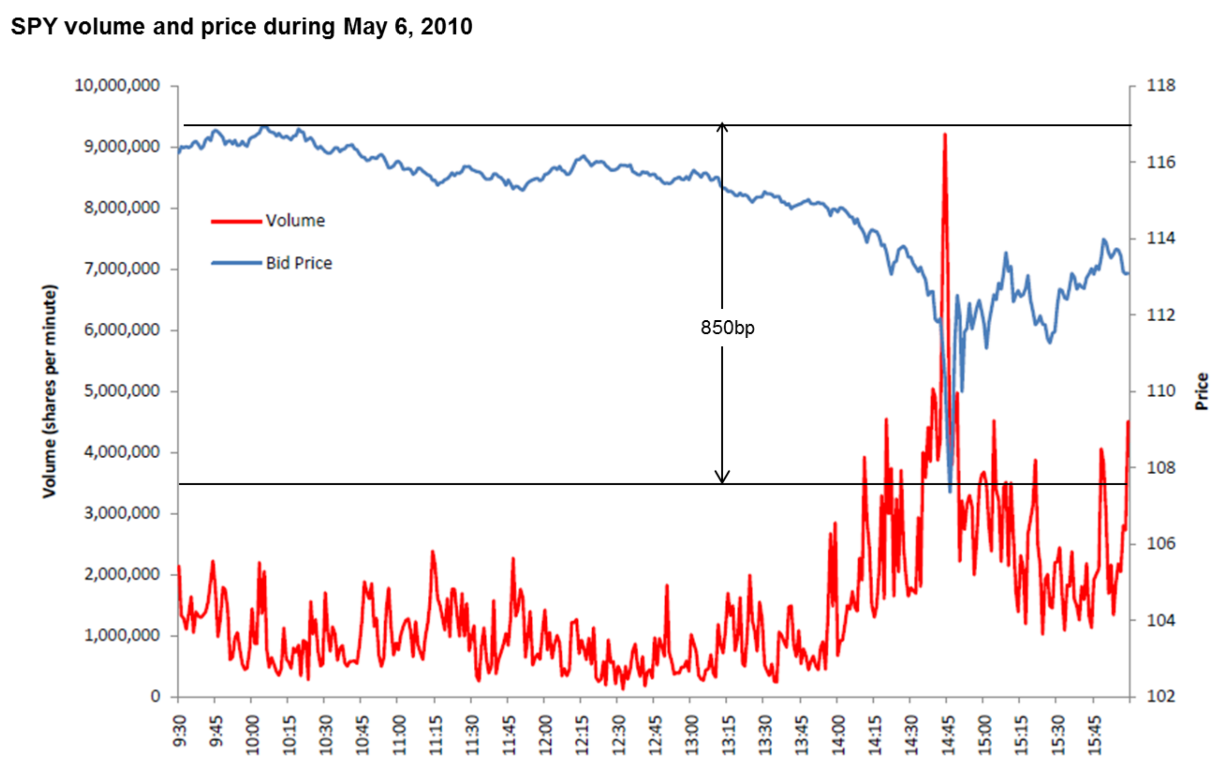
This paper intends to identify problems with rules to accommodate multiple venues and minimize the adverse effects of fragmentation experienced in other international markets so the benefits of competition may surpass the incremental costs to be incurred by the industry.

The excessive fragmentation has been driven by unnecessary rules as described by the SEC Commissioner Aguilar, at the U.S. Equity Market Structure Revision on May 11, 2015, according to the quote below:

“. . . to comply with the order protection rule of Reg NMS, trading venues and broker-dealers have developed elaborate IT systems to monitor the prices of all NMS stocks on all lit exchanges, and to route orders accordingly. These entities claim that this tangle of data connections adds needless complexity and cost, and makes our markets overly fragile.”

This fragility became evident during the flash crash of May 2010, when the market plunged 9% within minutes, and recovered a large part of this loss in an equally short time span, as can be seen on Chart 2.

Chart 2: The Flash Crash of May 2010



Source: Report of the staffs of the CFTC and SEC to the Joint Advisory Committee on Emerging Regulatory Issues. Findings Regarding the Market Events of May 6, 2010. Sep 30, 2010.

A September 2010 report jointly commissioned by the SEC and the CFTC to identify the reason of the flash crash showed that the market was so fragmented and fragile that "a single large trade could send stocks into a sudden spiral".[1]

In the following section (3) we briefly review the adverse effects of fragmentation drawn from international experience. In light of these, we review key rules for efficient regulation in section (4). In section (5) we present our conclusions.

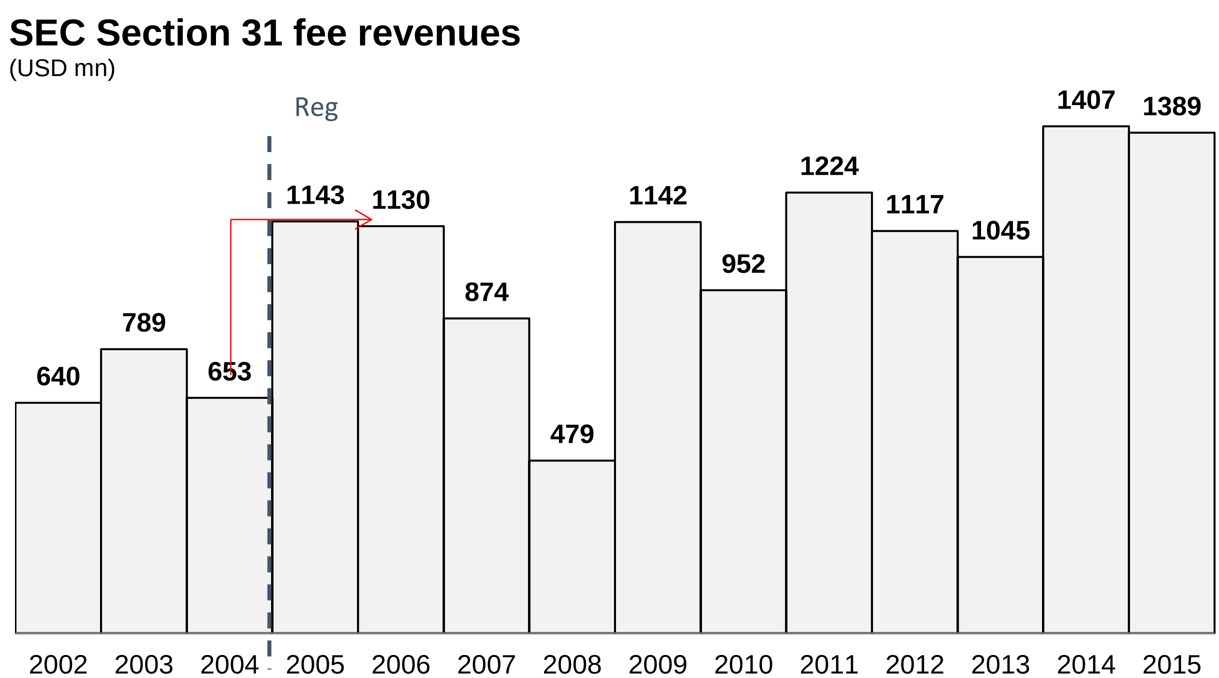
3. Adverse Effects of Fragmentation

Reg. NMS, which enabled the fragmentation of the US equity market with a focus on "fairness in price execution", had the adverse effects of increasing (a) regulatory costs, (b) connectivity costs, and (c) market data costs, while weakening price discovery.

(a) Higher regulatory costs

SEC Section 31 fee revenues[2] doubled after the enactment of Reg NMS. Chart 3 shows section 31 revenues doubling from $640 million in 2004 to from $1,389 million in 2015.

Chart 3: Regulatory costs in the US



[1] Findings Regarding the Market Events of May 6, 2010 Report of the staffs of the CFTC and SEC to the joint advisory committee on emerging regulatory issues.

[2] Sec 31 fees are charged based on the value traded of securities to recover the costs incurred by the government, including the SEC, for supervising and regulating the securities markets and securities professionals. Source: SEC, ERDesk estimates.

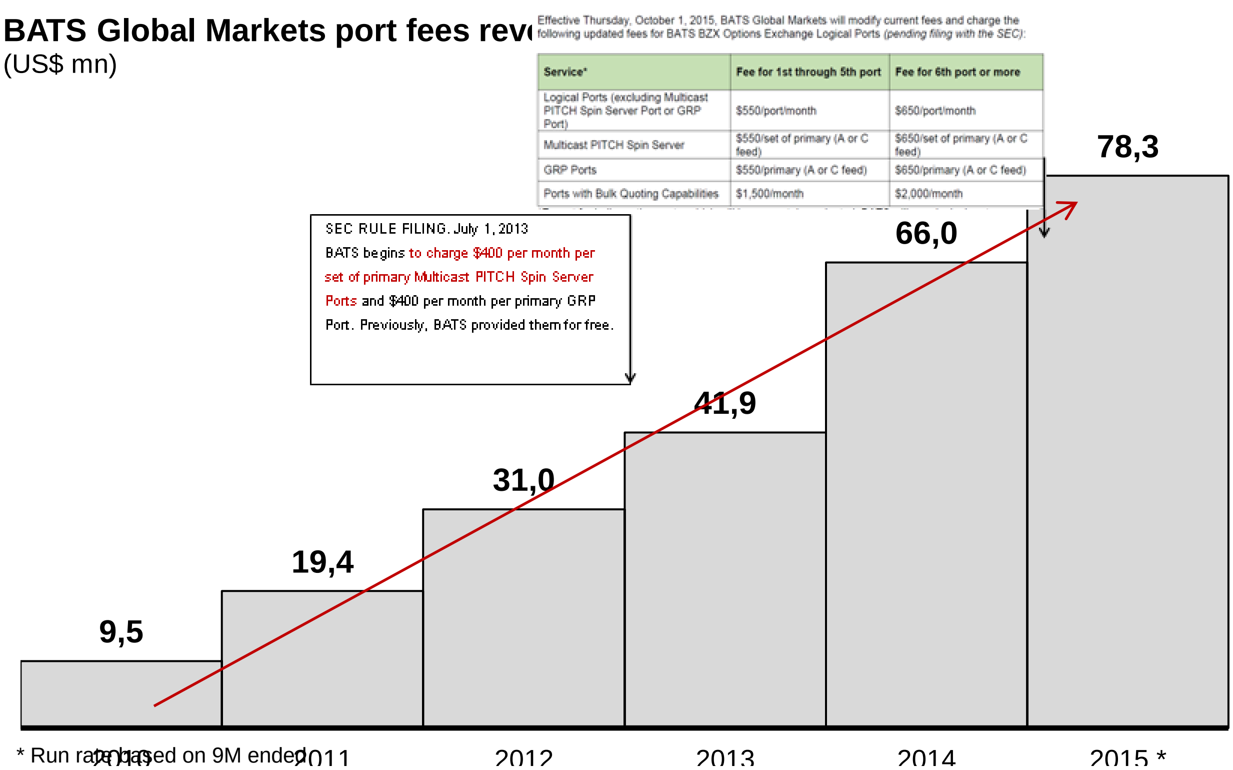
(b) Higher connectivity costs

Connectivity costs soared as broker dealers were forced to connect to every venue in order to comply with the OPR best execution obligations. In particular BATS connectivity costs increased by 8x.

Exchanges offset their drop in execution revenues by increasing connectivity fees due to the narrow definition of best execution under rule 601, that requires trades to be executed inside the National Best Bid and Offer (NBBO), regardless of size or market impact. Even though rule 601 didn't explicitly required broker dealers to connect to all venues, dealers indicated that in complying with the OPR from a practical perspective, they needed real-time data from [and connectivity to] all marketplaces for every trade. Some dealers feel that marketplaces are taking advantage of this situation by charging fees above a level that would exist if marketplaces were subject to competitive forces in the production and pricing of their market data products.

Chart 4 shows that BATS increased port fees in 2013 from $0 to $400 per month and then again in 2015 to $550 per month and even $650 for high bandwidth users.

Chart 4: BATS Connectivity Fees[3]



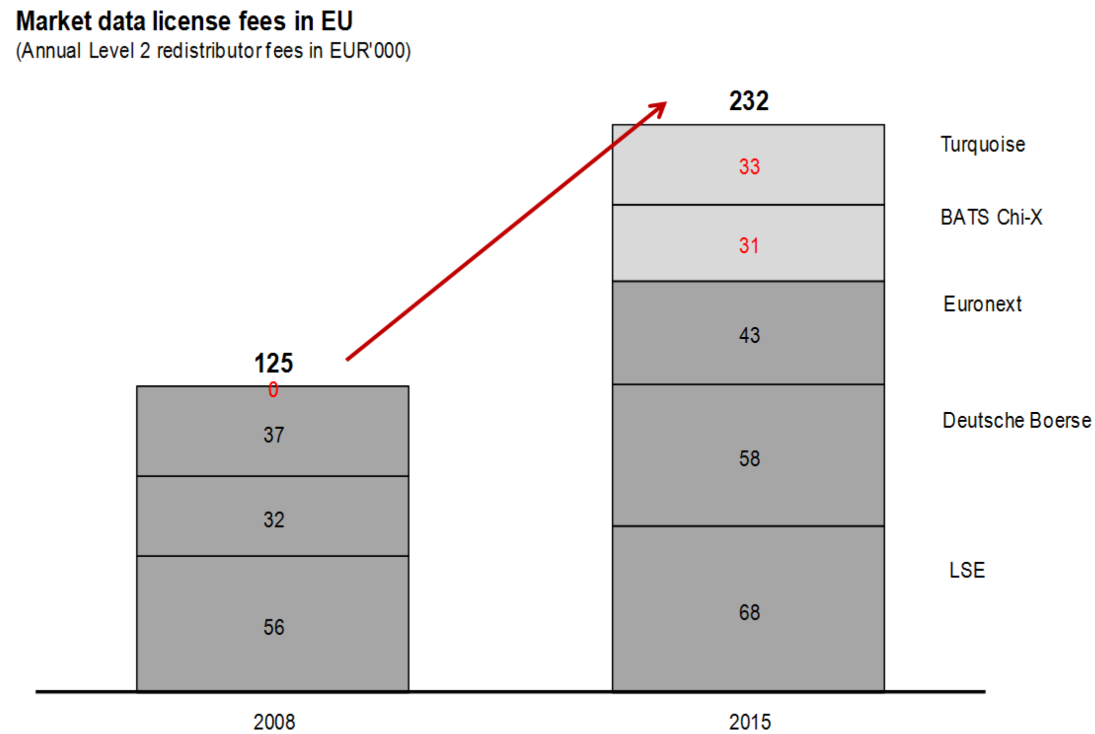
(c) Higher market data costs

Market data costs doubled as brokers connected to the new execution venues that emerged. Exchanges, also partially offset their drop in execution revenues by increasing market data fees. Participants had to

[3] Source: BATS Global Markets Registration S-1 statement filed with SEC. Page 62.

pay higher fees to incumbent exchanges and incremental fees to new exchanges as evidenced by higher market data revenues reported by EU exchanges on their financial statements, as shown in Chart 5.

Chart 5: Market Data Fees in the EU



Source: Company fee schedules

Brazil can minimize the adverse effects of <u>fragmentation</u> experienced in other international markets, so the benefits of competition surpass the incremental costs.

4. Key Rules for Efficient Regulation

Brazil´s developing capital markets are encouraging its regulators to draft rules on the matter of competition. In light of this, CVM published EDITAL SDM No. 9/19.

In our view, two articles of the proposed regulation will have the greatest impact on the market. The first is Minute C, article 30, on page 3, which refers to rebates offered by exchanges:

> ”A vedação de que o intermediário privilegie seus próprios interesses em detrimento dos interesses do cliente, a minuta acrescenta que o intermediário não considere, **para fins de execução das ordens, eventuais benefícios de qualquer natureza auferidos e não repassados aos clientes**.”

The second is the questioning about the appropriateness of introducing provision similar to Reg NMS’s Rule 611 (Trade Through rule or OPR):

> “CVM está interessada em receber comentários específicos sobre a adequação da minuta vis-à-vis a alternativa representada pelo roteamento automático de ordens e uma possível introdução de **regra similar à Order Protection Rule existente no mercado dos Estados Unidos.”**

When drafting rules for enabling competition among exchanges, regulators in Australia and Mexico focused on protecting investors’ interests, avoiding conflicts of interest and ensuring the transparency and resiliency of the capital markets based on the experience from other international markets that had already been opened to competition.

Regulators can minimize the adverse effects of fragmentation while capitalizing on the benefits of competition by considering the following rules:

Chart 6: Summary of Considerations and Recommendations

Cause	Effect	Recommendation
1. Rebates	Rebates create conflicts with best execution, distort price discovery and deteriorate market quality and increase end-client’s execution costs	Rule out rebates and any other payment for order flow
2. Best execution obligation with Order Protection Rule (OPR)	OPR instills complexity and fragility with inter-market linkages that lead to higher connectivity costs	Enact a best execution obligation based on EU and Australian total consideration which excludes the US OPR best-price approach. The best execution rule described on ICVM 505 should be kept intact, with no differentiation by investor profile
3. Internalization	Internalization and dark pools opacity enables predatory practices compromising market integrity	Ban internalization and dark pools for small orders while allowing “crosses” under exchange oversight

4. Off-exchange blocks	Off-exchange blocks free rides price discovery, removes liquidity from the central limit order book and does not contribute to the price formation	Define blocks as a large min size (~10% ADTV) to keep liquidity on the order book, protecting price discovery. Allow blocks to match outside the BBO, consistent with total consideration. Limit trade by trade with high collateral requirements. Award license for periodic block-crossing to "non-conflicted" operators.
5. Decentralized trade data	Decentralized trade data weakens price discovery and hinder best execution while increasing brokers' market data costs	Require pre-trade and post trade consolidation, awarding a license to an exchange, like IIROC's award to TMX.
6. Single-independent self regulator	The single-independent self regulator won't fulfill expectations of efficient regulation and risks integrity of markets.	Require that trading platforms keep internal SRO for mission critical activities – e.g., surveillance. Allow an external SRO for duplicate activities like FINRA's member compliance.
7. Multiple rulebooks	Multiple rulebooks disguise misconduct and create new forms of misconduct	Require harmonized rules for minimum tick size, trade cancellation policies, market level controls, circuit breakers, etc. Enforce cooperation with derivative markets.

In the upcoming sections we will discuss each one of these rules in detail, while providing recommendations for regulators to minimize the adverse effects of fragmentation.

4.1 Rebates

Rebates[4] create conflicts with best execution, distort price discovery, deteriorate market quality and increase end-client's execution costs. As a result, jurisdictions with rebates are revaluating and, eventually, eliminating them. US institutional investors demand their elimination, as stated on the quotes below[5]:

T Rowe – Andrew Brooks, Head of Equity Trading

> "We question the nature of various order routing practices. The **maker-taker model[6]**. Payment for order flow and internalization present a challenge to order routing protocols … and are an **impediment to seek best execution**"

Vanguard – Michael Buek, Head of Equity Trading

> "… access fees and **rebates under maker-taker models distort the price discovery process** as posted orders do not account for the actual costs to trade at posted prices."

The Capital Group[7]– Matt Lyons, Global Head of Trading

> "Complexity of the marketplace leads to fragility . . . Strongly recommend **to eliminate rebates** to alleviate issues"

SEC Commissioner Aguilar agrees with the views exposed above, stating that rebates (maker-taker pricing) create conflicts of interest and recommended their suspension.

[4] Rebates are payments from exchanges or trading platforms to participants for sending orders into their central limit order book. For example, in the maker-taker model, the exchange pays the fee to the broker that posts a limit order while in the taker-maker the exchange pays a fee to the broker that sends a market order. Brokers typically pass the rebate to the HFTs that use brokers' DMA.

[5] Senate Hearing, September 20, 2012, SEC Hearing, October 27, 2015.

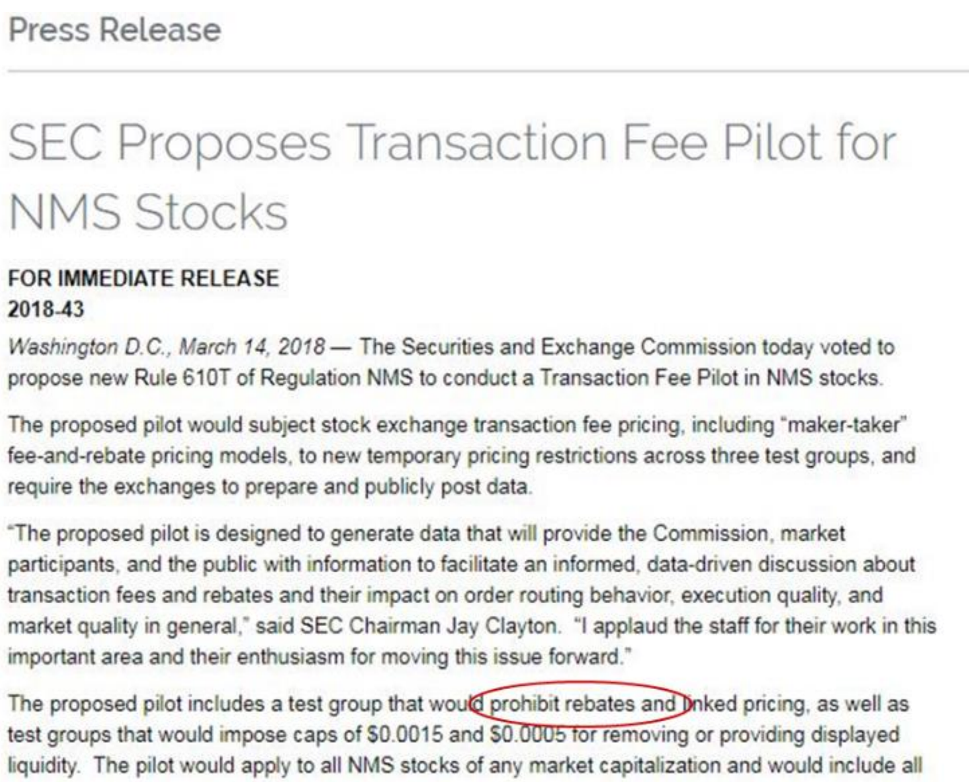
[6] The maker-taker is a fee structure where the maker or provider of liquidity places a limit order and collects a rebate while the taker sends a market order and is charged a fee.

[7] The Capital Group is one of the largest asset managers in the world with $1.4 trillion in AUM.

Video 1: SEC Commissioner Aguilar on Rebates[8]

Based on the negative assessment of the impact of rebates on compliance with the best execution rule and the impact on price formation, the SEC proposed a pilot plan to reduce or eventually eliminate rebates[9].

Chart 7: SEC Press Release on Pilot to Eliminate Rebates



Press Release

SEC Proposes Transaction Fee Pilot for NMS Stocks

FOR IMMEDIATE RELEASE
2018-43

Washington D.C., March 14, 2018 — The Securities and Exchange Commission today voted to propose new Rule 610T of Regulation NMS to conduct a Transaction Fee Pilot in NMS stocks.

The proposed pilot would subject stock exchange transaction fee pricing, including "maker-taker" fee-and-rebate pricing models, to new temporary pricing restrictions across three test groups, and require the exchanges to prepare and publicly post data.

"The proposed pilot is designed to generate data that will provide the Commission, market participants, and the public with information to facilitate an informed, data-driven discussion about transaction fees and rebates and their impact on order routing behavior, execution quality, and market quality in general," said SEC Chairman Jay Clayton. "I applaud the staff for their work in this important area and their enthusiasm for moving this issue forward."

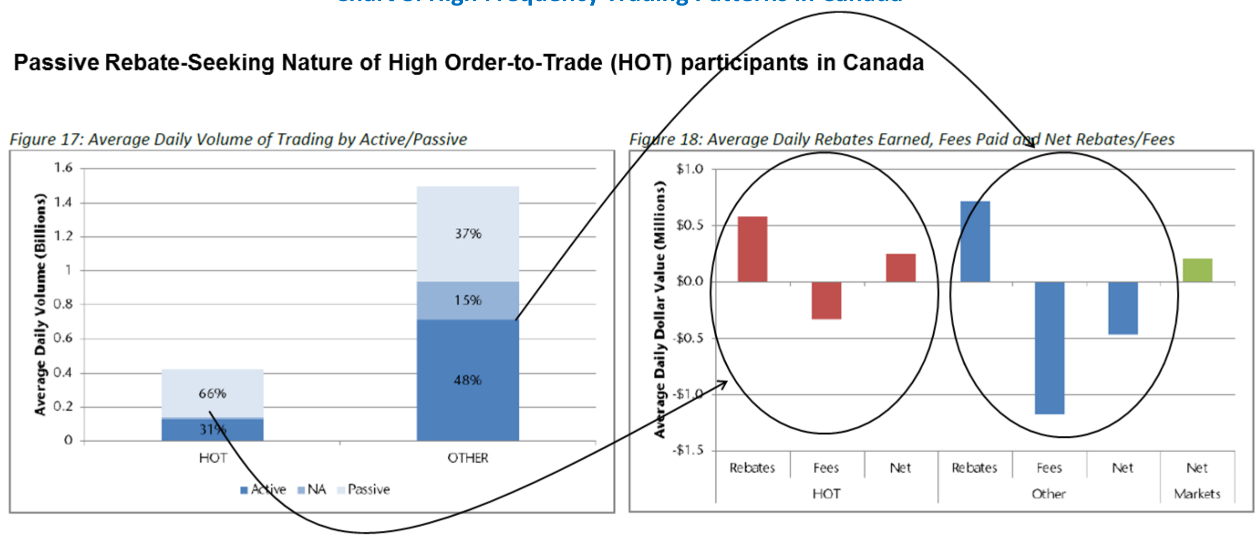
The proposed pilot includes a test group that would prohibit rebates and linked pricing, as well as test groups that would impose caps of $0.0015 and $0.0005 for removing or providing displayed liquidity. The pilot would apply to all NMS stocks of any market capitalization and would include all

[8] Watch video at https://www.youtube.com/watch?v=nc2ueIlFzog
[9] Source: https://www.sec.gov/news/press-release/2018-4

Rebates result in higher net fees for investors, as High Frequency Traders (HFTs) using Passive Rebate Arbitrage (PRA) strategies capture the economics of the rebates and leave investors paying higher fees.

A study conducted by the Canadian regulator, IIROC, compared the trading costs for HFTs with passive rebate arbitrage with that of investors and found that the latter are left paying the take higher fee as HFTs poach most of the limit orders with their higher speed. As shown on Chart 7 (below) High-Order-to-Trade (HOT) participants trade mostly through passive orders (66%), therefore, they collect rebates and are paid to trade. On the other hand, all other investors rely on active orders (48%) so they end up paying higher fees (this will be explained in more detail on chart 12).

Chart 8: High Frequency Trading Patterns in Canada



Source: IIROC, The HOT Study, Phases I and II of IIROC's Study of High Frequency Trading Activity on Canadian equity markets

As a result, The Canadian Securities Administrators, CSA, is also proposing to conduct a pilot to eventually eliminate rebates[10].

The Australian Securities and Investment Commission (ASIC), also noted the problems with rebates, stating that "rebates exacerbate the risk of conflicts of interest" and that "maker-taker models do not promote market quality or market integrity" as shown on ASIC Report 331, market making and maker-taker pricing[11], below:

> **"**There have been concerns in Australia and overseas about the impact on market quality and market integrity of maker–taker pricing and other incentive-based pricing models. IOSCO's Committee on Secondary Markets is assessing the impact of trading fee models on trading behavior. It is considering the potential for fee models involving rebates to exacerbate the **risk of conflicts of interest. Trading fee models can create best execution conflicts for market participants' order routing decisions**. Rebates can also create inefficiencies in pricing of securities

[10] https://www.albertasecurities.com/-/media/ASC-Documents-part-1/Regulatory-Instruments/2019/01/5436112-v1-CSA-Staff-Notice-23-323.ashx

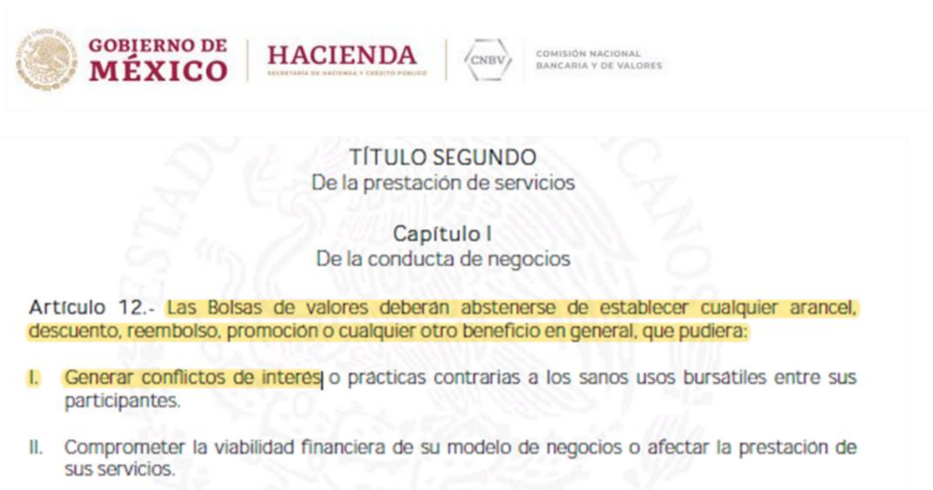
[11] ASIC Report 331, Page 94

because prices do not factor in rebates and fees. **They can also distort trading behavior where trading decisions are influenced by fee incentives.**

We have previously stated (e.g. in Report 237 Response to submissions on Consultation Paper 145 Australian equity market structure: Proposals (REP 237) and CP (168) that we would be concerned if pricing incentives influence behavior in a way that is not in the best interests of clients and wider market integrity. We believe there is sufficient evidence to conclude that **maker–taker models, where the <u>market operator pays a rebate, do not promote market quality or market integrity</u>.”**

Mexico followed a similar path banning rebates in 2017, according to "Disposiciones de Carácter General Aplicables a las Bolsas de Valores, Titulo Segundo, Articulo 12."

Chart 9: Mexico´s Ruling on Rebates[12]


GOBIERNO DE MÉXICO | HACIENDA | CNBV COMISIÓN NACIONAL BANCARIA Y DE VALORES

TÍTULO SEGUNDO
De la prestación de servicios

Capítulo I
De la conducta de negocios

Artículo 12.- Las Bolsas de valores deberán abstenerse de establecer cualquier arancel, descuento, reembolso, promocion o cualquier otro beneficio en general, que pudiera:

I. Generar conflictos de interes o practicas contrarias a los sanos usos bursátiles entre sus participantes.

II. Comprometer la viabilidad financiera de su modelo de negocios o afectar la prestacion de sus servicios.

Source: Disposiciones de carácter general aplicables a las bolsas de valores, publicado en el Diario Oficial de la Federación el 15 de mayo de 2017. Actualizado con las reformas publicadas en el propio Diario el 18 de diciembre de 2017; 10 y 26 de abril de 2018.

Rebates in Brazil would also (i) create conflicts of interest, (ii) distort price discovery and (iii) deteriorate market quality leading to excessive fragmentation.

<u>(i) Create Conflict of interest</u>

Market participants have already stated that rebates create conflict of interest, as shown below[13]:

- "The maker-taker model are an impediment to seek best execution.” – *T Rowe – Andrew Brooks, Head of Equity Trading*
- "Certain brokers’ order routing practices place greater importance on capturing rebates and avoiding fees than maximizing execution quality.” – *Vanguard – Michael Buek, Head of Equity Trading*

[12] https://www.cnbv.gob.mx/Normatividad/Disposiciones%20de%20car%C3%A1cter%20general%20aplicables%20a%20las%20bolsas%20de%20valores.pdf

[13] SEC Equity Market Structure Advisory Committee, October 27, 2015

- "A broker-dealers' duty to pursue best execution could be compromised when their trading venue decision is driven by the economic incentive to minimize access fees paid and maximize rebates received." *– The Capital Group – Matt Lyons, Global Head of Trading*

(ii) Distort price discovery

SEC Chairman Schapiro in her testimony[14] to the US Senate explains that effective price discovery together with strong investor protection are the two key elements to achieve efficient capital formation in equity markets. Capital formation promotes economic growth and jobs, as well as the ability of individual Americans to realize economic security.

Rebates distort price discovery as they promote trading strategies that are only intended to collect rebates. This creates a sense of deeper liquidity from HFT orders that get cancelled in milliseconds before institutional investors can tap it. This is explained in more detail by *The Capital Group Matt Lyons,*

- "rebates paid to liquidity providers in the maker-taker fee scheme effectively offers a subsidy to market makers who may encounter adverse selection. The rebate subsidy reduces the risk associated with making markets and allows market makers to develop strategies to determine imbalances in supply and demand, which, in turn, will inform their future decisions on providing or taking liquidity. For example, we believe entering and cancelling orders in milliseconds distorts the true supply and demand price discovery process."

(iii) Deteriorate market quality

In addition to distorting price discovery, rebates deteriorate market quality, as measured by higher cancelation rates. This transitory volume, from HFTs that trade for the only reason to collect rebates, was evidenced during the Flash Crash of May 2010 and other mini Flash Crashes. This volume misleads investors because it does not translate into liquidity. This is explained in more detail by *T Rowe Andrew Brooks, "*the growth of HFT has led to increased volume which does not necessarily mean liquidity. When you combine HFT volumes and even higher cancelation rates, [you] undermine market integrity and cause deterioration in market quality. We feel that this volume is transitory and misleading." *– T Rowe – Andrew Brooks, Head of Equity Trading*[15]

[14] Testimony on U.S. Equity Market Structure by SEC Chairman Mary L. Schapiro on December 8, 2010 https://www.sec.gov/news/testimony/2010/ts120810mls.htm

[15] Source: Senate Hearing, September 20, 2012

Video 2: T Rowe Brooks on Rebates and Market Quality[16]

Regulators in Australia and Mexico conducted studies that found that rebates incentivize high frequency traders (HFTs) to send orders to new entrants despite their thin books with the only purpose to collect payments as they are able to offset that risk in the incumbent's liquid order book using Passive Rebate Arbitrage (PRA) strategies distorting the supply and demand curves and compromising market quality.

This led Australia's capital market regulator ASIC to ban new entrant Chi-X from offering rebates.

[16] Watch video at https://youtu.be/EKT7N_VztgA

Chart 10: ASIC Ruling on Maker-Taker Pricing

ASIC
Australian Securities & Investments Commission

Background to ASIC's regulatory framework on competition in exchange markets

What will be the impact of Chi-X's proposed 'maker-taker' pricing model?

25. Chi-X intends to introduce maker-taker pricing, which provides a rebate to persons who submit passive orders (e.g. with a limit price) and charges a fee to persons who submit aggressive orders (e.g. market orders). This model has been a feature of global markets for a number of years. While the majority of respondents to CP 145 did not oppose maker-taker pricing, there has been some concern that it may create pricing inefficiencies and distortions.

26. We expect our best execution rule to minimise situations where client orders are routed to markets based on rebates rather than the best interests of the client. We also expect market operators to take into account the potential implications for market integrity when setting fees or rebates. We will discuss with market operators the nature and potential impact of any intended rebates, and we will continue to monitor the impact of pricing models domestically and abroad. If it becomes apparent that a pricing model is having a material impact on market integrity, we may reconsider whether a rule is needed.

27. We have also created a rule (6.5.1) requiring material changes to a market operator's procedures to be notified to ASIC to enable us to consider the impact on market integrity. This will include notification of material changes to pricing models.

Source: ASIC

Mexican regulator CNBV also took a similar approach, banning rebates and basing best execution on total consideration instead of OPR's best price. CNBV ruled that exchanges must refrain from setting fees, refunds, discounts or other benefits that could generate conflicts of interest.

In a study conducted by the Australian regulator on market quality, ASIC found that markets that offer rebates have a much higher rates of trade cancellations to orders, which as depicted by T-Rowe Brooks, "higher cancellation rates undermine market integrity and cause deterioration in market quality[17]."

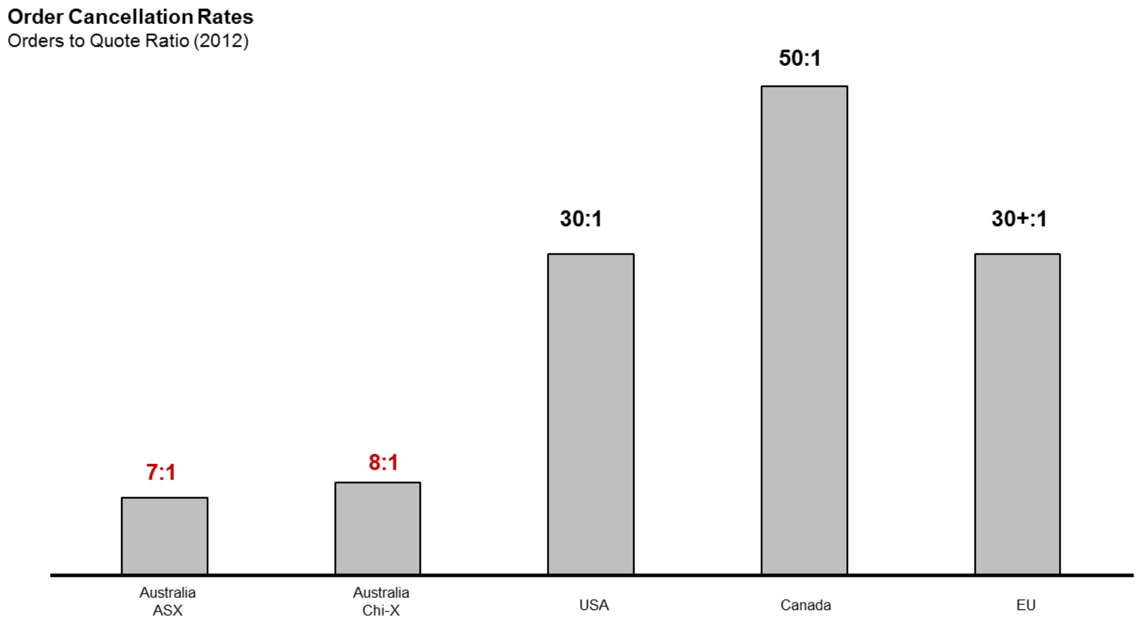
Chart 11 shows that markets that offer rebates, like the US, Canada and Europe experience a much higher cancellation rate than those that do not rebates, like Australia.

Australia's ASIC concluded that rebates "do not promote market quality or market integrity" as evidenced by higher order cancelation rates[18].

[17]Watch video at https://www.youtube.com/watch?v=af6fo6u_WQI

[18] ASIC REPORT 331, Market making and maker–taker pricing (Page 94) "We believe there is sufficient evidence to conclude that maker–taker models, where the market operator pays a rebate, do not promote market quality or market integrity ."
http://asic.gov.au/about-asic/corporate-publications/newsletters/asic-market-supervision-update/asic-market-supervision-update-previous-issues/asic-market-supervision-update-issue-45/

Chart 11: Order Cancelation Rates Across Selected Markets



In a SEC panel, The Capital Group Global Trading Manager Matt Lyons attributed the market´s fragility (including flash crashes) to rebates and strongly recommended their elimination.

Video 3: The Capital Group Matt Lyons on Rebates[19]

[19] Watch video at https://youtu.be/VdTuqr2abs0

US agency brokers, which initially backed rebates, also started supporting their elimination, as evidenced in the following letter sent by J.P. Morgan to the SEC within the public hearing related to the Traction Fee Pilot for NMS stocks:

Chart 12: J.P. Morgan´s Views on Maker-Taker Pricing[20]

JPMORGAN CHASE & CO.

Mr. Brent J. Fields
September 14, 2018
Page 2 of 6

We believe that the "maker-taker"[6] pricing model and the use of rebates within it by exchanges has reduced the accuracy and clarity of securities quotes, which do not reflect the economic impact of fees and rebates; contributed to greater market complexity and fragmentation; introduced inefficiencies into market executions; and unnecessarily introduced the potential for conflicts of interest between broker-dealers and their clients, which could erode market confidence. We agree with the view summarized in the SEC Division of Trading and Markets' 2015 memo to the Equity Market Structure Advisory Committee ("EMSAC") that:

> *directly eliminating or substantially impairing the maker-taker fee model by lowering the fee cap or banning the payment of rebates would address the concerns with respect to conflicts of interest, market complexity, and price transparency. . . In particular, with less pressure to be first in line to*

This change of hearts was due to the fact that brokers´ execution costs quadrupled after they were left paying take fees, as HFTs capture most rebates with their faster technology. In the following chart we calculated that HFTs left brokers paying higher take fees on 60% of their orders from a previous 50%. Since taker fees are 30 cents per hundred, while maker fees are 26 cents per hundred, this change of only 10 percentage points made broker execution costs quadruple.

Chart 13: US Trading Costs With and Without Rebates

Economics with no rebates

per 100 shares		Brokers Active / Passive Ratio			
Market order	2c	50%			
Limit order	2c	50%			
Net exchange fee	4c	2c			per side

Brokers active ratios have increase 10% points after the entry of HFTs

Economics with rebates

per 100 shares					
Market order	30c	50%	60%	100%	
Limit order	-26c	50%	40%	0%	
Net exchange fee	4c	2c	7.6c	30c	per side

$\underbrace{2c \quad 7.6c}_{4:1}$

Source: Nasdaq, NYSE
Note: US execution venues pay ~$3bn p.a. in rebates

[20] https://www.sec.gov/comments/s7-05-18/s70518-4345321-173276.pdf

Knight Capital CEO Thomas Joyce stated at the U.S. Equity Market Structure Revision on May, 2015 that "marker taker has encouraged a large group of traders with only goal to collect them [rebates] as opposed to investing or intermediating and the SEC should take a hard look at that."[21]

Noting how rebates undermine market integrity, ASIC "… has actively discouraged maker-taker pricing rebates, has banned payment for order flow, and has taken a principles-based approach to market selection for execution."[22]

The case to ban rebates in Brazil, is even stronger, as **end investors** would end up paying higher take fees, as shown on Chart 13. In Brazil, exchange fees are charged directly to end investors so they are going to be impacted the most, not brokers, after end investors are left paying the higher take fees as the HFTs collect most of the rebates with their faster technology.

Regulators should also ban equity participation incentives as they conflict with best execution. Chi-X Europe launched three "jump ball" warrant programs rewarding participants that contributed to market share expansion.

Like rebates, warrants conflict with best execution as brokers send the order to the venue that compensates them through warrants instead of sending it to the one that benefits the client.

For example, ChiX Europe issued warrants that were awarded "based on the value traded by trading participants on the Chi-X platform," according to its filing.[23]

We recommend regulation to rule out rebates and any other payment for order flow such as, warrants.

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[21] Watch video at https://www.youtube.com/watch?v=B0yeBFa89EM

[22] http://asic.gov.au/about-asic/corporate-publications/newsletters/asic-market-supervision-update/asic-market-supervision-update-previous-issues/asic-market-supervision-update-issue-45/

[23] Excerpt from BATS Exchange S-1/A filed with the SEC, CHI-X EUROPE LTD (pages F–54 and F-56) SHARE Capital
In 2009, 21 warrants of £1 each were issued to the trading participants of the Company as part of the 2009 Warrant or "Jump Ball" Program. These warrants entitle the holders to subscribe to class 'B' shares for a cash payment equal to £2.25. The number of Class 'B' shares that a holder could subscribe was based on the value traded by them on the Chi-X platform in accordance with the terms of the 2009 warrant program and were exercisable at the end of November 2009.

4.2 Best Price Obligation with Order Protection Rule

The Order Protection Rule, OPR, instills complexity and fragility with intermarket linkages that lead to higher connectivity costs. In particular, the "Best Price" OPR approach used by US regulators takes price as the only relevant factor when assessing best execution. Displayed quotes are protected from trade-throughs creating additional complexity in the market through a "tangle of data connections" between venues to prevent the execution of trades at prices inferior to protected quotes displayed by other trading centers.

In the US, OPR is being reconsidered. The OPR was intended to promote intermarket price protection of orders by restricting the execution of trades on one venue at prices that are inferior to displayed quotations at another venue. Specifically, OPR requires a trading venue to implement policies and procedures to prevent "trade-throughs" on other trading venues with protected quotations.[24]

At the December 15, 2004 open meeting at which Regulation NMS was proposed, SEC Commissioners Glassman and Atkins dissented[25] on the need for any trade-through rule - "By making price the sole criterion for determining how and where orders will be executed, the trade-through rule also restricts investor choice and ability to obtain best execution."

The dissent letter included comment from participants like Barclays explaining: "Indeed, based on years of empirical evidence and substantial quantitative research into the components of transaction costs, it is our strong belief that price is just one element in overall execution quality. Institutional traders often need to trade off price for liquidity, speed of execution, likelihood of completion, and other attributes. We believe investors should have the choice over where to execute their orders, considering these other attributes, and that regulatory reform should continue to encourage market centers to compete in all these dimensions of execution quality."

SEC Commissioner Gallagher stated that "the OPR, or 'trade-through' rule, creates distortions by assuming price is all participants care, while there is a less complex best execution alternative referring to 'total consideration'."[26]

---

[24] The rule does not affirmatively require the routing of orders to trading centers that are displaying the best prices. Rather, the rule only restricts trades at prices worse than a protected quotation.

[25] Dissent of Commissioners Cynthia A. Glassman and Paul S. Atkins to the Adoption of Regulation NMS - June 9, 2005

[26] Watch video at https://www.youtube.com/watch?v=6KTCw211vyw SEC Equity Market Structure Advisory Committee Meeting, May 13, 2015

Video 4: SEC Commissioner Gallagher on OPR[27]

Furthermore, SEC Commissioner Aguilar[28] stated that in order " to comply with the order protection rule of Reg NMS, trading venues and broker-dealers have developed elaborated IT systems to monitor the prices of all NMS stocks on all lit exchanges, and to route orders accordingly. These entities claim that this tangle of data connections adds needless complexity and cost, and makes our markets overly fragile."

In light of the increased costs, market participants urged the SEC to repeal the Order Protection Rule arguing the duty of best execution, and economic self-interest would be sufficient to protect limit orders.[29] At the SEC Equity Market Structure Committee[30], representative from top capital market institutions made comments opposing the OPR:

> **Bill Baxter (Fidelity)** stated that the commercial standard for best execution in the market is more comprehensive than the Order Protection Rule and suggested adopting a more principles-based approach, rather than one that is prescriptive
>
> **Joseph Mecane (Barclays)** commented that the costs of Order Protection Rule do not outweigh its benefits in today's market
>
> **Jamie Selway (ITG)** stated that since Order Protection Rule is a prescriptive approach to order routing, it has difficulty accommodating innovations

[27] Watch video at https://youtu.be/778rcNIeSxQ
[28] U.S. Equity Market Structure, May 11, 2015, https://www.sec.gov/news/statement/us-equity-market-structure.html
[29] Blume (2002, 2007) and O'Hara (2004)
[30] SEC Equity Market Structure Advisory Committee Meeting, May 13, 2015 https://www.sec.gov/news/pressrelease/2015-70.html

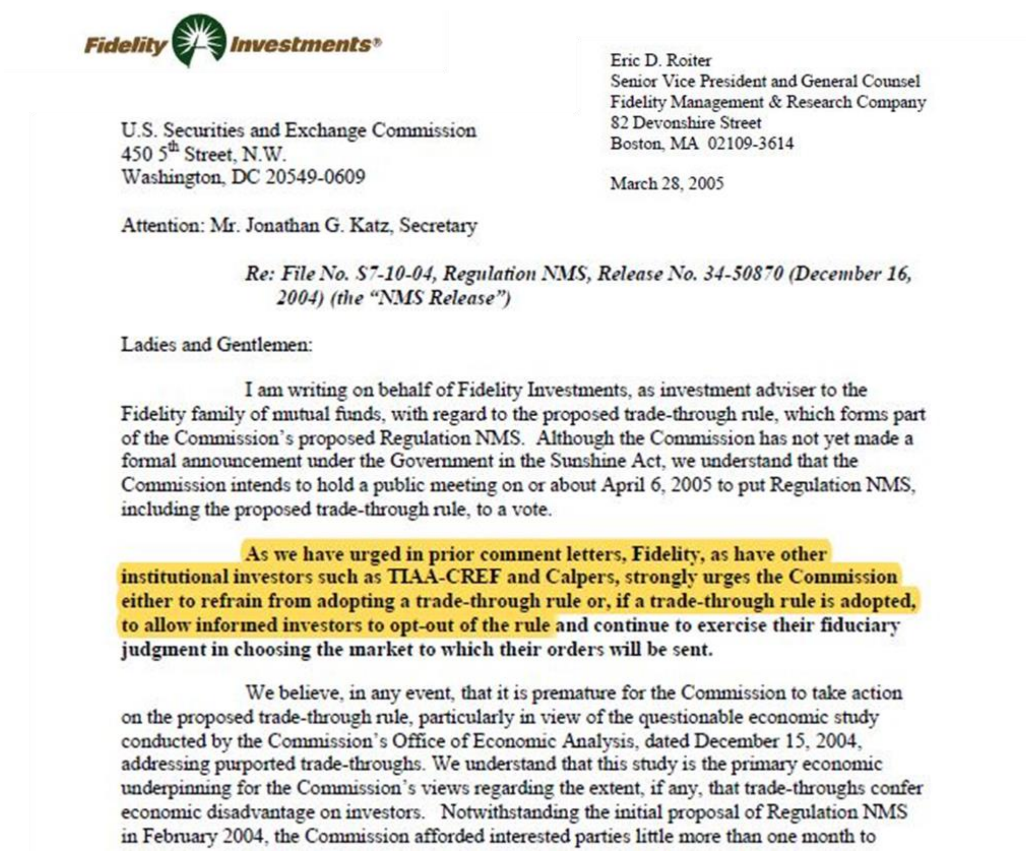
Thomas Wittman (NASDAQ) would prefer a principle-based approach to revising Order Protection Rule rather than one that is prescriptive

Jeff Brown (Charles Schwab) had stated that Order Protection Rule was not needed.

Matthew Andresen (Headlands) stated that Order Protection Rule increased competition for NYSE, but Nasdaq was already competitive before the rule. He stated that in 2015, Order Protection Rule may no longer be needed for competition.

This series of deviation from the OPR rule stem from the fact that OPR is the narrowest version of best execution wherein price is the only factor taken into consideration. And this realization also happened in the US, where regulators[31] as well as institutional investors, such as Fidelity, strongly urge to repeal it:

Chart 14: Fidelity's Views on OPR[32]



Fidelity Investments®

Eric D. Roiter
Senior Vice President and General Counsel
Fidelity Management & Research Company
82 Devonshire Street
Boston, MA 02109-3614

March 28, 2005

U.S. Securities and Exchange Commission
450 5th Street, N.W.
Washington, DC 20549-0609

Attention: Mr. Jonathan G. Katz, Secretary

Re: File No. S7-10-04, Regulation NMS, Release No. 34-50870 (December 16, 2004) (the "NMS Release")

Ladies and Gentlemen:

I am writing on behalf of Fidelity Investments, as investment adviser to the Fidelity family of mutual funds, with regard to the proposed trade-through rule, which forms part of the Commission's proposed Regulation NMS. Although the Commission has not yet made a formal announcement under the Government in the Sunshine Act, we understand that the Commission intends to hold a public meeting on or about April 6, 2005 to put Regulation NMS, including the proposed trade-through rule, to a vote.

As we have urged in prior comment letters, Fidelity, as have other institutional investors such as TIAA-CREF and Calpers, strongly urges the Commission either to refrain from adopting a trade-through rule or, if a trade-through rule is adopted, to allow informed investors to opt-out of the rule and continue to exercise their fiduciary judgment in choosing the market to which their orders will be sent.

We believe, in any event, that it is premature for the Commission to take action on the proposed trade-through rule, particularly in view of the questionable economic study conducted by the Commission's Office of Economic Analysis, dated December 15, 2004, addressing purported trade-throughs. We understand that this study is the primary economic underpinning for the Commission's views regarding the extent, if any, that trade-throughs confer economic disadvantage on investors. Notwithstanding the initial proposal of Regulation NMS in February 2004, the Commission afforded interested parties little more than one month to

In Australia, ASIC adopted best execution based on total consideration. ASIC, however, included a very prescriptive best execution provisions for retail investors that makes the rule prone to regulatory arbitrage. ASIC outline its best execution rule in 22 pages.[33]

---

[31] See dissent of SEC Commissioners Cynthia A. Glassman and Paul S. Atkins on OPR "trade-through rule" https://www.sec.gov/rules/final/34-51808-dissent.pdf

[32] https://www.sec.gov/rules/proposed/s71004/edroiter032805.pdf

[33] https://download.asic.gov.au/media/4720070/rg265-published-4-may-2018.pdf

In Europe, best execution is also based on total consideration and retail provisions are not prescriptive "**Where an investment firm executes an order on behalf of a retail client, the best possible result shall be determined in terms of the total consideration, <u>representing the price of the financial instrument and the costs relating to execution</u>,**"

Chart 15: MiFID Rules on Best Execution

MiFID II Article 27:

"(1) Member States shall require that investment firms take all sufficient steps to obtain, when executing orders, the best possible result for their clients taking into account price, costs, speed, likelihood of execution and settlement, size, nature or any other consideration relevant to the execution of the order. Nevertheless, where there is a specific instruction from the client the investment firm shall execute the order following the specific instruction. **Where an investment firm executes an order on behalf of a retail client, the best possible result shall be determined in terms of the total consideration, <u>representing the price of the financial instrument and the costs relating to execution</u>**, which shall include all expenses incurred by the client which are directly relating to the execution of the order, including execution venue fees, clearing and settlement fees and any other fees paid to third parties involved in the execution of the order.

Conversely, in Mexico, CNVB adopted a broad total consideration of best execution, without any specific provisions for retail orders[34].

Chart 16: CNVB Rules on Best Execution

GOBIERNO DE MÉXICO | HACIENDA | CNBV COMISIÓN NACIONAL BANCARIA Y DE VALORES

[73] **Artículo 76 Bis.-** Las casas de bolsa en la ejecución de las órdenes de sus clientes sobre valores de renta variable, deberán cumplir con el deber de mejor ejecución. Para tales efectos deberán contar con sistemas automatizados que les permitan ejecutar la orden considerando los factores que se indican a continuación en el orden señalado, salvo que por las características de la instrucción se requieran aplicar en un orden distinto:

[73] I. El mejor precio disponible en las bolsas de valores, dadas las condiciones de mercado al momento de la ejecución.

[73] II. El volumen de dicho valor disponible en las bolsas de valores.

[73] III. La probabilidad de ejecución, conforme a la metodología de cálculo que determinen las casas de bolsa, la cual deberá ser aprobada por su director general.

[73] Las casas de bolsa en la determinación de la metodología de cálculo de la probabilidad de ejecución a que alude la fracción III anterior, deberán incorporar la información de al menos los últimos tres meses, que sea publicada diariamente por las bolsas de valores en términos de las "Disposiciones de carácter general aplicables a las bolsas de valores", publicadas en el Diario Oficial de la Federación el 15 de mayo de 2017 y sus respectivas modificaciones.

[73] Las casas de bolsa deberán cumplir con el deber de mejor ejecución cuando el tipo de orden esté contemplada en cualquiera de las bolsas de valores; en caso contrario, deberán enviar la orden a aquella bolsa en la que se contemple el tipo de orden respectivo.

Mexico also made DMA orders, which are typically small top of book orders and mostly linked to retail investors, not subject to best execution obligations:

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[34] Rules for Brokers published in November 4th, 2019

(72) **Artículo 68.-** Las casas de bolsa podrán proporcionar a sus clientes canales de acceso electrónico directo, para el envío de instrucciones al libro de manera inmediata a los sistemas electrónicos de negociación de una bolsa de valores. Las órdenes transmitidas a través de dichos canales no estarán sujetas al deber de mejor ejecución.

Australia, on the other hand, made DMA orders subject to best execution requirements, but added some exceptions to it:

Chart 17: ASIC Rules on Best Execution[35]

ASIC
Australian Securities & Investments Commission

Direct electronic access to markets **RG 265.235**

Where a market participant provides clients with direct electronic access to an order book, we consider that the best execution obligation still applies **to the extent that the market participant must take into account the client's instructions** (e.g. to have fast access): Rule 3.8.1. A market participant must outline any parameters for the client's SOR or manual processes to select the order books to transmit an order or orders to.

Thus, brokers classify DMA orders as client-specific instructions in order to avoid best execution rules, in a clear case of regulatory arbitrage:

Chart 18: J.P. Morgan´s View on DMA

BEST EXECUTION DISCLOSURE
for
J.P. MORGAN SECURITIES AUSTRALIA LIMITED

3.3.3.2 Where Your order is a DMA order utilising J.P. Morgan's Low Latency DMA platform, the order will be directly transmitted to either the **ASX Central Limit Order Book or ASX Centre Point**, determined by specific instructions from You and based on market state and price/time priority.

This maneuver shifts the responsibility of achieving best execution from the broker to the client and is also performed in Europe, where brokers classify DMA as a "specific client instructions":

Chart 19: EU Brokers´ View on DMA

[35] https://download.asic.gov.au/media/4720070/rg265-published-4-may-2018.pdf

bgc voice / electronic brokerage GFI SUNRISE

BEST EXECUTION & ORDER HANDLING POLICY

19. DIRECT MARKET ACCESS

Where the client has direct market access ("DMA") through an electronic interface provided by the Firm, the client takes responsibility for achieving best execution. The Firm regards this arrangement as a particular example of specific instruction

CVM has already adopted best execution based on total consideration on its Rule 505. CVM Rule 505 is concise, clear and purposeful:

- It requires brokers to seek best execution for both retail and institutional clients.
- It is based on broad consideration which allows institutional investors to trade larger orders at minimum market impact.
- It accepts specific instructions to let professional traders like market makers provide liquidity.

Chart 20: CVM Rule 505

CVM Comissão de Valores Mobiliários

INSTRUÇÃO CVM Nº 505, DE 27 DE SETEMBRO DE 2011

Parágrafo único. O departamento de autorregulação deve incluir as operações de que trata o **caput** no seu programa de trabalho.

Seção II – Execução de Ordens

Specific instruction – eg, DMA

BROAD total consideration

Art. 19. O intermediário deve executar as ordens nas condições indicadas pelo cliente ou, na falta de indicação, nas melhores condições que o mercado permita.

Parágrafo único. Para aferir as melhores condições para a execução de ordens, o intermediário deve levar em conta o preço, o custo, a rapidez, a probabilidade de execução e liquidação, o volume, a natureza e qualquer outra consideração relevante para execução da ordem.

Art. 20. O intermediário deve estabelecer regras, procedimentos e controles internos sobre a execução de ordens, de modo a:

We recommend that ICVM 505 rule be kept intact without prescriptive provisions for retail investors to prevent regulatory arbitrages

4.3 Internalization and Dark Pools

Internalization involves brokers internally executing client order flow against their own accounts on a systematic basis. Brokers internalization is not subject to pre-trade transparency. Similarly, dark pools are systematized execution facilities that operate with limited pre-trade transparency. The prices of orders entered into a dark pool are not displayed to other market participants and are matched anonymously against contra-side orders.

On the other hand, exchanges play a critical role on the public price discovery process. They provide a reliable external reference that is essential to the efficient functioning of our capital markets. Investors look to display prices on exchanges for many reasons: to value their holdings and to make trading decisions[36].

Internalization and dark pools' opacity enable predatory practices compromising market integrity. The SEC found that several dark pools harm their clients by giving special benefits to HFTs and in July 2018, it voted to improve transparency and regulatory oversight of "dark pools", after rising concerns that their opacity allows for predatory practices.[37]

Chart 21: SEC´s View on Dark Pools

SEC votes to improve oversight of dark pools

JULY 18, 2018

The SEC has voted to improve the transparency and regulatory oversight of stock market trading venues often called **"dark pools",** after rising concerns that their **opacity allows for predatory practices**.

"I applaud the staff's retrospective review of our regulation of ATSs," SEC chair Jay Clayton said in a statement. "I agree that promoting greater transparency in order interaction, matching, and execution will help empower investors and their intermediaries to find those trading venues that best meet their trading and investing objectives."

As a result, the SEC imposed fines on major brokers:

Barclays and Credit Suisse pay biggest ever fines for dark pool trading, The Guardian, 31 Jan 2016

> Barclays and Credit Suisse has been fined $154m following an investigation into the banks' dark pools exploited by "predatory, HFTs" at the expense of the bank's traditional customers. NY State

[36] Richard Holley – SEC Equity Market Structure Advisory Committee Meeting

[37] Source: SEC Open Meeting July 18, 2018 adopted new Form ATS-N and amendments to Regulation ATS https://www.ft.com/content/7c749d6c-8ab8-11e8-b18d-0181731a0340

Attorney General Schneiderman said Barclays had told its dark pool clients that **it monitored for high-speed trading, but it didn't and it actually favored high-speed traders**.

SEC orders Citigroup to pay $12 mln to settle dark pool probe, Reuters 14, Sep 2018

The SEC found misled users with **assurances that HFTs were not allowed to trade on Citi Match**, a premium-priced dark pool platform operated by CORE, when two of its most active users reasonably qualified as such traders and had executed more than $9 billion of orders through the pool. The regulator also found that Citi did not disclose that half of its dark-pool orders were routed to and executed on other trading venues that did not offer the same premium features as Citi's.

ITG Pays $12 Million Fine to Settle SEC Probe into Its Dark Pool, Finance Magnates 07 Nov 2018

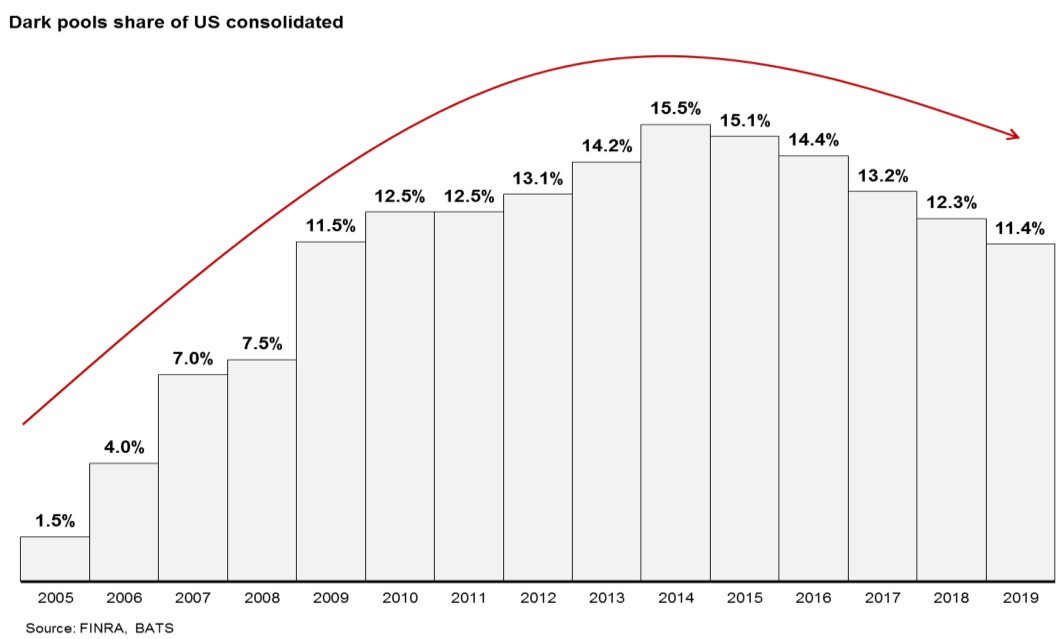
The SEC found that **ITG misled users with assurances that it will not reveal their anonymized data on its dark pool platform** POSIT to high-frequency traders, however, "ITG informed some high frequency trading firms that they could use these Top 100 Reports, that identify 'potential unsatisfied liquidity needs' in the dark pool, despite assuring subscribers that ITG would not signal their trading intentions," the SEC said.

Goldman Sachs fined over trade rule violations in dark pool, Reuters 1 Jul 2014

FINRA said that Goldman's dark pool SIGMA-X executed nearly 400,000 trades between July and August 2011 that were closed at inferior prices, in violation of investor protection rules. Goldman Sachs Execution & Clearing L.P. agreed to pay $0.8m fine and settle the case with FINRA and return $1.67 m to harmed customers.

Growth in dark trading has caused considerable concern among regulators worldwide.

Chart 22: Dark Pool´s Market Share in the US



Prompting them to express deep concerns stating that dark pools:

a. **"highly fragmented information and liquidity which leads to higher searching costs."**

> *IOSCO "Issues Raised by Dark Liquidity" 2010* – to know whether a dark pool has liquidity it is necessary to route an order. This leads to potentially higher search costs associated with finding hidden fragmented liquidity, with participants having to ping multiple dark pools to assess liquidity.

Dark trading in the US is also highly fragmented, with over 33 venues in operation accounting for over 1/8th of total market volumes.

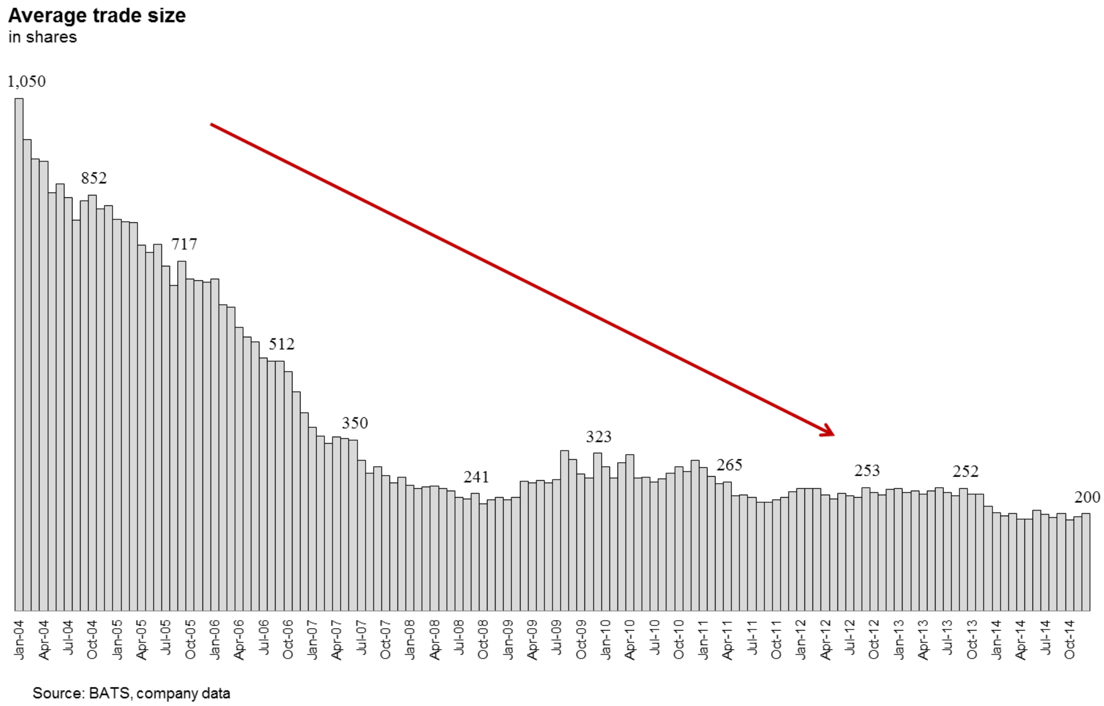
Chart 23: Dark Pool Trading in the US

	ATS Name	MPID	Total Shares	Market share of consolidated
1	UBS ATS	UBSA	10,640,553,655	2.44%
2	CROSSFINDER	CROS	5,073,122,074	1.16%
3	JPM-X	JPMX	3,896,341,826	0.89%
4	MS POOL (ATS-4)	MSPL	3,607,688,751	0.83%
5	LEVEL ATS	EBXL	3,578,470,823	0.82%
6	THE BARCLAYS ATS	LATS	3,223,947,685	0.74%
7	SIGMA X2	SGMT	2,985,103,751	0.68%
8	SUPERX	DBAX	2,978,227,646	0.68%
9	BIDS TRADING	BIDS	2,592,094,791	0.59%
10	INSTINCT X	MLIX	1,554,428,790	0.36%
11	POSIT	ITGP	1,501,095,200	0.34%
12	MS TRAJECTORY CROSS (ATS-1)	MSTX	1,481,911,020	0.34%
13	IBKR ATS	IATS	1,242,271,529	0.28%
14	VIRTU MATCHIT ATS	KCGM	1,156,230,076	0.26%
15	JPB-X	JPBX	1,049,252,299	0.24%
16	LIQUIDNET H2O ATS	LQNA	898,175,210	0.21%
17	MS RPOOL (ATS-6)	MSRP	861,637,771	0.20%
18	CBX	ICBX	819,869,179	0.19%
19	INSTINET BLOCKCROSS	BLKX	748,435,578	0.17%
20	CROSSSTREAM	XSTM	689,483,620	0.16%
21	DEALERWEB	DLTA	556,972,487	0.13%
22	INTELLIGENT CROSS LLC	INCR	517,823,607	0.12%
23	LIQUIDNET ATS	LQNT	440,050,700	0.10%
24	USTOCKTRADE SECURITIES, INC.	USTK	431,792,006	0.10%
25	CODA	CODA	350,371,540	0.08%
26	LUMINEX ATS	LMNX	266,728,690	0.06%
27	INSTINET CROSSING	XIST	168,347,462	0.04%
28	CITI CROSS	CXCX	161,227,385	0.04%
29	CITIBLOC	CBLC	95,700,503	0.02%
30	AQUA SECURITIES L.P.	AQUA	14,629,420	0.00%
31	XE	WDNX	12,985,859	0.00%
32	PRO SECURITIES ATS	PROS	2,949,761	0.00%
33	MAGMA ATS	MAGM	40,000	0.00%
	Grand Total		**53,597,960,694**	**12.27%**

Source: FINRA, 2Q19

Fragmentation in dark trading increase participants' searching costs. As HFTs began to dominate US markets, order sizes in central limit order books (CLOB) collapsed.

Chart 24: Average Trade Size in US Equity Trading



This led investors trading large blocks of shares in displayed venues to seek protection against slippage[38] and leakage[39] in dark pools. As a result, dark trading reached a 15% market share of consolidated volume.

b. "weaken the quality of the price discovery mechanism on the 'lit' markets."

The European Commission, 2010 - The SEC and the European Commission have indicated that majority of studies concluded that dark trading affects price discovery

Excerpt from SEC Equity Market Structure Literature Review - Part I: Market Fragmentation (2013)

The majority of papers that focus specifically on dark trading conclude that it can detract from market quality, both in the form of higher transaction costs and less efficient price discovery.

Comerton-Forde and Putnins (2012)[40] looked into the 500 largest Australian stocks and concluded that **informational efficiency deteriorates when dark trading of less than block size exceeds 10% of total volume.**

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[38] Slippage refers to the difference between the expected price of a trade and the price at which the trade is executed.

[39] A leak of an investors' intention to the market could trigger front running resulting in higher implicit execution cost to the investor.

[40] Dark Trading and Price Discovery, Journal of Financial Economics (JFE), Forthcoming, 26 Jun 2015

ASIC (2013), examined the 300 most active Australian stocks and reaches a similar conclusion regarding the **10% threshold for when non-block dark trading leads to harmful effects on quoted spreads and quoted depth**.

Weaver (2011)[41] analyzed trading in more than 4,000 U.S. stocks and finds that **increased dark trading is associated in a linear fashion with wider spreads and higher volatility.**

c. "add a layer of complexity to the marketplace."

Citadel CEO Griffin stated in a US Senate Committee hearing[42]: "I would concur with Mr. Sprecher that the dark pools add a layer of complexity to the marketplace. They are not subject to the same anti-discrimination provisions of the exchanges. **We should level the playing field between the exchanges and the dark pools.**"

Video 5: Citadel CEO on Dark Pools[43]

d. "lead to inherent conflict of interest when broker-dealers operate their own."

U.S. Senator Mark Warner letter to FINRA, 2017 - "Several broker-owned dark pools engaged in predatory trading harmful to their clients by giving special benefits to HFT."

Only intermediaries who profit by selling flow and ultra-low latency technology to HFTs benefit from internalization. These intermediaries were the ones initially promoting internalization, however as the market excessively fragmented, the costs quickly outweighed its benefits, and those same proponents of fragmentation began questioning its benefits.

---

[41] The Trade-At Rule, Internalization, and Market Quality, 25 May 2011

[42] Senate Hearing "The Role Of Regulation In Shaping Equity Markets" July 2014 - ICE CEO Jeff Sprecher also stated that "the decision where your trade goes is made by a third party, it is legal, lawful, and accepted right now that that third party can route that trade to their own wholly owned trading venue where they can make additional profit, theoretically. So we have now seen every major broker-dealer create their own dark pool

[43] Source: https://youtu.be/yLV05CGTSl0

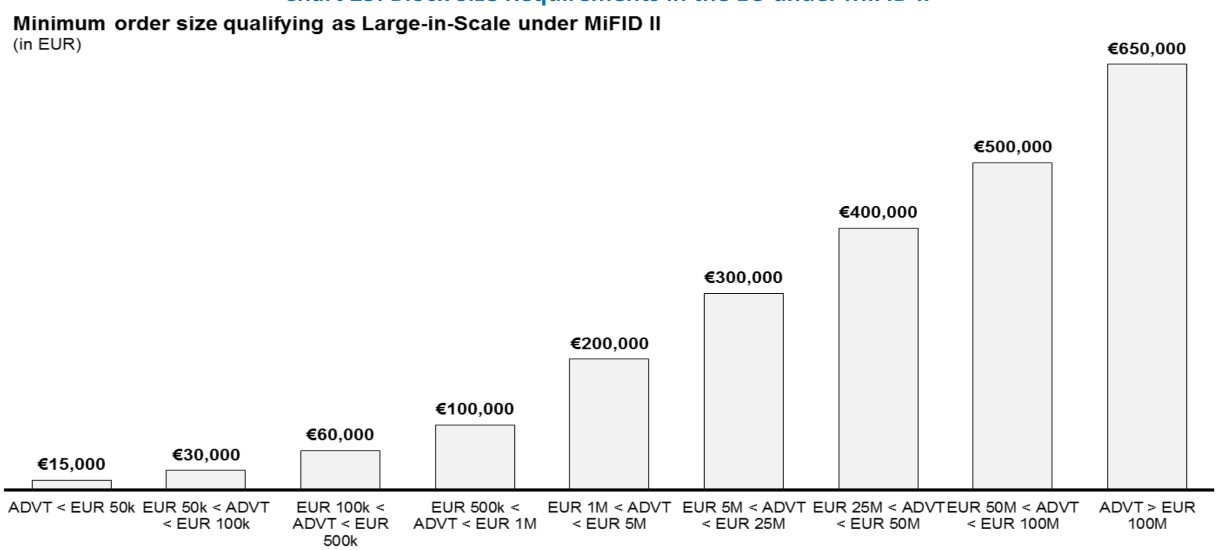
We recommend regulation to ban internalization and dark pools for small orders while allowing “crosses” under exchange oversight.

4.4 Off-Exchange Blocks

Off-exchange blocks free rides price discovery as they use the exchanges’ best bid and offer (BBO) to match orders. These off-exchange transactions have a severe impact on price discovery, particularly if a lax definition of a block trade enables a significant portion of liquidity to be traded outside of lit exchanges.

In order to mitigate this, EU regulators require blocks to have a minimum size of roughly 10% of average daily traded value (ADTV):

Chart 25: Block Size Requirements in the EU under MiFID II



Mexico´s regulator followed suite and set the minimum for block trades at 20% of ADTV with a MX$10 million minimum.

However, bilateral clearing of blocks introduce systemic risk and regulators should impose high collateral requirements on them in order to preserve market resiliency. To cope with this, DTCC began aggregating trade-for-trade blocks in the US[44], while in Hong Kong, trade-for-trade transactions are imposed a default fee on participants.[45]

We recommend that regulation (i) define blocks as a large minimum size (~10% ADTV like MiFID's rule) to protect price discovery, (ii) allow blocks to match outside the BBO, consistent with total consideration, (iii) limit trade-for-trade transactions with high collateral requirements and (iv) only award license for periodic block-crossing to “non-conflicted” operators.

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[44] http://www.dtcc.com/news/2010/june/01/nscc-begins-aggregating-trade-for-trade-obligations-to-reduce-cost-and-risk

[45] The fee is charged for each Settlement Day that it is in default and forced to borrow through buy-ins to protect the market from disruptions

4.5 Decentralized Trade Data

Decentralized trade data weakens price discovery and hinders best execution while increasing brokers' market data costs.

US mandates consolidated pre-trade and post-trade tapes. Canada introduced competition in 2001 without a consolidated tape and had to wait until the Canadian Securities Administrators (CSA) mandated tape which was ultimately consolidated by TMX in 2010.

NYSE, NASDAQ and Amex are the Securities Industry Processor (SIP) of each respective tape and operate the Consolidated Quotation System (CQS) and Consolidated Tape Association (CTA).

In its Concept Release[46], the SEC explains the importance of market data consolidation: "All participants in the U.S. markets have access to a consolidated, real-time stream of market. The information for each security is 'consolidated' in that it is continually collected from the various market centers that trade the security and then disseminated in a single stream of information. This consolidated, real-time stream of market information has been an essential element in the success of the U.S. securities markets. It is the principal tool for enhancing the transparency of the buying and selling interest in a security, for addressing the fragmentation of buying and selling interest among different market centers, and for facilitating the best execution of customers' orders by their broker-dealers."

Moreover, the SEC Concept Release explains that "broad public **access to consolidated market information was not the fortuitous result of private market forces, but of planning and concerted effort** by the Congress, the Commission, the SROs, and the securities industry as a whole. Prior to the 1970's, the various SROs had acted individually in deciding who would be entitled to receive their market information and on what terms. In the early 1970's, the Commission took the initial steps toward creating a central market system in which investors would have access to information from all markets."

Finally, the SEC added "One of the most important functions that the Commission can perform for retail investors is to ensure that they have access to the information they need to protect and further their own interests. This information could greatly expand the ability of retail investors to monitor and control their own securities transactions, including the quality of execution of their transactions by broker-dealers."

TSX was awarded in 2009 a 5-year license as the information processor (TMX IP) to consolidate the tape.

> **Canada NewsWire Group, May 12, 2010**
> "We are very pleased to have established our role as the CSA-mandated Information Processor for Canadian equities," said Eric Sinclair, President, TMX Datalinx and Group Head of Data Services. "We believe the benefits of having a single access point for obtaining Canadian consolidated data will translate into reduced connection costs for market participants as well as improved market efficiency and integrity."
>
> **TMX IP operates under "reasonable commercial terms"**
> "TMX IP will report annually to CSA staff, in writing, whether it has fully recovered its costs (including cost of capital and cost to meet the requirements under subsections 14.4(2), (4), and

[46] SEC Concept Release: Regulation of Market Information
https://www.sec.gov/rules/concept/34-42208.htm#sro

(5) of NI 21-101) associated with offering the TMX IP services and will review and report on whether the profit margin received from the TMX IP services is in line with industry standards."[47]

In addition to the submissions to the consolidated quote and tape, Canadian exchanges should be authorized to distribute their own data independently in order to promote the wide availability of market data.[48]

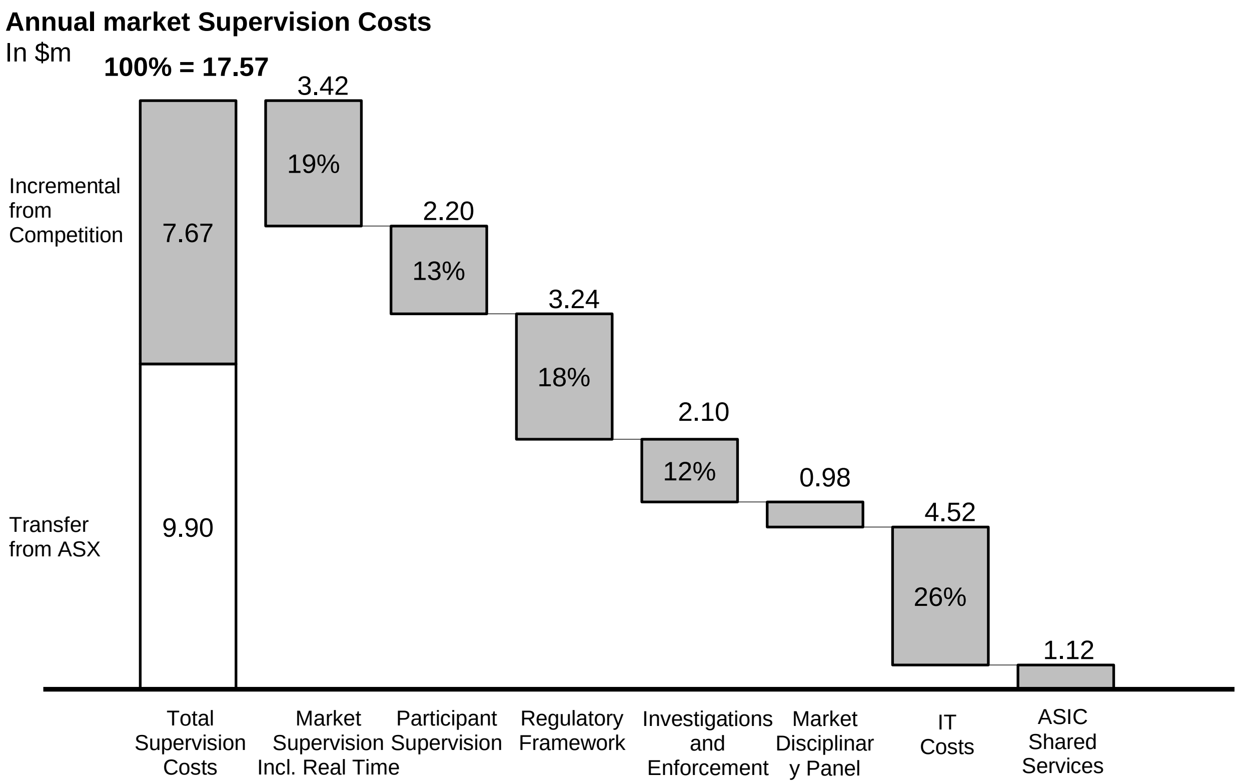
We recommend regulation to require pre-trade and post trade consolidation, awarding a license to an exchange, like IIROC's award to TMX.

[47] https://www.osc.gov.on.ca/en/SecuritiesLaw_sn_20140627_21-313_info-pro-exchange-traded.htm
[48] SEC Rule 601, Consolidation, Distribution, and Display of Data

4.6 Single-Independent Self Regulator

In Australia, the Single-Independent Self Regulator didn't fulfill the expectations of efficient regulation as the SSR doubled its supervision costs[49] after the introduction of competition.

Chart 26: Market Supervision Costs in Australia



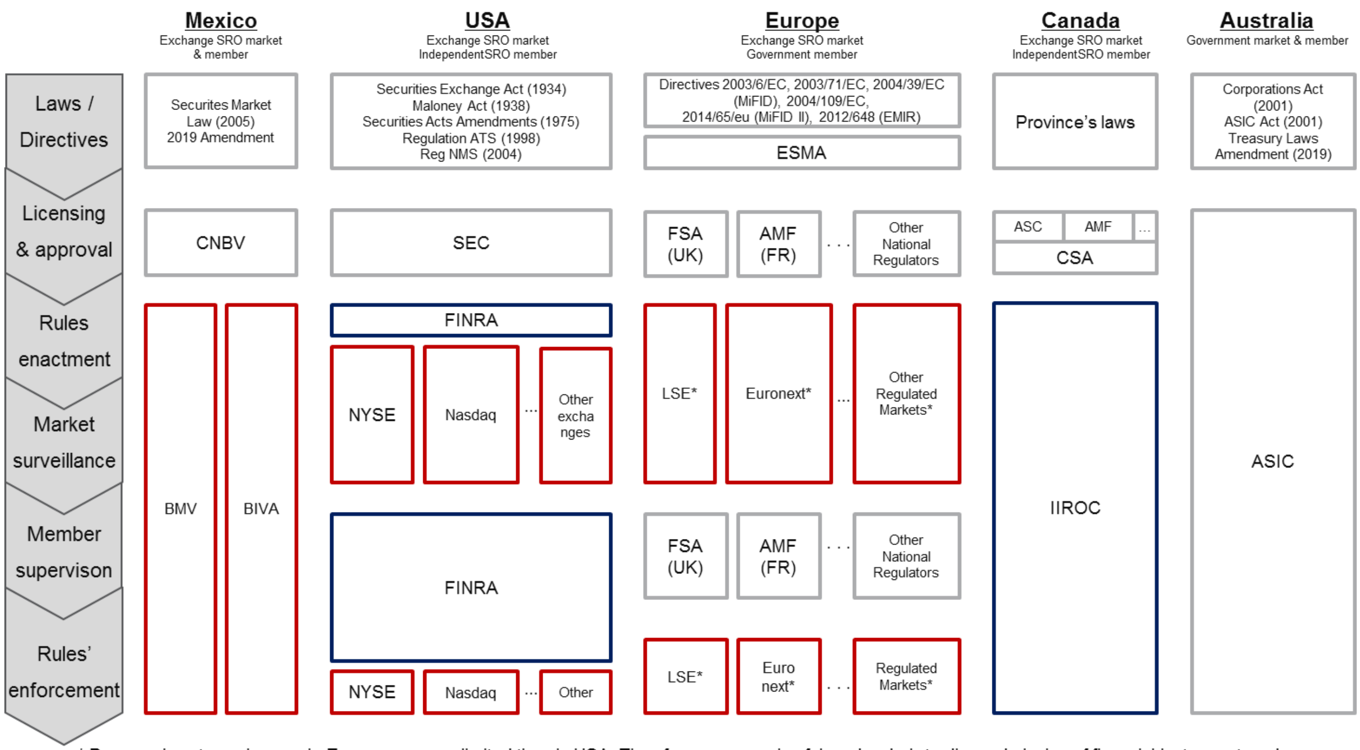
There are four SRO models that differ on who is responsible for the surveillance of markets and who is responsible for the supervision of members:

(1) Exchange conducts market surveillance & member supervision – eg, Mexico;
(2) Exchange conducts surveillance and outsources member supervision – eg USA;
(3) Exchange conducts market surveillance and government conducts member supervision – eg EU;
(4) Government conducts both, surveillance & supervision – eg, Canada

[49] Source: Cost recovery Impact Statement 2012-2013 (p.15) and Cost recovery Consultation Paper (p.31) Note: ASIC based the allocation of costs on industry relative revenues. Includes the ongoing costs of the integrated market surveillance system, IMSS. The total cost is net of supervision of the small financial markets, the ASX 24 market and the IMSS configuration fees for Chi-X and ASX PureMatch (that is $3.2 million).

Our recommendation is for the US model where exchanges conduct surveillance over their own markets and outsources member supervision to a single-self regulator, FINRA.

Chart 27: SRO Models



* Powers given to exchanges in Europe are more limited than in USA. They focus on securing fair and orderly trading, admission of financial instrumentsand access. EU exchanges have less powers on members; they include fines and suspension. There is no single, pan-European SRO defining universal market integrity rules.
Grey bound: public institution. Blue bound: non-profit SRO. Red bound: private, for-profit SRO.

This model places responsibility of supervision to each operator which conducts its own mission critical surveillance functions. This is key to prevent the case of China, where negligent surveillance ended up in the collapse of the futures market.

China opened its equity market through the Shanghai – Hong Kong Stock Connect to see its equity and futures market volumes increasing exponentially. The ADTV in CSI index futures surpassed that of the S&P futures. However, negligent surveillance incited misconduct, forcing regulators to close down liquidity providers:

The impact of China's regulatory investigations following the recent stock market crash

Clifford Chance – Briefing note – August 2015

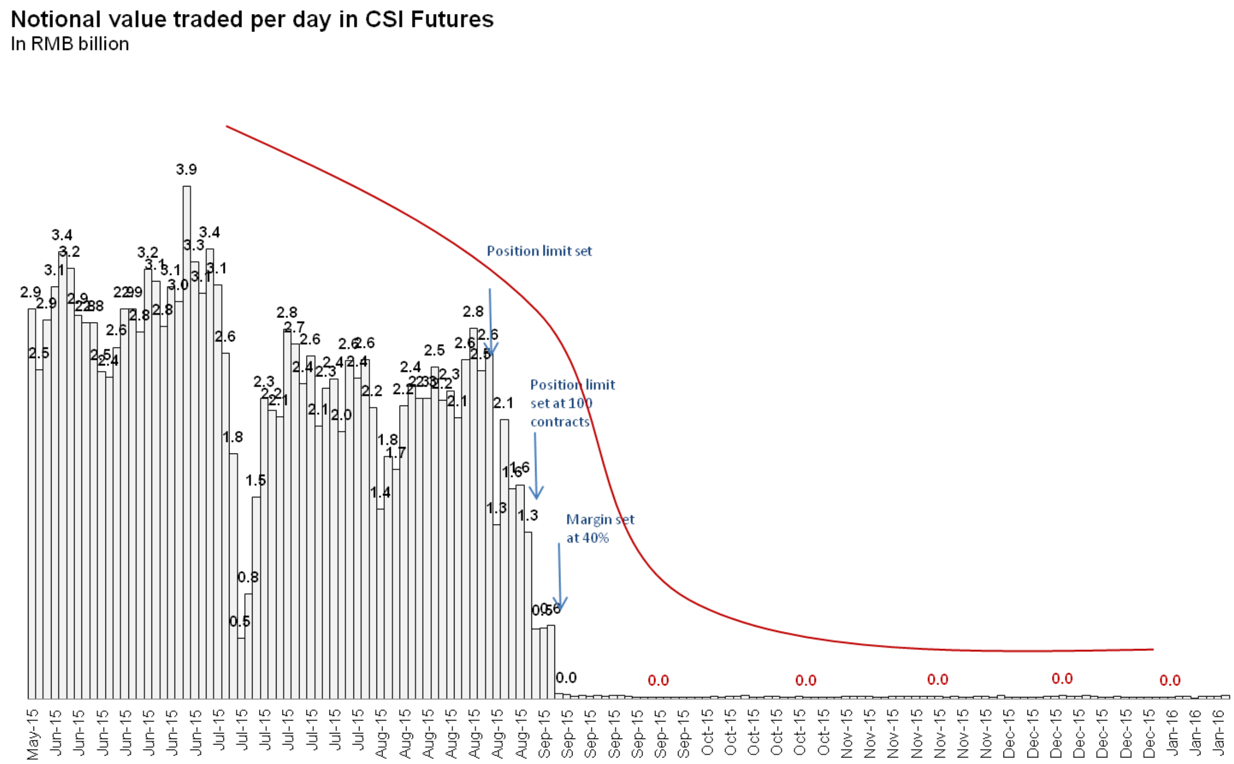
The CSRC is also paying attention to foreign investors' trading under the Shanghai – Hong Kong Stock Connect program and the shorting of A shares or the A share index (such as the SGX FTSE China A50 Index Futures) via offshore transactions
Asked for a definition of "malicious short selling" at a press conference earlier this month, CSRC spokesman Deng Ge said it was "cross-market manipulation".

China Crackdown on Citadel Shines Light on Foreign Firms

Wall Street Journal, Aug. 6, 2015

Ultimately, China had to sacrifice its futures market which was larger than the S&P 500

Chart 28: CSI Futures Traded Value



From our perspective, member supervision isn't critical so a single-self regulator can integrate this function and perform it for all exchanges reducing the cost to brokers.

We recommend the adoption of the US model, where each operator is responsible for its own surveillance and *use an external* SRO for duplicate activities like FINRA's member compliance.

4.7 Multiple Rulebooks

Multiple rulebooks can disguise misconducts and create new forms of misconduct, thus complicating the effective oversight of the market.

There are many instances where market participants have consciously dispersed their trading activity across multiple markets to avoid detection. The case of China, discussed in the previous section, shows how critical it is to conduct cross-market surveillance to prevent manipulations across venues within the same asset class and across asset classes. The more venues there are, the easier for a bad actor to hide its trades.

The first step is to require harmonized rules to prevent market disruptions that can create opportunities for misconduct[50]. The report jointly commissioned by the SEC and the CFTC on the May 2010 Flash Crash concluded that the event was triggered by exchanges' different trade cancellation policies. This turbulence was taken advantage of by a high-frequency trader who was arrested over his alleged role in the May 2010 “flash crash” as authorities blamed him for manipulation. CFTC Head of Enforcement Goelman stated “his conduct was at least significantly responsible for the order imbalance that in turn was one of the conditions that led to the flash crash.”

In a Senate hearing, the Chairman of the CME recommended the harmonization of rules across venues and across markets, including equity-linked markets.

Video 6: Chairman Duffy on Harmonization[51]

We recommend that regulation require harmonized rules for minimum tick size, trade cancellation policies, market level controls, circuit breakers, etc., and enforce cooperation with equity-linked derivatives markets.

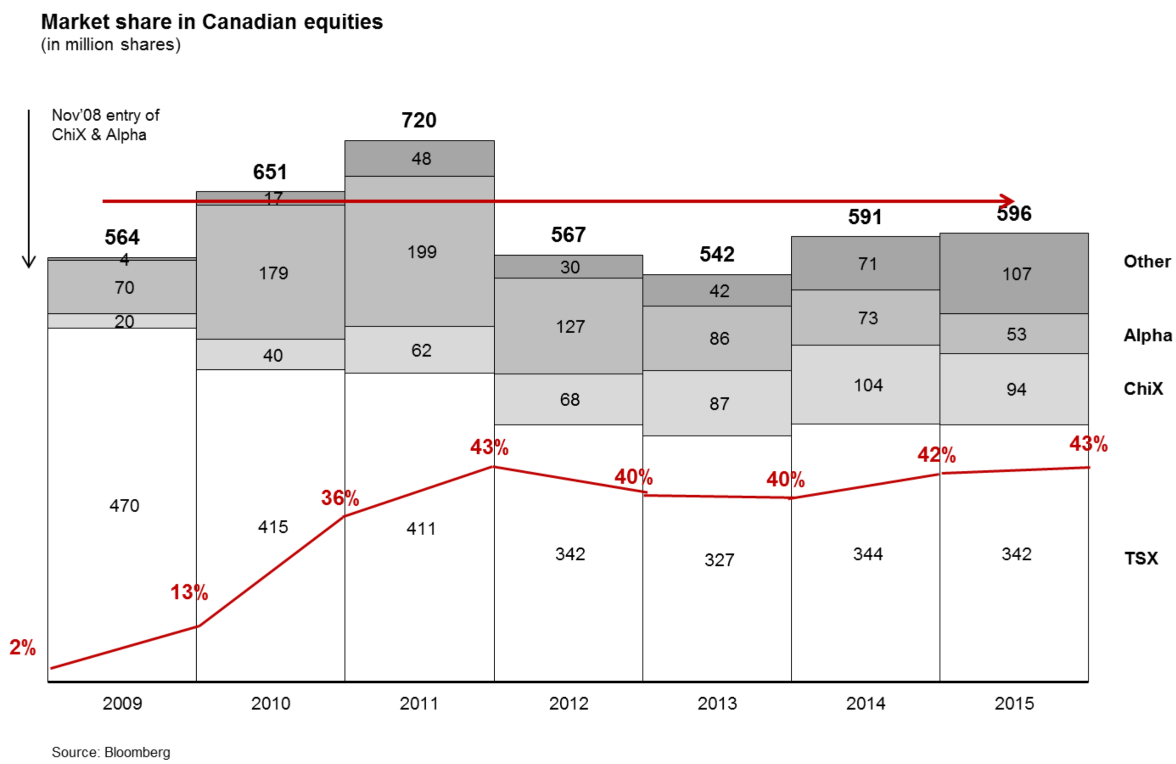
[50] UK speed trader arrested over role in 2010 'flash crash', Reuters April 21, 2015
[51] https://youtu.be/5kFTobh8axM Senate Hearing on May 5th, 2010

5. Conclusion

Brazil should tap the experience in other international markets to minimize the adverse effects of fragmentation, to assure that the benefits of competition surpass the incremental costs incurred by the industry.

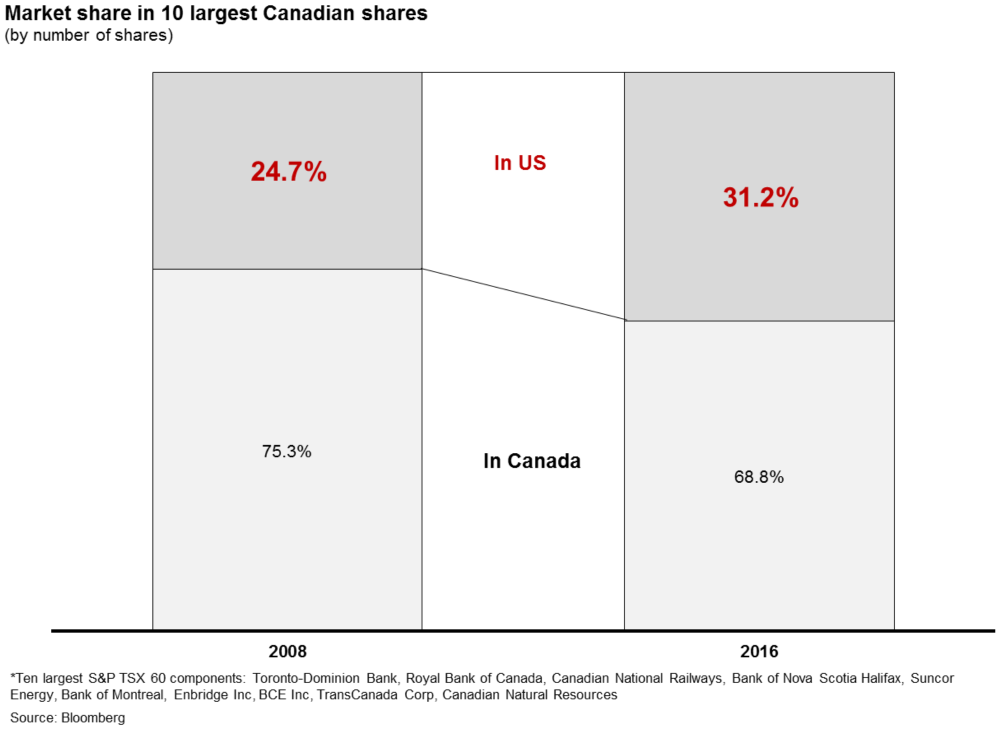
The introduction of competition in Canada at the beginning of 2009 fragmented the market with the new venues capturing 43% of the domestic market share by 2015. However, competition didn't expand volumes and the fragmentation caused by rebates and OPR deteriorated domestic liquidity and the market.

Chart 29: Canada - Traded Volume and Market Share



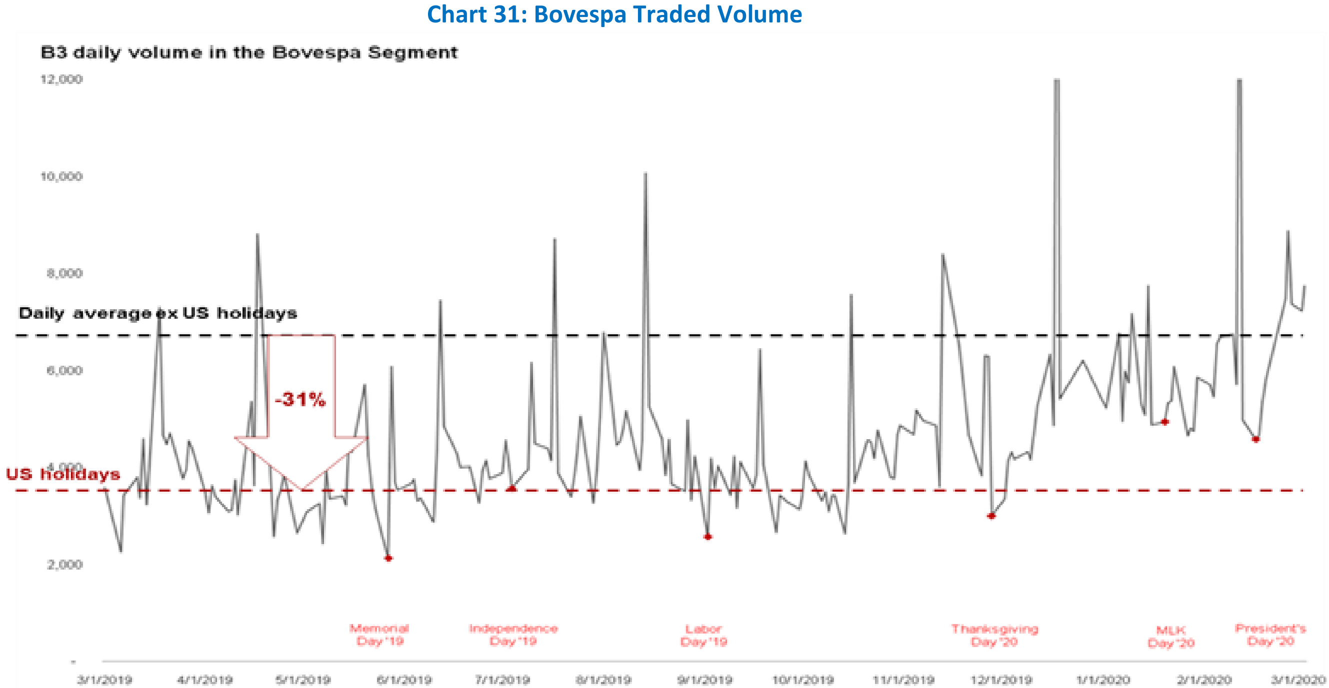
As a result, the market expatriated even further to the US

Chart 30: Market Share in Canadian Equities by Country



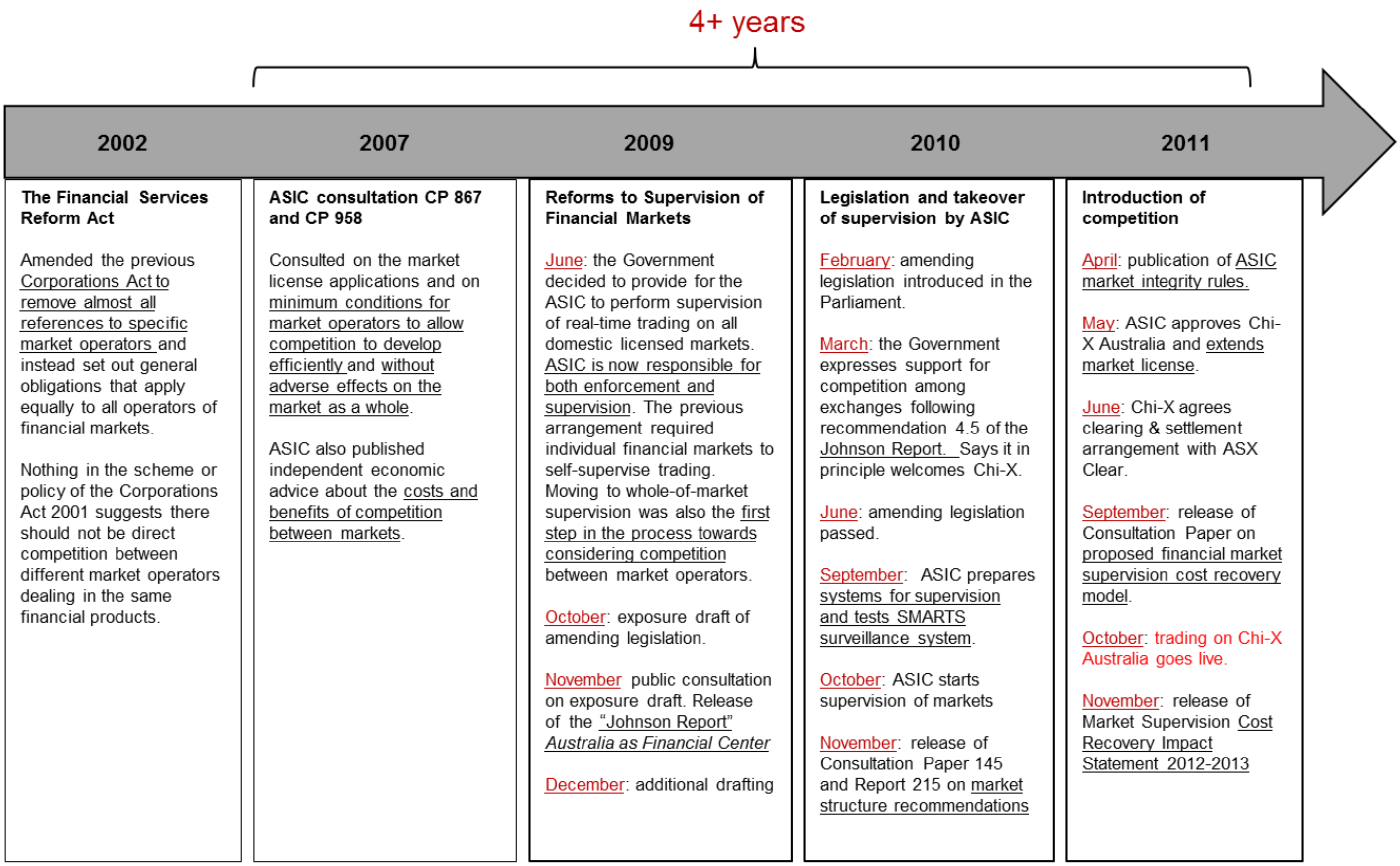
Brazil is also vulnerable to expatriation given the large number of Brazilian ADRs trading in the US. This is clear during US public holidays, when traded volumes in Brazil drop on average 31% due to the markets in the US being closed, **suggesting that US has a role in price discovery.**

Chart 31: Bovespa Traded Volume



Brazil should follow Australia's meticulous process to accommodate competition, given the risk of introducing regulations that could excessively fragment liquidity, increase trading costs, raise systemic risk and, eventually, expatriate volumes. ASIC implemented regulations enabling competition over the course of 4 years in order to properly assess the costs and benefits of each initiative, ensure capital market development, prevent expatriation of volumes and secure the backing of market participants.

Chart 32: Steps to Introduce Competition in Australia



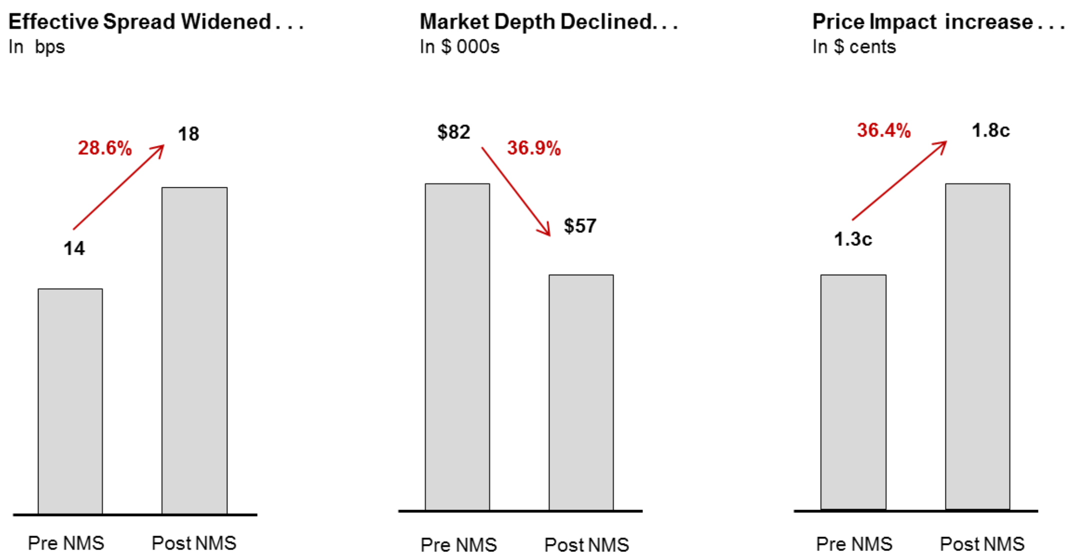
Source: ASIC

Finally, we recommend CVM to follow Australia's meticulous process to accommodate competition to prevent any further expatriation of the Brazilian capital markets.

6. Exhibit – The Effects of Reg NMS on Market Quality

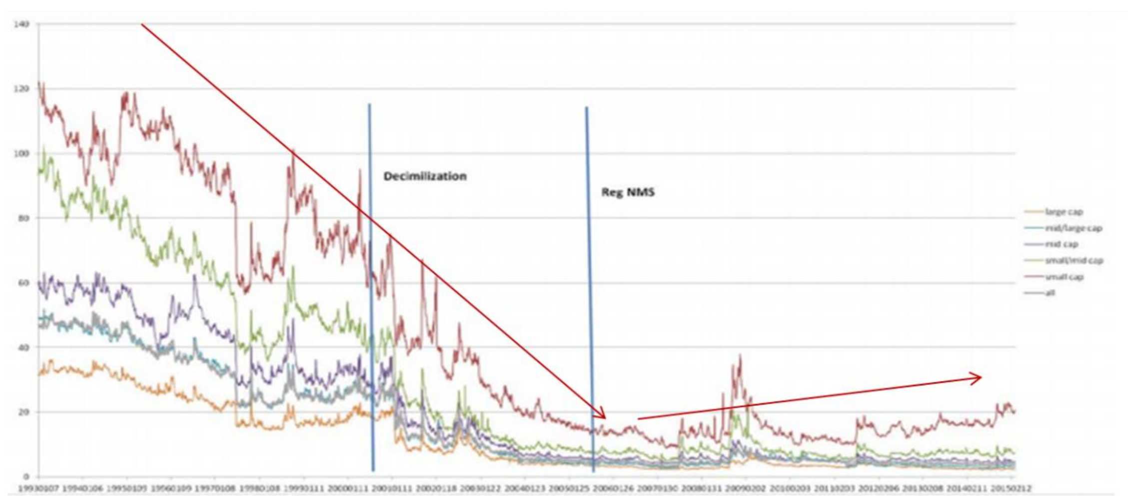
Numerous studies analyzing the quality of financial markets after the introduction of the Order Protection Rule within Reg NMS have concluded that the OPR had negative effects on the market´s quality, evidenced by a widening of effective spreads, reduced market depth and an increase in price

Chart 33: Effects of Reg NMS on Market Quality[52]



According to The Capital Group SVP Matt Lyons on the Failure of Reg NMS at an SEC panel: "after RegNMS there has been no material decrease in spreads, and even at the lower market cap range spreads have actually widened."[53]

Chart 34: Spreads on US Equities (in bps)



[52] Based on Regulation NMS and Market Quality, Kee H. Chung and Chairat Chuwonganant
http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1455969
[53] Watch video: https://www.flickr.com/photos/187598430@N04/49697018358
Source: www.sec.gov/news/otherwebcasts/2015/equity-market-structure-advisory-committee-102715.shtml

Regulatory Experience

Equity Research Desk (ERDesk) is a consulting and research firm focused on global capital markets-related entities such as securities exchanges, trading platforms, financial technology companies and index providers. ERDesk regularly consults for the exchange industry, market infrastructure operators, and investors in areas such as strategy, products, market structure, pricing, rules and regulations. ERDesk has worked extensively in frontier, emerging and developed markets. The coverage includes mutual and publicly-listed exchanges, brokers, and trading platforms, across the US, Europe, Africa, Asia and Latin America.

ERDesk also provides regular advice to regulators. Listed below are a few examples:

- **Jordan** (2020): conducting a strategic review of the regulatory function and the role of the Jordan Securities Commission.
- **Dominican Republic** (2019): conducted a fee benchmark to the SIMV, SuperIntendencia de Valores. Presented a fee justification based on the ROIC method.
- **Brazil** (2018): participated as an expert witness in the CADE antitrust case related to settlement fees.
- **Brazil** (2017): conducted a benchmark on post-trade fees presented to CVM
- **Mexico** (2016): provided the Mexican regulator CNBV with an analysis of the functioning of markets with multiple exchanges and presented a measured approach to introducing competition to minimize the adverse effects of fragmentation experienced in other international markets.
- **Croatia** (2016): presented the benefits of vertical integration.
- **Mozambique** (2016): provided advice to the exchange and authorities on regulatory framework and market development initiatives to accelerate growth of the local capital markets.
- **Panama** (2014): proposed regulatory changes to local authorities to help Panama benefit from opportunities created by regulatory reforms in USA and Europe, including the Dodd-Frank act in USA and EMIR in Europe.
- **Turkey** (2014): provided Turkish regulator CMB with an analysis of the likely impact of the introduction of competition in cash equity trading. The analysis included an assessment on the impact on market structure, costs and market shares. The presentation was conducted together with the EBRD (European Bank for Reconstruction and Development).
- **Russia** (2013): presented a set of initiatives and proposed regulatory reforms to the Federal Commission for Securities Markets (FCSM) of the Russian Federation and the Bank of Russia. Proposed reforms focused on market structure, competition and market development and included an update of regulatory reforms in the international agenda.
- **India** (2013): presented findings on equity trading costs to the SEBI. The presentation was conducted together with Wolfensohn Fund Management.
- **Argentina** (2012-Present): ERDesk advised the national securities commission CNV since the approval of the Capital Market Law of 2012, on market structure and regulation related to the best execution criteria, interconnection of stock markets, clearing models, and service fees. Other aspects covered include capital, operational and financial requirements to be met by financial infrastructures and intermediaries.
- **Russia** (2010): provided advice to the FCSM and the Ministry of Finance on the consequences of fragmented capital market infrastructures in Russia. The study focused on the effects of having a

multiplicity of registrars and depositories which prevented Russia from complying with SEC 17f-7 rule under the US Investment Company Act.

- **Australia** (2010): advised the ASIC on requirements, costs, benefits and impact of the potential introduction of competition in equity trading.
- **USA** (2004-Present): ERDesk Partner Benn Steil has testified on financial markets before the US House, Senate, SEC, CFTC

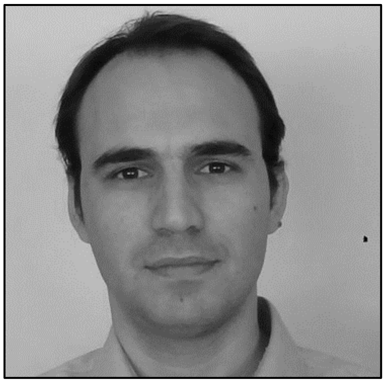
About the Authors

Diego Perfumo, ERDesk Managing Director

Diego provides investment research on exchanges and capital firms. Previously he worked for Efficient Frontiers advising exchanges, trading firms, brokers, and data provides in the cash, fixed income, derivatives, commodities, and currency markets.
He has received broad recognition for his in-depth coverage, regularly quoted in the media, including The Wall Street Journal, Barron's, Financial Times, Traders Magazine, etc.
Diego has conducted advisory work for exchanges, investors, regulators, ATSs, MTFs and brokers in the US, Canada, Mexico, Peru, Panama, Dominican Rep., Brazil, Argentina, Chile, Europe, Eastern Europe, Russia, India, China, Australia, etc.
He holds an MBA and a Masters in Financial Engineering from Columbia University.

Bernardo Mariano, ERDesk Managing Director

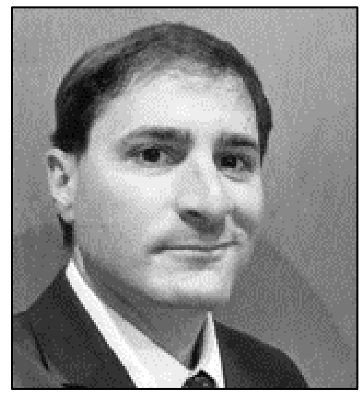
Bernardo provides research on exchanges including private equity investments of mutual exchanges. Prior to joining ERDesk Bernardo worked as a Director for Instinet and later, CEO of Reuters' Bondex.
He is regularly invited as a speaker at FIA's, FIAB's and WFE's events to speak on market structure, regulation and emerging markets.
Bernardo has conducted advisory work for exchanges, investors, regulators, ATSs, MTFs and brokers in the US, Canada, Mexico, Peru, Panama, Dominican Rep., Brazil, Argentina, Chile, Europe, Eastern Europe, Russia, India, China, Australia, etc.
He holds an MS in Economics from University of Illinois and an MIA in Finance from Columbia University.



Martín Pérez Enrri, ERDesk Associate

Martin consults on strategy, regulation, pricing and benchmarks of exchanges, alternative trading platforms, clearinghouses and central securities depositories. He has been advising regulators and exchanges in Mexico, Argentina, Brazil, Chile, Mexico, Russia, Turkey, Australia and India, among others.
Martín holds a degree in Economics from the University of Buenos Aires, an MSc in Financial Mathematics from Cass Business School, City, University of London, a Graduate Programme in Investment Management from London Business School, an MA in Finance from Universidad Torcuato Di Tella and BSc. in Economics from the University of Buenos Aires.

Alex Moreno, ERDesk Senior Consultant



Alex worked on numerous consulting projects for exchanges, asset managers, trading technology firms and trading firms in emerging markets with a view on market development, positioning, awareness and capacity building.
Prior to joining ERDesk, Alex held positions in Investment Banking and Private Equity at JPMorgan, Ernst & Young and S&P Global.
He holds a BSc in Economics from the University of Buenos Aires and is a CFA charterholder.

Previous ERDesk work on rules to promote competition

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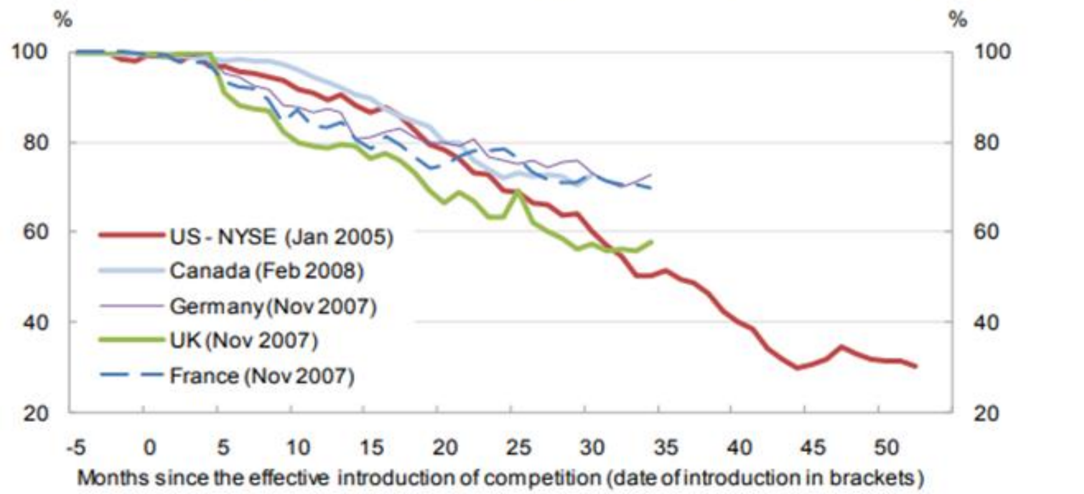
Australian equity market structure

ASIC

Australian Securities & Investments Commission

November 2010

Figure 7: Market share of primary exchange markets following introduction of competition



Source: D. Perfumo, B. Steil, presentation at the Exchange Forum 2010, Federation of Euro-Asian Stock Exchanges London, UK, 1 June 2010.