

Required fields are shown with yellow backgrounds and asterisks.

Page 1 of * 114	SECURITIES AND EXCHANGE COMMISSION WASHINGTON, D.C. 20549 Form 19b-4		File No.* SR - 2012 - * 044	Amendment No. (req. for Amendments *)
Proposed Rule Change by NASDAQ Stock Market Pursuant to Rule 19b-4 under the Securities Exchange Act of 1934				
Initial * <input checked="" type="checkbox"/>	Amendment * <input type="checkbox"/>	Withdrawal <input type="checkbox"/>	Section 19(b)(2) * <input type="checkbox"/>	Section 19(b)(3)(A) * <input checked="" type="checkbox"/>
			Section 19(b)(3)(B) * <input type="checkbox"/>	
			Rule	
Pilot <input type="checkbox"/>	Extension of Time Period for Commission Action * <input type="checkbox"/>	Date Expires * <input type="text"/>	<input type="checkbox"/> 19b-4(f)(1)	<input type="checkbox"/> 19b-4(f)(4)
			<input checked="" type="checkbox"/> 19b-4(f)(2)	<input type="checkbox"/> 19b-4(f)(5)
			<input type="checkbox"/> 19b-4(f)(3)	<input type="checkbox"/> 19b-4(f)(6)
Exhibit 2 Sent As Paper Document <input type="checkbox"/>		Exhibit 3 Sent As Paper Document <input type="checkbox"/>		
<b>Description</b> Provide a brief description of the proposed rule change (limit 250 characters, required when Initial is checked *). A proposed rule change to modify the fees applicable to non-display usage of certain NASDAQ depth-of-book market data.				
<b>Contact Information</b> Provide the name, telephone number and e-mail address of the person on the staff of the self-regulatory organization prepared to respond to questions and comments on the proposed rule change. First Name * John Last Name * Yetter Title * Deputy General Counsel E-mail * john.yetter@nasdaqomx.com Telephone * (301) 978-8497 Fax (301) 978-8472				
<b>Signature</b> Pursuant to the requirements of the Securities Exchange Act of 1934,  has duly caused this filing to be signed on its behalf by the undersigned thereunto duly authorized officer. Date 03/26/2012 By Edward S. Knight Executive Vice President and General Counsel (Name *) (Title *)  NOTE: Clicking the button at right will digitally sign and lock this form. A digital signature is as legally binding as a physical signature, and once signed, this form cannot be changed. Edward S Knight,				

SECURITIES AND EXCHANGE COMMISSION  
WASHINGTON, D.C. 20549

For complete Form 19b-4 instructions please refer to the EFFS website.

**Form 19b-4 Information (required)**

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The self-regulatory organization must provide all required information, presented in a clear and comprehensible manner, to enable the public to provide meaningful comment on the proposal and for the Commission to determine whether the proposal is consistent with the Act and applicable rules and regulations under the Act.

**Exhibit 1 - Notice of Proposed Rule Change (required)**

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The Notice section of this Form 19b-4 must comply with the guidelines for publication in the Federal Register as well as any requirements for electronic filing as published by the Commission (if applicable). The Office of the Federal Register (OFR) offers guidance on Federal Register publication requirements in the Federal Register Document Drafting Handbook, October 1998 Revision. For example, all references to the federal securities laws must include the corresponding cite to the United States Code in a footnote. All references to SEC rules must include the corresponding cite to the Code of Federal Regulations in a footnote. All references to Securities Exchange Act Releases must include the release number, release date, Federal Register cite, Federal Register date, and corresponding file number (e.g., SR-[SRO]-xx-xx). A material failure to comply with these guidelines will result in the proposed rule change being deemed not properly filed. See also Rule 0-3 under the Act (17 CFR 240.0-3)

**Exhibit 2 - Notices, Written Comments, Transcripts, Other Communications**

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Exhibit Sent As Paper Document

Copies of notices, written comments, transcripts, other communications. If such documents cannot be filed electronically in accordance with Instruction F, they shall be filed in accordance with Instruction G.

**Exhibit 3 - Form, Report, or Questionnaire**

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Exhibit Sent As Paper Document

Copies of any form, report, or questionnaire that the self-regulatory organization proposes to use to help implement or operate the proposed rule change, or that is referred to by the proposed rule change.

**Exhibit 4 - Marked Copies**

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The full text shall be marked, in any convenient manner, to indicate additions to and deletions from the immediately preceding filing. The purpose of Exhibit 4 is to permit the staff to identify immediately the changes made from the text of the rule with which it has been working.

**Exhibit 5 - Proposed Rule Text**

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The self-regulatory organization may choose to attach as Exhibit 5 proposed changes to rule text in place of providing it in Item I and which may otherwise be more easily readable if provided separately from Form 19b-4. Exhibit 5 shall be considered part of the proposed rule change.

**Partial Amendment**

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If the self-regulatory organization is amending only part of the text of a lengthy proposed rule change, it may, with the Commission's permission, file only those portions of the text of the proposed rule change in which changes are being made if the filing (i.e. partial amendment) is clearly understandable on its face. Such partial amendment shall be clearly identified and marked to show deletions and additions.

1. Text of Proposed Rule Change

(a) Pursuant to the provisions of Section 19(b)(1) under the Securities Exchange Act of 1934 (“Act”),<sup>1</sup> and Rule 19b-4 thereunder,<sup>2</sup> The NASDAQ Stock Market LLC (“NASDAQ” or “Exchange”) is filing with the Securities and Exchange Commission (“Commission”) a proposal to modify the fees applicable to Non-Display Usage of certain NASDAQ Depth-of-Book market data. Specifically, NASDAQ will establish a monthly Subscriber fee of \$300 for Non-Display Usage of Depth-of-Book data (as defined in NASDAQ Rule 7023(a)(1)) by Professional Subscribers that access that data directly from NASDAQ. The Subscriber fee will be tiered based on the number of Subscribers and will be capped at a maximum monthly fee of \$75,000.

The text of the proposed rule change is below. Proposed new language is underlined; deleted text is bracketed<sup>3</sup>

\* \* \* \* \*

**7023. NASDAQ Depth-of-Book Data**

(a) Definitions applicable to this Rule.

(1) Depth-of-Book refers to data feeds containing price quotations at more than one price level. The Depth-of-Book data feeds are:

(A) NASDAQ Level 2 means, with respect to stocks listed on NASDAQ, the best-priced orders or quotes from each NASDAQ member displayed in the NASDAQ Market Center;

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<sup>1</sup> 15 U.S.C. 78s(b)(1).

<sup>2</sup> 17 CFR 240.19b-4.

<sup>3</sup> Changes are marked to the rules of The NASDAQ Stock Market LLC found at [nasdaq.cchwallstreet.com](http://nasdaq.cchwallstreet.com). The changes also include SR-NASDAQ-2012-042, which NASDAQ filed with the Commission on March 23, 2012.

(B) NASDAQ OpenView means, with respect to stocks listed on an exchange other than NASDAQ, all orders and quotes from all NASDAQ members displayed in the NASDAQ Market Center as well as the aggregate size of such orders and quotes at each price level in the execution functionality of the NASDAQ Market Center; and

(C) NASDAQ TotalView means, with respect to stocks listed on NASDAQ, all orders and quotes from all NASDAQ members displayed in the NASDAQ Market Center as well as the aggregate size of such orders and quotes at each price level in the execution functionality of the NASDAQ Market Center.

(2) Display/Non-Display Usage refers to the method by which Subscribers access Depth-of-Book data.

(A) Display Usage means any method of accessing Depth-of-Book data that involves the display of such data on a screen or other visualization mechanism for access or use by a natural person or persons, and

(B) Non-Display Usage means any method of accessing Depth-of-Book data that involves access or use by a machine or automated device without access or use of a display by a natural person or persons.

(3) Professional/Non-Professional Subscriber refers to the classification of types of Subscribers.

(A) A Non-Professional Subscriber is a natural person who is not:

(1) registered or qualified in any capacity with the Commission, the Commodity Futures Trading Commission, any state securities agency, any securities exchange or association, or any commodities or futures contract market or association;

(2) engaged as an "investment adviser" as that term is defined in Section 201(11) of the Investment Advisers Act of 1940 (whether or not registered or qualified under that Act); or

(3) employed by a bank or other organization exempt from registration under federal or state securities laws to perform functions that would require registration or qualification if such functions were performed for an organization not so exempt.

(B) A Professional Subscriber is any Subscriber other than a Non-Professional Subscriber.

- (4) Distributor refers to any entity that receives a feed or data file of Depth-of-Book data directly from NASDAQ or indirectly through another entity and then distributes it to one or more Subscribers.

(A) Internal Distributors are Distributors that receive a Depth-of-Book feed or data file and then distribute that feed or data file to one or more Subscribers within the Distributor's own entity.

(B) External Distributors are Distributors that receive a Depth-of-Book feed or data file and then distribute that feed or data file to one or more Subscribers outside the Distributor's own entity.

All Distributors shall execute a NASDAQ Distributor Agreement. NASDAQ itself is a vendor of its Depth-of-Book data feed(s) and has executed a NASDAQ Distributor Agreement and pays the Distributor charge.

- (5) Direct/Indirect Access refers to the manner in which a Distributor or Subscriber receives or accesses NASDAQ Depth-of-Book data.

(A) Direct Access has the same meaning as set forth in NASDAQ Rule 7019(c).

(B) Indirect Access means any means of accessing NASDAQ Depth-of-Book data other than Direct Access.

- (6) A Controlled Device is any device that a Distributor of NASDAQ Depth-of-Book data permits to: (1) access the Depth-of-Book information or (2) communicate with the Distributor so as to cause the Distributor to access the Depth-of-Book data.

Where a Controlled Device is part of an electronic network between computers used for investment, trading or order routing activities, the Distributor must demonstrate that the particular Controlled Device should not have to pay for an entitlement. For example, in some Display systems the Distributor gives the Subscribers the choice to view the data or not; a Subscriber that chooses not to view it would not be charged. Similarly, in a Non-Display system, users of Controlled Devices may have a choice of basic or advanced computerized trading or order routing services, where only the advanced version uses the information. Customers of the basic service would not be charged.

(b) Subscriber Fees.

- (1) NASDAQ Level 2

- (A) Non-Professional Subscribers pay a monthly fee of \$9 each;
- (B) Professional Subscribers pay a monthly fee of \$30 each for any Display Usage, or for Non-Display Usage based upon Indirect Access; [and]
- (C) Professional Subscribers pay a monthly fee as set forth in subsection (4) below for Non-Display Usage based upon Direct Access; and
- (D) The monthly Subscriber fees for NASDAQ Level 2 are separate from the fees for NASDAQ Level 1 set forth in the NASDAQ UTP Plan.
- (2) NASDAQ TotalView
- (A) Non-Professional Subscribers pay a monthly fee of \$14 each; [and]
- (B) Professional Subscribers pay a monthly fee of \$70 each for any Display Usage, or for Non-Display Usage based upon Indirect Access; and[.]
- (C) Professional Subscribers pay a monthly fee as set forth in subsection (4) below for Non-Display Usage based upon Direct Access.
- (3) NASDAQ OpenView
- (A) Non-Professional Subscribers pay a monthly fee of \$1 each;
- (B) Professional Subscribers pay a monthly fee of \$6 each for any Display Usage, or for Non-Display Usage based upon Indirect Access;
- (C) There is no fee for use of NASDAQ OpenView Top-of-File data which consists of NASDAQ's aggregate best bid and offer quotation for each security listed on an exchange other than NASDAQ; and[.]
- (D) Professional Subscribers pay a monthly fee as set forth in subsection (4) below for Non-Display Usage based upon Direct Access.
- (4) Professional Subscribers pay a monthly fee for Non-Display Usage based upon Direct Access to NASDAQ Level 2, NASDAQ TotalView, or NASDAQ OpenView:

<u>Subscribers</u>	<u>Monthly Fee</u>
<u>1-10</u>	<u>\$ 300 per</u>
<u>11-29</u>	<u>\$ 3,300.00</u>
<u>30-49</u>	<u>\$ 9,000.00</u>

<u>Subscribers</u>	<u>Monthly Fee</u>
<u>50-99</u>	<u>\$ 15,000.00</u>
<u>100-249</u>	<u>\$ 30,000.00</u>
<u>250+</u>	<u>\$ 75,000.00</u>

The Professional Subscriber fee for Non-Display Usage via Direct Accessed applies to any Subscriber that accesses any data elements included in any Depth-of-Book data feed.

(c) Enterprise License Fees

- (1) A Distributor that is also a broker-dealer pays a monthly fee of \$25,000 for the right to provide NASDAQ TotalView and NASDAQ OpenView to Non-Professional Subscribers for Internal Distribution, or for External Distribution to Subscribers with whom the firm has a brokerage relationship. This Enterprise License shall not apply to relevant Level 1 and NASDAQ Level 2 fees.
  - (2) A Distributor that is also a broker-dealer pays a monthly fee of \$100,000 for the right to provide NASDAQ TotalView and NASDAQ OpenView for Display Usage by Professional and non-Professional Subscribers for Internal Distribution, or for External Distribution to Subscribers with whom the firm has a brokerage relationship. This Enterprise License shall not apply to relevant Level 1 and NASDAQ Level 2 fees.
  - (3) As an alternative to subsections (1) and (2) above, a Distributor that is also a broker-dealer may pay a monthly fee of \$325,000 to provide NASDAQ Level 2, NASDAQ TotalView, or NASDAQ OpenView for Display Usage by Non-Professional Subscribers with whom the firm has a brokerage relationship. This Enterprise License shall not apply to relevant Level 1 or Depth Distributor fees.
  - [(4) A Distributor that is also a broker-dealer pays a monthly fee of \$30,000 for Internal Distribution of TotalView and OpenView for Non-Display Usage by an unlimited number of devices within that firm. This Enterprise License shall not apply to relevant Level 1 fees.]
- (d) 30-Day Free-Trial Offer: NASDAQ shall offer all new individual Subscribers and potential new individual Subscribers a 30-day waiver of the Subscriber fees for NASDAQ TotalView. This waiver shall not include the incremental fees assessed for the NASDAQ Level 2-only service, which are \$30 for Professional Subscribers and \$9 for Non-Professional Subscribers per month. This fee waiver period shall be applied on a rolling basis, determined by the date on which a new individual Subscriber or potential individual Subscriber is first entitled by a Distributor to receive access to NASDAQ TotalView. A Distributor may only provide this waiver to a specific individual Subscriber once. For the period of the

offer, the NASDAQ TotalView fee of \$40 per Professional Subscriber and \$5 per Non-Professional Subscriber per month shall be waived.

- (e) **Historical ModelView Information:** NASDAQ will make historical ModelView information available via NASDAQTrader.com. ModelView contains historical information regarding aggregate displayed and reserve liquidity at each price level directly from the NASDAQ Market Center. ModelView is available for a subscription fee of \$2,000 per month.

\* \* \* \* \*

(b) Not applicable.

(c) Not applicable.

2. Procedures of the Self-Regulatory Organization

The proposed rule change was approved by senior management of the Exchange pursuant to authority delegated by the Board of Directors of NASDAQ on July 18, 2007. Exchange staff will advise the Board of Directors of the Exchange of any action taken pursuant to delegated authority. No other action by the Exchange is necessary for the filing of the rule change.

Questions regarding this rule filing may be directed to Jeffrey S. Davis, Deputy General Counsel, The NASDAQ OMX Group, at (301) 978-8484 (telephone) or (301) 978-8472 (fax), or John Yetter, Deputy General Counsel, The NASDAQ OMX Group, at (301) 978-8497 (telephone) or (301) 978-8472 (fax).

3. Self-Regulatory Organization's Statement of the Purpose of, and Statutory Basis for, the Proposed Rule Change

a. Purpose

***Growth in Use of Non-Displayed Data.*** The implementation of Regulation NMS in 2006 and 2007 triggered a dramatic change in the composition, speed, and consumption of market data products in U.S. equities trading. Regulation NMS spurred the development and proliferation of proprietary data products by liberalizing SEC Rule



603, allowing self-regulatory organizations to offer on a proprietary basis data that previously was confined to national market system plans, and permit investors to use this proprietary data in circumstances where consolidated data previously was required. Regulation NMS also drove market participants to increase trading speed and, by necessity, the speed of market data feeds by requiring in Rule 611 that all market participants compete to access a limited set of protected quotations. As a result, some market participants and exchanges have used Depth-of-Book data to identify liquidity in fragmented markets.

Technological advancements and their use by increasingly sophisticated market participants have intensified the changes brought about by Regulation NMS. For example, the prevalence and importance of co-location has grown rapidly as market participants seek to access protected quotes faster than their competitors. Also, markets and market participants continually seek expanded bandwidth options to communicate an ever-increasing number of trading messages without significant latencies and improvement of determinism. Connectivity offerings have multiplied as new networks and technologies come on line.

As technology, automation, speed, and other aspects of trading have evolved, so too has market data consumption. No longer is trading and investing dominated by individuals responding to market data displayed on trading screens by manually entering quotes and trades into the markets. Instead, the vast majority of trading is done by firms leveraging powerful servers running sophisticated algorithms and consuming massive quantities of data without displaying that data to individual traders. While certain groups of investors, including retail investors, continue to view traditional market data displays,

their orders are generally processed, delivered, and executed by firm servers using non-displayed data. Non-Display Usage is used not only for automated order generation and program trading, but also to provide reference prices for algorithmic trading and order routing; and for various back office processes, including surveillance, order verification, and risk management functions.

***NASDAQ Market Data Pricing.*** NASDAQ's pricing model for market data products must keep pace with changes in data consumption patterns in order to allocate fees and charges fairly among Subscribers. NASDAQ's pricing has evolved over time in response to previous changes in market data consumption, and it now includes numerous factors for setting fees. Generally, NASDAQ allocates market data fees among Subscribers based on the data elements consumed, including top-of-book,<sup>4</sup> Depth-of-Book,<sup>5</sup> and other, more sophisticated data products.<sup>6</sup> NASDAQ also distinguishes between different sets of securities, NASDAQ-listed securities versus securities listed on other markets for which NASDAQ's data plays a different, often more limited, role. Moreover, NASDAQ has long followed industry practice by distinguishing between real-time and delayed data, allocating higher fees to real-time usage and lower or no fees to delayed data usage. Also, since 1999 NASDAQ has distinguished between Professional and Non-Professional Subscribers, offering lower fees to Non-Professional Subscribers in order to encourage use by average investors and also recognizing that Professional

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<sup>4</sup> Compare NASDAQ Rule 7011 (top-of-book consolidated data) and NASDAQ Rule 7047 (top-of-book NASDAQ-only data).

<sup>5</sup> See NASDAQ Rule 7023.

<sup>6</sup> See NASDAQ Rules 7044 (Market Pathfinders), 7048 (Custom Data Feeds), and 7057 (NASDAQ MatchView).

Subscribers make heavier use of the same data feeds.<sup>7</sup> These four distinctions have existed in tandem for many years.

Since the mid-2000s, in response to changes driven by Regulation NMS, NASDAQ has added new considerations to its pricing. Thus, in 2005, NASDAQ amended its Distributor fee schedule to distinguish between distributions that is Internal (redistribution within an entity that receives NASDAQ market data) versus External (redistribution outside that entity) to the Distributor.<sup>8</sup> Also, in 2005 NASDAQ began differentiating between Direct Access and Indirect Access, charging more for firms that access data directly from NASDAQ based on the enhanced speed and simplicity for Subscribers and the increased burden on NASDAQ of administering individual Distributor relationships.<sup>9</sup> Later, in 2007, NASDAQ began offering enterprise licenses that allocate fees by volume of usage, differentiating among heavy consumers and lighter consumers by capping fees.<sup>10</sup>

In March 2010, NASDAQ introduced an enterprise license for Non-Display Usage of market data.<sup>11</sup> Currently, NASDAQ offers two options for measuring Non-Display Usage of Depth-of-Book equities data. First, a firm can count and report each server or other Subscriber or device that uses data, whether displayed or non-displayed,

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<sup>7</sup> See NASDAQ Rule 7023(a)(3)(A).

<sup>8</sup> See NASDAQ Rule 7023(a)(4).

<sup>9</sup> See NASDAQ Rule 7023(a)(5)

<sup>10</sup> See NASDAQ Rule 7023(c).

<sup>11</sup> See NASDAQ Rule 7023(a)(1)((D)). See also Securities Exchange Act Release No. 34-61700 (Mar. 12, 2010), 75 F.R. 13172 (Mar. 18, 2010). See also NASDAQ Options Rules, Chapter XV, Section 4(a).

and pay the Professional fee for each Subscriber. Second, NASDAQ offers an optional \$30,000 per month Non-Display TotalView and OpenView fee cap for Internal Distribution.<sup>12</sup> For firms reporting over 400 Subscribers, the optional fee cap offers a cost savings per Subscriber, as well as relief from the administrative costs of identifying, tracking, and reporting each covered Subscriber. NASDAQ is proposing to remove this enterprise license for Non-Display Usage, as described in detail below.

***Current Proposal.*** NASDAQ is amending NASDAQ Rule 7023 to create a new Subscriber fee and tiered pricing structure for Direct Access to Depth-of-Book data that Professional Subscribers use in a Non-Display manner. This further refinement to NASDAQ's fees for Non-Display Usage of Depth-of-Book data leverages existing distinctions between Professional and Non-Professional Subscribers and between Direct and Indirect Access to data. Specifically, the proposed fee schedule for Direct Access is as follows:

<u>Subscribers</u>	<u>Monthly Fee</u>
1-10	\$300 per
11-29	\$3,300.00
30-49	\$9,000.00
50-99	\$15,000.00
100-249	\$30,000.00
250+	\$75,000.00

The fee for Professional Subscribers for Non-Display Usage that is accessed directly from NASDAQ shall apply to any Subscriber that accesses any data elements included in the TotalView entitlement, including the TotalView, OpenView, or Level 2 data elements. Professional Subscribers that access Depth-of-Book data indirectly and then

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<sup>12</sup> The TotalView and OpenView fee cap does not currently include Distributor fees. See NASDAQ Rule 7023(c)(4).

use it in a Non-Display fashion will pay the same Subscriber fees as Professional Subscribers that use comparable Display data.

NASDAQ has determined to apply the proposed Non-Display Usage fee to a finite group of Subscribers that consume high quantities of market data but that have, due to NASDAQ's current pricing structure, paid disproportionately low fees. The new fee will apply to (1) Professional Subscribers; (2) that are Internal Distributors; (3) via Direct Access; and (4) via Non-Display Usage. The historical rationales supporting these four existing distinctions apply with equal force to the current proposal.

*Empirical Data and Analysis.* NASDAQ considered numerous factors in determining the proper level of non-display fees to assess. Based on NASDAQ's knowledge and experience with firm trading behavior and data usage reporting, NASDAQ hypothesized that these trading characteristics correlate highly with intense Non-Display Usage, and that firms not exhibiting those characteristics correlate highly with higher Display Usage. To test this hypothesis, NASDAQ analyzed one month's data regarding order intensity, liquidity removal, and time at the inside among firms that are co-located and those that are not and among firms that connect to NASDAQ via a high number of ports versus a lower number of ports.<sup>13</sup> NASDAQ then compared overall market data costs for firms with high usage of non-displayed data versus firms with high usage of displayed market data.

NASDAQ found that the group of firms with high order intensity is comprised disproportionately of firms with Non-Display Usage. NASDAQ analyzed maximum

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<sup>13</sup> January 2012 represents the most recent full-month of data available. As such, it best represents current trading and data usage patterns and the best prediction of the actual application of the proposed fees.

order entry rates for 370 firms for the month of January 2012. As shown on Slide 1, of 370 firms, only 38 firms had maximum order entry rates exceeding 5,000 orders per second. NASDAQ believes that 23 of those 38 firms utilize exclusively non-displayed data, thereby paying less for market data than the 15 other firms with high order intensity rates that utilize displayed data. Further analysis revealed that firms with high order intensity often paid lower market data fees than firms with lower, often substantially lower, order intensity.

NASDAQ also found that firms removing high levels of liquidity and also utilizing high numbers of OUCH connectivity ports are disproportionately likely to engage in exclusively Non-Display Usage. As shown on Slide 2, NASDAQ determined that of the 272 firms that remove an average of over 100,000 shares of liquidity per day, the top 18 liquidity takers all rely exclusively on Non-Display data.<sup>14</sup> Again, further analysis revealed that firms removing high levels of liquidity, using high numbers of connectivity ports, and relying on non-displayed data paid disproportionately lower market data fees than firms removing comparable or greater liquidity and using comparable numbers of ports but using displayed market data.

Additionally, NASDAQ found that firms quoting most often at the inside and also removing high levels of liquidity are disproportionately likely to use exclusively Non-Display data. As shown on Slide 3, NASDAQ observed 351 firms for the month of January 2012, measuring time at the inside and liquidity taking. High rates of quoting at the inside require continual quote updates and generates substantial message traffic.

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<sup>14</sup> NASDAQ's findings are set forth in Exhibit 3B, pages 111 through 114 of this proposed rule change. This excludes one exchange that removes over 100,000 average shares of liquidity daily.

Likewise, high rates of liquidity taking require high levels of order submission, also generating high message traffic. Again, of the 351 firms covered, 27 firms that rely exclusively on non-displayed market data were over-represented among firms with high levels of both studied behaviors. Additionally, those 27 firms were under-billed relative to firms experiencing comparable or lower-intensity behavior and that consumed displayed market data.

NASDAQ found that firms that are co-located within NASDAQ's Carteret facility and that rely exclusively on Non-Display Usage account for a disproportionate percentage of overall message traffic. Based on data for January 2012, 23 co-located, non-display firms account for 70 percent of NASDAQ's overall message traffic whereas 359 other firms that are not co-located and/or that rely on displayed data account for 26 percent of NASDAQ's overall message traffic. As shown on Slide 4, Subscribers of non-displayed data, both co-located and not, account for 74 percent of NASDAQ's overall message traffic. These firms not only consume high quantities of market data, they also create significant quantities of market data that then must be processed, disseminated, and consumed by numerous industry participants.

Finally, NASDAQ studied the market data fees paid by non-display firms isolated by the data in Slides 1 through 4, comparing them with the market fees paid by otherwise comparable firms that rely on Display Usage. Based on this analysis, NASDAQ concluded that firms engaged in quoting and trading behavior based on Display Usage of market data paid on average eight times more in total market data fees compared with firms that engaged in comparable or higher-intensity behavior based on Non-Display Usage. NASDAQ designed the current to rectify this disparity by applying only to firms

that use exclusively non-displayed data and by using Subscriber tiers that correlate to the trading behaviors observed.

If, after further observation, NASDAQ determines that the proposed fees are either over-inclusive or under-inclusive in reaching the desired equalization, NASDAQ will modify the fees accordingly via a future proposed rule change.

b. Statutory Basis

NASDAQ believes that the proposed rule change is consistent with the provisions of Section 6 of the Act,<sup>15</sup> in general, and with Section 6(b)(4) of the Act,<sup>16</sup> in particular, in that it provides an equitable allocation of reasonable fees among Subscribers and recipients of NASDAQ data. In adopting Regulation NMS, the Commission granted self-regulatory organizations and broker-dealers increased authority and flexibility to offer new and unique market data to the public. It was believed that this authority would expand the amount of data available to consumers, and also spur innovation and competition for the provision of market data.

The Commission concluded that Regulation NMS—by deregulating the market in proprietary data—would itself further the Act’s goals of facilitating efficiency and competition:

[E]fficiency is promoted when broker-dealers who do not need the data beyond the prices, sizes, market center identifications of the NBBO and consolidated last sale information are not required to receive (and pay for) such data. The Commission also believes that efficiency is promoted when broker-dealers may choose to receive (and pay for) additional

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<sup>15</sup> 15 U.S.C. 78f.

<sup>16</sup> 15 U.S.C. 78f(b)(4).



market data based on their own internal analysis of the need for such data.<sup>17</sup>

By removing “unnecessary regulatory restrictions” on the ability of exchanges to sell their own data, Regulation NMS advanced the goals of the Act and the principles reflected in its legislative history. If the free market should determine whether proprietary data is sold to broker-dealers at all, it follows that the price at which such data is sold should be set by the market as well. Level 2, TotalView and OpenView are precisely the sort of market data product that the Commission envisioned when it adopted Regulation NMS.

On July 21, 2010, President Barack Obama signed into law H.R. 4173, the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 (“Dodd-Frank Act”), which amended Section 19 of the Act. Among other things, Section 916 of the Dodd-Frank Act amended paragraph (A) of Section 19(b)(3) of the Act by inserting the phrase “on any person, whether or not the person is a member of the self-regulatory organization” after “due, fee or other charge imposed by the self-regulatory organization.” As a result, all SRO rule proposals establishing or changing dues, fees, or other charges are immediately effective upon filing regardless of whether such dues, fees, or other charges are imposed on members of the SRO, non-members, or both. Section 916 further amended paragraph (C) of Section 19(b)(3) of the Exchange Act to read, in pertinent part, “At any time within the 60-day period beginning on the date of filing of such a proposed rule change in accordance with the provisions of paragraph (1) [of Section 19(b)], the Commission summarily may temporarily suspend the change in the

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<sup>17</sup> Securities Exchange Act Release No. 51808 (June 9, 2005), 70 FR 37496 (June 29, 2005).

rules of the self-regulatory organization made thereby, if it appears to the Commission that such action is necessary or appropriate in the public interest, for the protection of investors, or otherwise in furtherance of the purposes of this title. If the Commission takes such action, the Commission shall institute proceedings under paragraph (2)(B) [of Section 19(b)] to determine whether the proposed rule should be approved or disapproved.”

The decision of the United States Court of Appeals for the District of Columbia Circuit in NetCoalition v. SEC, No. 09-1042 (D.C. Cir. 2010), although reviewing a Commission decision made prior to the effective date of the Dodd-Frank Act, upheld the Commission’s reliance upon competitive markets to set reasonable and equitably allocated fees for market data. “In fact, the legislative history indicates that the Congress intended that the market system ‘evolve through the interplay of competitive forces as unnecessary regulatory restrictions are removed’ and that the SEC wield its regulatory power ‘in those situations where competition may not be sufficient,’ such as in the creation of a ‘consolidated transactional reporting system.’ ” NetCoalition, at 15 (quoting H.R. Rep. No. 94–229, at 92 (1975), *as reprinted in* 1975 U.S.C.C.A.N. 321, 323). The court’s conclusions about Congressional intent are therefore reinforced by the Dodd-Frank Act amendments, which create a presumption that exchange fees, including market data fees, may take effect immediately, without prior Commission approval, and that the Commission should take action to suspend a fee change and institute a proceeding to determine whether the fee change should be approved or disapproved only where the Commission has concerns that the change may not be consistent with the Act.

For the reasons stated above, NASDAQ believes that the proposed fees are fair and equitable, and not unreasonably discriminatory. As described above, the proposed fees are based on pricing conventions and distinctions that exist in NASDAQ's current fee schedule, and the fee schedules of other exchanges. These distinctions (top-of-book versus Depth-of-Book, Professional versus Non-Professional Usage, Direct versus Indirect Access, Internal versus External Distribution) are each based on principles of fairness and equity that have helped for many years to maintain fair, equitable, and not unreasonably discriminatory fees, and that apply with equal or greater force to the current proposal. Thus, although the proposal results in a fee increase of \$224 per Subscriber (from \$76 to \$300) or, at the top tier, \$45,000 per enterprise (from \$30,000 to \$75,000), these increases are based on careful analysis of empirical data and the application of time-tested pricing principles already accepted by the Commission for many years.

As described in greater detail below, if NASDAQ has calculated improperly and the market deems the proposed fees to be unfair, inequitable, or unreasonably discriminatory, firms can diminish or discontinue the use of their data because the proposed fee is entirely optional to all parties. Firms are not required to purchase Depth-of-Book data or to utilize any specific pricing alternative if they do choose to purchase Depth-of-Book data. NASDAQ is not required to make Depth-of-Book data available or to offer specific pricing alternatives for potential purchases. NASDAQ can discontinue offering a pricing alternative (as it has in the past) and firms can discontinue their use at any time and for any reason (as they often do), including due to their assessment of the reasonableness of fees charged. NASDAQ continues to create new pricing policies

aimed at increasing fairness and equitable allocation of fees among Subscribers, and NASDAQ believes this is another useful step in that direction.

4. Self-Regulatory Organization's Statement on Burden on Competition

NASDAQ does not believe that the proposed rule change will result in any burden on competition that is not necessary or appropriate in furtherance of the purposes of the Act, as amended. Notwithstanding its determination that the Commission may rely upon competition to establish fair and equitably allocated fees for market data, the NetCoalition court found that the Commission had not, in that case, compiled a record that adequately supported its conclusion that the market for the data at issue in the case was competitive. NASDAQ believes that a record may readily be established to demonstrate the competitive nature of the market in question.

There is intense competition between trading platforms that provide transaction execution and routing services and proprietary data products. Transaction execution and proprietary data products are complementary in that market data is both an input and a byproduct of the execution service. In fact, market data and trade execution are a paradigmatic example of joint products with joint costs. The decision whether and on which platform to post an order will depend on the attributes of the platform where the order can be posted, including the execution fees, data quality and price and distribution of its data products. Without the prospect of a taking order seeing and reacting to a posted order on a particular platform, the posting of the order would accomplish little. Without trade executions, exchange data products cannot exist. Data products are valuable to many end Subscribers only insofar as they provide information that end Subscribers expect will assist them or their customers in making trading decisions.

The costs of producing market data include not only the costs of the data distribution infrastructure, but also the costs of designing, maintaining, and operating the exchange's transaction execution platform and the cost of regulating the exchange to ensure its fair operation and maintain investor confidence. The total return that a trading platform earns reflects the revenues it receives from both products and the joint costs it incurs. Moreover, an exchange's customers view the costs of transaction executions and of data as a unified cost of doing business with the exchange. A broker-dealer will direct orders to a particular exchange only if the expected revenues from executing trades on the exchange exceed net transaction execution costs and the cost of data that the broker-dealer chooses to buy to support its trading decisions (or those of its customers). The choice of data products is, in turn, a product of the value of the products in making profitable trading decisions. If the cost of the product exceeds its expected value, the broker-dealer will choose not to buy it. Moreover, as a broker-dealer chooses to direct fewer orders to a particular exchange, the value of the product to that broker-dealer decreases, for two reasons. First, the product will contain less information, because executions of the broker-dealer's orders will not be reflected in it. Second, and perhaps more important, the product will be less valuable to that broker-dealer because it does not provide information about the venue to which it is directing its orders. Data from the competing venue to which the broker-dealer is directing orders will become correspondingly more valuable.

Thus, a super-competitive increase in the fees charged for either transactions or data has the potential to impair revenues from both products. "No one disputes that competition for order flow is 'fierce'." NetCoalition at 24. However, the existence of

fierce competition for order flow implies a high degree of price sensitivity on the part of broker-dealers with order flow, since they may readily reduce costs by directing orders toward the lowest-cost trading venues. A broker-dealer that shifted its order flow from one platform to another in response to order execution price differentials would both reduce the value of that platform's market data and reduce its own need to consume data from the disfavored platform. Similarly, if a platform increases its market data fees, the change will affect the overall cost of doing business with the platform, and affected broker-dealers will assess whether they can lower their trading costs by directing orders elsewhere and thereby lessening the need for the more expensive data.

Analyzing the cost of market data distribution in isolation from the cost of all of the inputs supporting the creation of market data will inevitably underestimate the cost of the data. Thus, because it is impossible to create data without a fast, technologically robust, and well-regulated execution system, system costs and regulatory costs affect the price of market data. It would be equally misleading, however, to attribute all of the exchange's costs to the market data portion of an exchange's joint product. Rather, all of the exchange's costs are incurred for the unified purposes of attracting order flow, executing and/or routing orders, and generating and selling data about market activity. The total return that an exchange earns reflects the revenues it receives from the joint products and the total costs of the joint products.

Competition among trading platforms can be expected to constrain the aggregate return each platform earns from the sale of its joint products, but different platforms may choose from a range of possible, and equally reasonable, pricing strategies as the means of recovering total costs. For example, some platform may choose to pay rebates to

attract orders, charge relatively low prices for market information (or provide information free of charge) and charge relatively high prices for accessing posted liquidity. Other platforms may choose a strategy of paying lower rebates (or no rebates) to attract orders, setting relatively high prices for market information, and setting relatively low prices for accessing posted liquidity. In this environment, there is no economic basis for regulating maximum prices for one of the joint products in an industry in which suppliers face competitive constraints with regard to the joint offering. This would be akin to strictly regulating the price that an automobile manufacturer can charge for car sound systems despite the existence of a highly competitive market for cars and the availability of after-market alternatives to the manufacturer-supplied system.

The market for market data products is competitive and inherently contestable because there is fierce competition for the inputs necessary to the creation of proprietary data and strict pricing discipline for the proprietary products themselves. Numerous exchanges compete with each other for listings, trades, and market data itself, providing virtually limitless opportunities for entrepreneurs who wish to produce and distribute their own market data. This proprietary data is produced by each individual exchange, as well as other entities, in a vigorously competitive market.

Broker-dealers currently have numerous alternative venues for their order flow, including ten self-regulatory organization (“SRO”) markets, as well as internalizing broker-dealers (“BDs”) and various forms of alternative trading systems (“ATs”), including dark pools and electronic communication networks (“ECNs”). Each SRO market competes to produce transaction reports via trade executions, and two FINRA-regulated Trade Reporting Facilities (“TRFs”) compete to attract internalized transaction

reports. Competitive markets for order flow, executions, and transaction reports provide pricing discipline for the inputs of proprietary data products.

The large number of SROs, TRFs, BDs, and ATs that currently produce proprietary data or are currently capable of producing it provides further pricing discipline for proprietary data products. Each SRO, TRF, ATS, and BD is currently permitted to produce proprietary data products, and many currently do or have announced plans to do so, including NASDAQ, NYSE, NYSE Amex, NYSEArca, and BATS.

Any ATS or BD can combine with any other ATS, BD, or multiple ATs or BDs to produce joint proprietary data products. Additionally, order routers and market data vendors can facilitate single or multiple broker-dealers' production of proprietary data products. The potential sources of proprietary products are virtually limitless.

The fact that proprietary data from ATs, BDs, and vendors can by-pass SROs is significant in two respects. First, non-SROs can compete directly with SROs for the production and sale of proprietary data products, as BATS and Arca did before registering as exchanges by publishing proprietary book data on the Internet. Second, because a single order or transaction report can appear in an SRO proprietary product, a non-SRO proprietary product, or both, the data available in proprietary products is exponentially greater than the actual number of orders and transaction reports that exist in the marketplace.

Market data vendors provide another form of price discipline for proprietary data products because they control the primary means of access to end Subscribers. Vendors impose price restraints based upon their business models. For example, vendors such as Bloomberg and Thomson Reuters that assess a surcharge on data they sell may refuse to



offer proprietary products that end Subscribers will not purchase in sufficient numbers. Internet portals, such as Google, impose a discipline by providing only data that will enable them to attract “eyeballs” that contribute to their advertising revenue. Retail broker-dealers, such as Schwab and Fidelity, offer their customers proprietary data only if it promotes trading and generates sufficient commission revenue. Although the business models may differ, these vendors’ pricing discipline is the same: they can simply refuse to purchase any proprietary data product that fails to provide sufficient value. NASDAQ and other producers of proprietary data products must understand and respond to these varying business models and pricing disciplines in order to market proprietary data products successfully.

In addition to the competition and price discipline described above, the market for proprietary data products is also highly contestable because market entry is rapid, inexpensive, and profitable. The history of electronic trading is replete with examples of entrants that swiftly grew into some of the largest electronic trading platforms and proprietary data producers: Archipelago, Bloomberg Tradebook, Island, RediBook, Attain, TracECN, BATS Trading and Direct Edge. A proliferation of dark pools and other ATSs operate profitably with fragmentary shares of consolidated market volume.

Regulation NMS, by deregulating the market for proprietary data, has increased the contestability of that market. While broker-dealers have previously published their proprietary data individually, Regulation NMS encourages market data vendors and broker-dealers to produce proprietary products cooperatively in a manner never before possible. Multiple market data vendors already have the capability to aggregate data and disseminate it on a profitable scale, including Bloomberg, and Thomson Reuters.

The court in NetCoalition concluded that the Commission had failed to demonstrate that the market for market data was competitive based on the reasoning of the Commission's NetCoalition order because, in the court's view, the Commission had not adequately demonstrated that the Depth-of-Book data at issue in the case is used to attract order flow. NASDAQ believes, however, that evidence not before the court clearly demonstrates that availability of data attracts order flow. For example, as of July 2010, 92 of the top 100 broker-dealers by shares executed on NASDAQ consumed NASDAQ Level 2 and 80 of the top 100 broker-dealers consumed TotalView. During that month, the NASDAQ Level 2 Subscribers were responsible for 94.44% of the orders entered into NASDAQ and TotalView Subscribers were responsible for 92.98%.

Competition among platforms has driven NASDAQ continually to improve its platform data offerings and to cater to customers' data needs. For example, NASDAQ has developed and maintained multiple delivery mechanisms (IP, multi-cast, and compression) that enable customers to receive data in the form and manner they prefer and at the lowest cost to them. NASDAQ offers front end applications such as its "Bookviewer" to help customers utilize data. NASDAQ has created new products like TotalView Aggregate to complement TotalView ITCH and /Level 2, because offering data in multiple formatting allows NASDAQ to better fit customer needs. NASDAQ offers data via multiple extranet providers, thereby helping to reduce network and total cost for its data products. NASDAQ has developed an online administrative system to provide customers transparency into their data feed requests and streamline data usage reporting. NASDAQ has also expanded its Enterprise License options that reduce the administrative burden and costs to firms that purchase market data.

Despite these enhancements and a dramatic increase in message traffic, NASDAQ's fees for market data have remained flat. In fact, as a percent of total Subscriber costs, NASDAQ data fees have fallen relative to other data usage costs -- including bandwidth, programming, and infrastructure -- that have risen. The same holds true for execution services; despite numerous enhancements to NASDAQ's trading platform, absolute and relative trading costs have declined. Platform competition has intensified as new entrants have emerged, constraining prices for both executions and for data.

The vigor of competition for Depth-of-Book information is significant and the Exchange believes that this proposal clearly evidences such competition. NASDAQ is offering a new pricing model in order to keep pace with changes in the industry and evolving customer needs. It is entirely optional and is geared towards attracting new customers, as well as retaining existing customers.

The Exchange has witnessed competitors creating new products and innovative pricing in this space over the course of the past year. NASDAQ continues to see firms challenge its pricing on the basis of the Exchange's explicit fees being higher than the zero-priced fees from other competitors such as BATS. In all cases, firms make decisions on how much and what types of data to consume on the basis of the total cost of interacting with NASDAQ or other exchanges. Of course, the explicit data fees are but one factor in a total platform analysis. Some competitors have lower transactions fees and higher data fees, and others are vice versa. The market for this Depth-of-Book information is highly competitive and continually evolves as products develop and change.

Additional evidence cited by NYSE Arca in SR-NYSE Arca-2010-097<sup>18</sup> which was not before the NetCoalition court also demonstrates that availability of Depth-of-Book data attracts order flow and that competition for order flow can constrain the price of market data:

1. Terrence Hendershott & Charles M. Jones, *Island Goes Dark: Transparency, Fragmentation, and Regulation*, 18 Review of Financial Studies 743 (2005);
2. Charts and Tables referenced in Exhibit 3B to that filing;
3. PHB Hagler Bailly, Inc., “Issues Surrounding Cost-Based Regulation of Market Data Prices;” and
4. PHB Hagler Bailly, Inc., “The Economic Perspective on Regulation of Market Data.”
5. Self-Regulatory Organization’s Statement on Comments on the Proposed Rule Change Received from Members, Participants, or Others

Written comments were neither solicited nor received.

6. Extension of Time Period for Commission Action

The Exchange does not consent to an extension of the time period for Commission action.

7. Basis for Summary Effectiveness Pursuant to Section 19(b)(3) or for Accelerated Effectiveness Pursuant to Section 19(b)(2)

Pursuant to Section 19(b)(3)(A)(ii) of the Act,<sup>19</sup> NASDAQ has designated this proposal as establishing or changing a due, fee, or other charge imposed by the self-regulatory organization on any person, whether or not the person is a member of the self-regulatory organization, which renders the proposed rule change effective upon filing.

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<sup>18</sup> See Securities Exchange Act Release No. 63291 (Nov. 9, 2010).

<sup>19</sup> 15 U.S.C. 78s(b)(3)(A)(ii).

8. Proposed Rule Change Based on Rules of Another Self-Regulatory Organization or of the Commission

Not applicable.

9. Exhibits

1. Completed notice of proposed rule change for publication in the Federal Register.

3a. Statement of Janusz Ordover and Gustavo Bamberger, Compass Lexecon LLC, dated December 29, 2010.

3b. Empirical analysis of the role of Non-Display Usage in trading in January of 2012.

**EXHIBIT 1**

SECURITIES AND EXCHANGE COMMISSION  
(Release No. 34- ; File No. SR-NASDAQ-2012-044)

March \_\_, 2012

Self-Regulatory Organizations; The NASDAQ Stock Market LLC; Notice of Filing and Immediate Effectiveness of Proposed Rule Change to Modify the Fees Applicable to Non-Display Usage of Certain NASDAQ Depth-of-Book Market Data

Pursuant to Section 19(b)(1) of the Securities Exchange Act of 1934 (“Act”),<sup>1</sup> and Rule 19b-4 thereunder,<sup>2</sup> notice is hereby given that on March 26, 2012, The NASDAQ Stock Market LLC (“NASDAQ”) filed with the Securities and Exchange Commission (“Commission”) the proposed rule change as described in Items I, II, and III below, which Items have been prepared by NASDAQ. The Commission is publishing this notice to solicit comments on the proposed rule change from interested persons.

I. Self-Regulatory Organization’s Statement of the Terms of the Substance of the Proposed Rule Change

NASDAQ is filing this proposed change to modify the fees applicable to Non-Display Usage of certain NASDAQ Depth-of-Book market data. The text of the proposed rule change is available at [nasdaq.cchwallstreet.com](http://nasdaq.cchwallstreet.com), at NASDAQ’s principal office, and at the Commission’s Public Reference Room.

II. Self-Regulatory Organization’s Statement of the Purpose of, and Statutory Basis for, the Proposed Rule Change

In its filing with the Commission, NASDAQ included statements concerning the purpose of and basis for the proposed rule change and discussed any comments it received on the proposed rule change. The text of these statements may be examined at

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<sup>1</sup> 15 U.S.C. 78s(b)(1).

<sup>2</sup> 17 CFR 240.19b-4.

the places specified in Item IV below. NASDAQ has prepared summaries, set forth in Sections A, B, and C below, of the most significant aspects of such statements.

A. Self-Regulatory Organization's Statement of the Purpose of, and Statutory Basis for, the Proposed Rule Change

1. Purpose

***Growth in Use of Non-Displayed Data.*** The implementation of Regulation NMS in 2006 and 2007 triggered a dramatic change in the composition, speed, and consumption of market data products in U.S. equities trading. Regulation NMS spurred the development and proliferation of proprietary data products by liberalizing SEC Rule 603, allowing self-regulatory organizations to offer on a proprietary basis data that previously was confined to national market system plans, and permit investors to use this proprietary data in circumstances where consolidated data previously was required. Regulation NMS also drove market participants to increase trading speed and, by necessity, the speed of market data feeds by requiring in Rule 611 that all market participants compete to access a limited set of protected quotations. As a result, some market participants and exchanges have used Depth-of-Book data to identify liquidity in fragmented markets.

Technological advancements and their use by increasingly sophisticated market participants have intensified the changes brought about by Regulation NMS. For example, the prevalence and importance of co-location has grown rapidly as market participants seek to access protected quotes faster than their competitors. Also, markets and market participants continually seek expanded bandwidth options to communicate an ever-increasing number of trading messages without significant latencies and

improvement of determinism. Connectivity offerings have multiplied as new networks and technologies come on line.

As technology, automation, speed, and other aspects of trading have evolved, so too has market data consumption. No longer is trading and investing dominated by individuals responding to market data displayed on trading screens by manually entering quotes and trades into the markets. Instead, the vast majority of trading is done by firms leveraging powerful servers running sophisticated algorithms and consuming massive quantities of data without displaying that data to individual traders. While certain groups of investors, including retail investors, continue to view traditional market data displays, their orders are generally processed, delivered, and executed by firm servers using non-displayed data. Non-Display Usage is used not only for automated order generation and program trading, but also to provide reference prices for algorithmic trading and order routing; and for various back office processes, including surveillance, order verification, and risk management functions.

***NASDAQ Market Data Pricing.*** NASDAQ's pricing model for market data products must keep pace with changes in data consumption patterns in order to allocate fees and charges fairly among Subscribers. NASDAQ's pricing has evolved over time in response to previous changes in market data consumption, and it now includes numerous factors for setting fees. Generally, NASDAQ allocates market data fees among Subscribers based on the data elements consumed, including top-of-book,<sup>3</sup> Depth-of-Book,<sup>4</sup> and other, more sophisticated data products.<sup>5</sup> NASDAQ also distinguishes

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<sup>3</sup> Compare NASDAQ Rule 7011 (top-of-book consolidated data) and NASDAQ Rule 7047 (top-of-book NASDAQ-only data).

<sup>4</sup> See NASDAQ Rule 7023.



between different sets of securities, NASDAQ-listed securities versus securities listed on other markets for which NASDAQ's data plays a different, often more limited, role. Moreover, NASDAQ has long followed industry practice by distinguishing between real-time and delayed data, allocating higher fees to real-time usage and lower or no fees to delayed data usage. Also, since 1999 NASDAQ has distinguished between Professional and Non-Professional Subscribers, offering lower fees to Non-Professional Subscribers in order to encourage use by average investors and also recognizing that Professional Subscribers make heavier use of the same data feeds.<sup>6</sup> These four distinctions have existed in tandem for many years.

Since the mid-2000s, in response to changes driven by Regulation NMS, NASDAQ has added new considerations to its pricing. Thus, in 2005, NASDAQ amended its Distributor fee schedule to distinguish between distributions that is Internal (redistribution within an entity that receives NASDAQ market data) versus External (redistribution outside that entity) to the Distributor.<sup>7</sup> Also, in 2005 NASDAQ began differentiating between Direct Access and Indirect Access, charging more for firms that access data directly from NASDAQ based on the enhanced speed and simplicity for Subscribers and the increased burden on NASDAQ of administering individual Distributor relationships.<sup>8</sup> Later, in 2007, NASDAQ began offering enterprise licenses

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<sup>5</sup> See NASDAQ Rules 7044 (Market Pathfinders), 7048 (Custom Data Feeds), and 7057 (NASDAQ MatchView).

<sup>6</sup> See NASDAQ Rule 7023(a)(3)(A).

<sup>7</sup> See NASDAQ Rule 7023(a)(4).

<sup>8</sup> See NASDAQ Rule 7023(a)(5)

that allocate fees by volume of usage, differentiating among heavy consumers and lighter consumers by capping fees.<sup>9</sup>

In March 2010, NASDAQ introduced an enterprise license for Non-Display Usage of market data.<sup>10</sup> Currently, NASDAQ offers two options for measuring Non-Display Usage of Depth-of-Book equities data. First, a firm can count and report each server or other Subscriber or device that uses data, whether displayed or non-displayed, and pay the Professional fee for each Subscriber. Second, NASDAQ offers an optional \$30,000 per month Non-Display TotalView and OpenView fee cap for Internal Distribution.<sup>11</sup> For firms reporting over 400 Subscribers, the optional fee cap offers a cost savings per Subscriber, as well as relief from the administrative costs of identifying, tracking, and reporting each covered Subscriber. NASDAQ is proposing to remove this enterprise license for Non-Display Usage, as described in detail below.

***Current Proposal.*** NASDAQ is amending NASDAQ Rule 7023 to create a new Subscriber fee and tiered pricing structure for Direct Access to Depth-of-Book data that Professional Subscribers use in a Non-Display manner. This further refinement to NASDAQ's fees for Non-Display Usage of Depth-of-Book data leverages existing distinctions between Professional and Non-Professional Subscribers and between Direct and Indirect Access to data. Specifically, the proposed fee schedule for Direct Access is as follows:

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<sup>9</sup> See NASDAQ Rule 7023(c).

<sup>10</sup> See NASDAQ Rule 7023(a)(1)((D)). See also Securities Exchange Act Release No. 34-61700 (Mar. 12, 2010), 75 F.R. 13172 (Mar. 18, 2010). See also NASDAQ Options Rules, Chapter XV, Section 4(a).

<sup>11</sup> The TotalView and OpenView fee cap does not currently include Distributor fees. See NASDAQ Rule 7023(c)(4).

<u>Subscribers</u>	<u>Monthly Fee</u>
1-10	\$ 300 per
11-29	\$ 3,300.00
30-49	\$ 9,000.00
50-99	\$ 15,000.00
100-249	\$ 30,000.00
250+	\$ 75,000.00

The fee for Professional Subscribers for Non-Display Usage that is accessed directly from NASDAQ shall apply to any Subscriber that accesses any data elements included in the TotalView entitlement, including the TotalView, OpenView, or Level 2 data elements. Professional Subscribers that access Depth-of-Book data indirectly and then use it in a Non-Display fashion will pay the same Subscriber fees as Professional Subscribers that use comparable Display data.

NASDAQ has determined to apply the proposed Non-Display Usage fee to a finite group of Subscribers that consume high quantities of market data but that have, due to NASDAQ's current pricing structure, paid disproportionately low fees. The new fee will apply to (1) Professional Subscribers; (2) that are Internal Distributors; (3) via Direct Access; and (4) via Non-Display Usage. The historical rationales supporting these four existing distinctions apply with equal force to the current proposal.

***Empirical Data and Analysis.*** NASDAQ considered numerous factors in determining the proper level of non-display fees to assess. Based on NASDAQ's knowledge and experience with firm trading behavior and data usage reporting, NASDAQ hypothesized that these trading characteristics correlate highly with intense Non-Display Usage, and that firms not exhibiting those characteristics correlate highly with higher Display Usage. To test this hypothesis, NASDAQ analyzed one month's data regarding order intensity, liquidity removal, and time at the inside among firms that

are co-located and those that are not and among firms that connect to NASDAQ via a high number of ports versus a lower number of ports.<sup>12</sup> NASDAQ then compared overall market data costs for firms with high usage of non-displayed data versus firms with high usage of displayed market data.

NASDAQ found that the group of firms with high order intensity is comprised disproportionately of firms with Non-Display Usage. NASDAQ analyzed maximum order entry rates for 370 firms for the month of January 2012. As shown on Slide 1, of 370 firms, only 38 firms had maximum order entry rates exceeding 5,000 orders per second. NASDAQ believes that 23 of those 38 firms utilize exclusively non-displayed data, thereby paying less for market data than the 15 other firms with high order intensity rates that utilize displayed data. Further analysis revealed that firms with high order intensity often paid lower market data fees than firms with lower, often substantially lower, order intensity.

NASDAQ also found that firms removing high levels of liquidity and also utilizing high numbers of OUCH connectivity ports are disproportionately likely to engage in exclusively Non-Display Usage. As shown on Slide 2, NASDAQ determined that of the 272 firms that remove an average of over 100,000 shares of liquidity per day, the top 18 liquidity takers all rely exclusively on Non-Display data.<sup>13</sup> Again, further analysis revealed that firms removing high levels of liquidity, using high numbers of

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<sup>12</sup> January 2012 represents the most recent full-month of data available. As such, it best represents current trading and data usage patterns and the best prediction of the actual application of the proposed fees.

<sup>13</sup> NASDAQ's findings are set forth in Exhibit 3B, pages 111 through 114 of this proposed rule change. This excludes one exchange that removes over 100,000 average shares of liquidity daily.

connectivity ports, and relying on non-displayed data paid disproportionately lower market data fees than firms removing comparable or greater liquidity and using comparable numbers of ports but using displayed market data.

Additionally, NASDAQ found that firms quoting most often at the inside and also removing high levels of liquidity are disproportionately likely to use exclusively Non-Display data. As shown on Slide 3, NASDAQ observed 351 firms for the month of January 2012, measuring time at the inside and liquidity taking. High rates of quoting at the inside require continual quote updates and generates substantial message traffic. Likewise, high rates of liquidity taking require high levels of order submission, also generating high message traffic. Again, of the 351 firms covered, 27 firms that rely exclusively on non-displayed market data were over-represented among firms with high levels of both studied behaviors. Additionally, those 27 firms were under-billed relative to firms experiencing comparable or lower-intensity behavior and that consumed displayed market data.

NASDAQ found that firms that are co-located within NASDAQ's Carteret facility and that rely exclusively on Non-Display Usage account for a disproportionate percentage of overall message traffic. Based on data for January 2012, 23 co-located, non-display firms account for 70 percent of NASDAQ's overall message traffic whereas 359 other firms that are not co-located and/or that rely on displayed data account for 26 percent of NASDAQ's overall message traffic. As shown on Slide 4, Subscribers of non-displayed data, both co-located and not, account for 74 percent of NASDAQ's overall message traffic. These firms not only consume high quantities of market data, they also

create significant quantities of market data that then must be processed, disseminated, and consumed by numerous industry participants.

Finally, NASDAQ studied the market data fees paid by non-display firms isolated by the data in Slides 1 through 4, comparing them with the market fees paid by otherwise comparable firms that rely on Display Usage. Based on this analysis, NASDAQ concluded that firms engaged in quoting and trading behavior based on Display Usage of market data paid on average eight times more in total market data fees compared with firms that engaged in comparable or higher-intensity behavior based on Non-Display Usage. NASDAQ designed the current to rectify this disparity by applying only to firms that use exclusively non-displayed data and by using Subscriber tiers that correlate to the trading behaviors observed.

If, after further observation, NASDAQ determines that the proposed fees are either over-inclusive or under-inclusive in reaching the desired equalization, NASDAQ will modify the fees accordingly via a future proposed rule change.

b. Statutory Basis

NASDAQ believes that the proposed rule change is consistent with the provisions of Section 6 of the Act,<sup>14</sup> in general, and with Section 6(b)(4) of the Act,<sup>15</sup> in particular, in that it provides an equitable allocation of reasonable fees among Subscribers and recipients of NASDAQ data. In adopting Regulation NMS, the Commission granted self-regulatory organizations and broker-dealers increased authority and flexibility to offer new and unique market data to the public. It was believed that this authority would

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<sup>14</sup> 15 U.S.C. 78f.

<sup>15</sup> 15 U.S.C. 78f(b)(4).

expand the amount of data available to consumers, and also spur innovation and competition for the provision of market data.

The Commission concluded that Regulation NMS—by deregulating the market in proprietary data—would itself further the Act’s goals of facilitating efficiency and competition:

[E]fficiency is promoted when broker-dealers who do not need the data beyond the prices, sizes, market center identifications of the NBBO and consolidated last sale information are not required to receive (and pay for) such data. The Commission also believes that efficiency is promoted when broker-dealers may choose to receive (and pay for) additional market data based on their own internal analysis of the need for such data.<sup>16</sup>

By removing “unnecessary regulatory restrictions” on the ability of exchanges to sell their own data, Regulation NMS advanced the goals of the Act and the principles reflected in its legislative history. If the free market should determine whether proprietary data is sold to broker-dealers at all, it follows that the price at which such data is sold should be set by the market as well. Level 2, TotalView and OpenView are precisely the sort of market data product that the Commission envisioned when it adopted Regulation NMS.

On July 21, 2010, President Barack Obama signed into law H.R. 4173, the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 (“Dodd-Frank Act”), which amended Section 19 of the Act. Among other things, Section 916 of the Dodd-Frank Act amended paragraph (A) of Section 19(b)(3) of the Act by inserting the phrase “on any person, whether or not the person is a member of the self-regulatory organization” after “due, fee or other charge imposed by the self-regulatory

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<sup>16</sup> Securities Exchange Act Release No. 51808 (June 9, 2005), 70 FR 37496 (June 29, 2005).

organization.” As a result, all SRO rule proposals establishing or changing dues, fees, or other charges are immediately effective upon filing regardless of whether such dues, fees, or other charges are imposed on members of the SRO, non-members, or both. Section 916 further amended paragraph (C) of Section 19(b)(3) of the Exchange Act to read, in pertinent part, “At any time within the 60-day period beginning on the date of filing of such a proposed rule change in accordance with the provisions of paragraph (1) [of Section 19(b)], the Commission summarily may temporarily suspend the change in the rules of the self-regulatory organization made thereby, if it appears to the Commission that such action is necessary or appropriate in the public interest, for the protection of investors, or otherwise in furtherance of the purposes of this title. If the Commission takes such action, the Commission shall institute proceedings under paragraph (2)(B) [of Section 19(b)] to determine whether the proposed rule should be approved or disapproved.”

The decision of the United States Court of Appeals for the District of Columbia Circuit in NetCoalition v. SEC, No. 09-1042 (D.C. Cir. 2010), although reviewing a Commission decision made prior to the effective date of the Dodd-Frank Act, upheld the Commission’s reliance upon competitive markets to set reasonable and equitably allocated fees for market data. “In fact, the legislative history indicates that the Congress intended that the market system ‘evolve through the interplay of competitive forces as unnecessary regulatory restrictions are removed’ and that the SEC wield its regulatory power ‘in those situations where competition may not be sufficient,’ such as in the creation of a ‘consolidated transactional reporting system.’ ” NetCoalition, at 15 (quoting H.R. Rep. No. 94–229, at 92 (1975), *as reprinted in* 1975 U.S.C.C.A.N. 321, 323). The



court's conclusions about Congressional intent are therefore reinforced by the Dodd-Frank Act amendments, which create a presumption that exchange fees, including market data fees, may take effect immediately, without prior Commission approval, and that the Commission should take action to suspend a fee change and institute a proceeding to determine whether the fee change should be approved or disapproved only where the Commission has concerns that the change may not be consistent with the Act.

For the reasons stated above, NASDAQ believes that the proposed fees are fair and equitable, and not unreasonably discriminatory. As described above, the proposed fees are based on pricing conventions and distinctions that exist in NASDAQ's current fee schedule, and the fee schedules of other exchanges. These distinctions (top-of-book versus Depth-of-Book, Professional versus Non-Professional Usage, Direct versus Indirect Access, Internal versus External Distribution) are each based on principles of fairness and equity that have helped for many years to maintain fair, equitable, and not unreasonably discriminatory fees, and that apply with equal or greater force to the current proposal. Thus, although the proposal results in a fee increase of \$224 per Subscriber (from \$76 to \$300) or, at the top tier, \$45,000 per enterprise (from \$30,000 to \$75,000), these increases are based on careful analysis of empirical data and the application of time-tested pricing principles already accepted by the Commission for many years.

As described in greater detail below, if NASDAQ has calculated improperly and the market deems the proposed fees to be unfair, inequitable, or unreasonably discriminatory, firms can diminish or discontinue the use of their data because the proposed fee is entirely optional to all parties. Firms are not required to purchase Depth-of-Book data or to utilize any specific pricing alternative if they do choose to purchase

Depth-of-Book data. NASDAQ is not required to make Depth-of-Book data available or to offer specific pricing alternatives for potential purchases. NASDAQ can discontinue offering a pricing alternative (as it has in the past) and firms can discontinue their use at any time and for any reason (as they often do), including due to their assessment of the reasonableness of fees charged. NASDAQ continues to create new pricing policies aimed at increasing fairness and equitable allocation of fees among Subscribers, and NASDAQ believes this is another useful step in that direction.

B. Self-Regulatory Organization's Statement on Burden on Competition

NASDAQ does not believe that the proposed rule change will result in any burden on competition that is not necessary or appropriate in furtherance of the purposes of the Act, as amended. Notwithstanding its determination that the Commission may rely upon competition to establish fair and equitably allocated fees for market data, the NetCoalition court found that the Commission had not, in that case, compiled a record that adequately supported its conclusion that the market for the data at issue in the case was competitive. NASDAQ believes that a record may readily be established to demonstrate the competitive nature of the market in question.

There is intense competition between trading platforms that provide transaction execution and routing services and proprietary data products. Transaction execution and proprietary data products are complementary in that market data is both an input and a byproduct of the execution service. In fact, market data and trade execution are a paradigmatic example of joint products with joint costs. The decision whether and on which platform to post an order will depend on the attributes of the platform where the order can be posted, including the execution fees, data quality and price and distribution

of its data products. Without the prospect of a taking order seeing and reacting to a posted order on a particular platform, the posting of the order would accomplish little. Without trade executions, exchange data products cannot exist. Data products are valuable to many end Subscribers only insofar as they provide information that end Subscribers expect will assist them or their customers in making trading decisions.

The costs of producing market data include not only the costs of the data distribution infrastructure, but also the costs of designing, maintaining, and operating the exchange's transaction execution platform and the cost of regulating the exchange to ensure its fair operation and maintain investor confidence. The total return that a trading platform earns reflects the revenues it receives from both products and the joint costs it incurs. Moreover, an exchange's customers view the costs of transaction executions and of data as a unified cost of doing business with the exchange. A broker-dealer will direct orders to a particular exchange only if the expected revenues from executing trades on the exchange exceed net transaction execution costs and the cost of data that the broker-dealer chooses to buy to support its trading decisions (or those of its customers). The choice of data products is, in turn, a product of the value of the products in making profitable trading decisions. If the cost of the product exceeds its expected value, the broker-dealer will choose not to buy it. Moreover, as a broker-dealer chooses to direct fewer orders to a particular exchange, the value of the product to that broker-dealer decreases, for two reasons. First, the product will contain less information, because executions of the broker-dealer's orders will not be reflected in it. Second, and perhaps more important, the product will be less valuable to that broker-dealer because it does not provide information about the venue to which it is directing its orders. Data from the

competing venue to which the broker-dealer is directing orders will become correspondingly more valuable.

Thus, a super-competitive increase in the fees charged for either transactions or data has the potential to impair revenues from both products. “No one disputes that competition for order flow is ‘fierce.’” NetCoalition at 24. However, the existence of fierce competition for order flow implies a high degree of price sensitivity on the part of broker-dealers with order flow, since they may readily reduce costs by directing orders toward the lowest-cost trading venues. A broker-dealer that shifted its order flow from one platform to another in response to order execution price differentials would both reduce the value of that platform’s market data and reduce its own need to consume data from the disfavored platform. Similarly, if a platform increases its market data fees, the change will affect the overall cost of doing business with the platform, and affected broker-dealers will assess whether they can lower their trading costs by directing orders elsewhere and thereby lessening the need for the more expensive data.

Analyzing the cost of market data distribution in isolation from the cost of all of the inputs supporting the creation of market data will inevitably underestimate the cost of the data. Thus, because it is impossible to create data without a fast, technologically robust, and well-regulated execution system, system costs and regulatory costs affect the price of market data. It would be equally misleading, however, to attribute all of the exchange’s costs to the market data portion of an exchange’s joint product. Rather, all of the exchange’s costs are incurred for the unified purposes of attracting order flow, executing and/or routing orders, and generating and selling data about market activity.

The total return that an exchange earns reflects the revenues it receives from the joint products and the total costs of the joint products.

Competition among trading platforms can be expected to constrain the aggregate return each platform earns from the sale of its joint products, but different platforms may choose from a range of possible, and equally reasonable, pricing strategies as the means of recovering total costs. For example, some platform may choose to pay rebates to attract orders, charge relatively low prices for market information (or provide information free of charge) and charge relatively high prices for accessing posted liquidity. Other platforms may choose a strategy of paying lower rebates (or no rebates) to attract orders, setting relatively high prices for market information, and setting relatively low prices for accessing posted liquidity. In this environment, there is no economic basis for regulating maximum prices for one of the joint products in an industry in which suppliers face competitive constraints with regard to the joint offering. This would be akin to strictly regulating the price that an automobile manufacturer can charge for car sound systems despite the existence of a highly competitive market for cars and the availability of after-market alternatives to the manufacturer-supplied system.

The market for market data products is competitive and inherently contestable because there is fierce competition for the inputs necessary to the creation of proprietary data and strict pricing discipline for the proprietary products themselves. Numerous exchanges compete with each other for listings, trades, and market data itself, providing virtually limitless opportunities for entrepreneurs who wish to produce and distribute their own market data. This proprietary data is produced by each individual exchange, as well as other entities, in a vigorously competitive market.

Broker-dealers currently have numerous alternative venues for their order flow, including ten self-regulatory organization (“SRO”) markets, as well as internalizing broker-dealers (“BDs”) and various forms of alternative trading systems (“ATs”), including dark pools and electronic communication networks (“ECNs”). Each SRO market competes to produce transaction reports via trade executions, and two FINRA-regulated Trade Reporting Facilities (“TRFs”) compete to attract internalized transaction reports. Competitive markets for order flow, executions, and transaction reports provide pricing discipline for the inputs of proprietary data products.

The large number of SROs, TRFs, BDs, and ATs that currently produce proprietary data or are currently capable of producing it provides further pricing discipline for proprietary data products. Each SRO, TRF, AT, and BD is currently permitted to produce proprietary data products, and many currently do or have announced plans to do so, including NASDAQ, NYSE, NYSE Amex, NYSEArca, and BATS.

Any AT or BD can combine with any other AT, BD, or multiple ATs or BDs to produce joint proprietary data products. Additionally, order routers and market data vendors can facilitate single or multiple broker-dealers’ production of proprietary data products. The potential sources of proprietary products are virtually limitless.

The fact that proprietary data from ATs, BDs, and vendors can by-pass SROs is significant in two respects. First, non-SROs can compete directly with SROs for the production and sale of proprietary data products, as BATS and Arca did before registering as exchanges by publishing proprietary book data on the Internet. Second, because a single order or transaction report can appear in an SRO proprietary product, a non-SRO proprietary product, or both, the data available in proprietary products is

exponentially greater than the actual number of orders and transaction reports that exist in the marketplace.

Market data vendors provide another form of price discipline for proprietary data products because they control the primary means of access to end Subscribers. Vendors impose price restraints based upon their business models. For example, vendors such as Bloomberg and Thomson Reuters that assess a surcharge on data they sell may refuse to offer proprietary products that end Subscribers will not purchase in sufficient numbers. Internet portals, such as Google, impose a discipline by providing only data that will enable them to attract “eyeballs” that contribute to their advertising revenue. Retail broker-dealers, such as Schwab and Fidelity, offer their customers proprietary data only if it promotes trading and generates sufficient commission revenue. Although the business models may differ, these vendors’ pricing discipline is the same: they can simply refuse to purchase any proprietary data product that fails to provide sufficient value. NASDAQ and other producers of proprietary data products must understand and respond to these varying business models and pricing disciplines in order to market proprietary data products successfully.

In addition to the competition and price discipline described above, the market for proprietary data products is also highly contestable because market entry is rapid, inexpensive, and profitable. The history of electronic trading is replete with examples of entrants that swiftly grew into some of the largest electronic trading platforms and proprietary data producers: Archipelago, Bloomberg Tradebook, Island, RediBook, Attain, TracECN, BATS Trading and Direct Edge. A proliferation of dark pools and other ATSS operate profitably with fragmentary shares of consolidated market volume.

Regulation NMS, by deregulating the market for proprietary data, has increased the contestability of that market. While broker-dealers have previously published their proprietary data individually, Regulation NMS encourages market data vendors and broker-dealers to produce proprietary products cooperatively in a manner never before possible. Multiple market data vendors already have the capability to aggregate data and disseminate it on a profitable scale, including Bloomberg, and Thomson Reuters.

The court in NetCoalition concluded that the Commission had failed to demonstrate that the market for market data was competitive based on the reasoning of the Commission's NetCoalition order because, in the court's view, the Commission had not adequately demonstrated that the Depth-of-Book data at issue in the case is used to attract order flow. NASDAQ believes, however, that evidence not before the court clearly demonstrates that availability of data attracts order flow. For example, as of July 2010, 92 of the top 100 broker-dealers by shares executed on NASDAQ consumed NASDAQ Level 2 and 80 of the top 100 broker-dealers consumed TotalView. During that month, the NASDAQ Level 2 Subscribers were responsible for 94.44% of the orders entered into NASDAQ and TotalView Subscribers were responsible for 92.98%.

Competition among platforms has driven NASDAQ continually to improve its platform data offerings and to cater to customers' data needs. For example, NASDAQ has developed and maintained multiple delivery mechanisms (IP, multi-cast, and compression) that enable customers to receive data in the form and manner they prefer and at the lowest cost to them. NASDAQ offers front end applications such as its "Bookviewer" to help customers utilize data. NASDAQ has created new products like TotalView Aggregate to complement TotalView ITCH and /Level 2, because offering



data in multiple formatting allows NASDAQ to better fit customer needs. NASDAQ offers data via multiple extranet providers, thereby helping to reduce network and total cost for its data products. NASDAQ has developed an online administrative system to provide customers transparency into their data feed requests and streamline data usage reporting. NASDAQ has also expanded its Enterprise License options that reduce the administrative burden and costs to firms that purchase market data.

Despite these enhancements and a dramatic increase in message traffic, NASDAQ's fees for market data have remained flat. In fact, as a percent of total Subscriber costs, NASDAQ data fees have fallen relative to other data usage costs -- including bandwidth, programming, and infrastructure -- that have risen. The same holds true for execution services; despite numerous enhancements to NASDAQ's trading platform, absolute and relative trading costs have declined. Platform competition has intensified as new entrants have emerged, constraining prices for both executions and for data.

The vigor of competition for Depth-of-Book information is significant and the Exchange believes that this proposal clearly evidences such competition. NASDAQ is offering a new pricing model in order to keep pace with changes in the industry and evolving customer needs. It is entirely optional and is geared towards attracting new customers, as well as retaining existing customers.

The Exchange has witnessed competitors creating new products and innovative pricing in this space over the course of the past year. NASDAQ continues to see firms challenge its pricing on the basis of the Exchange's explicit fees being higher than the zero-priced fees from other competitors such as BATS. In all cases, firms make

decisions on how much and what types of data to consume on the basis of the total cost of interacting with NASDAQ or other exchanges. Of course, the explicit data fees are but one factor in a total platform analysis. Some competitors have lower transactions fees and higher data fees, and others are vice versa. The market for this Depth-of-Book information is highly competitive and continually evolves as products develop and change.

Additional evidence cited by NYSE Arca in SR-NYSE Arca-2010-097<sup>17</sup> which was not before the NetCoalition court also demonstrates that availability of Depth-of-Book data attracts order flow and that competition for order flow can constrain the price of market data:

1. Terrence Hendershott & Charles M. Jones, *Island Goes Dark: Transparency, Fragmentation, and Regulation*, 18 Review of Financial Studies 743 (2005);
  2. Charts and Tables referenced in Exhibit 3B to that filing;
  3. PHB Hagler Bailly, Inc., “Issues Surrounding Cost-Based Regulation of Market Data Prices;” and
  4. PHB Hagler Bailly, Inc., “The Economic Perspective on Regulation of Market Data.”
- C. Self-Regulatory Organization’s Statement on Comments on the Proposed Rule Change Received from Members, Participants, or Others

Written comments were neither solicited nor received.

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<sup>17</sup> See Securities Exchange Act Release No. 63291 (Nov. 9, 2010).

III. Date of Effectiveness of the Proposed Rule Change and Timing for Commission Action

Pursuant to Section 19(b)(3)(A)(ii) of the Act,<sup>18</sup> NASDAQ has designated this proposal as establishing or changing a due, fee, or other charge imposed by the self-regulatory organization on any person, whether or not the person is a member of the self-regulatory organization, which renders the proposed rule change effective upon filing.

IV. Solicitation of Comments

Interested persons are invited to submit written data, views, and arguments concerning the foregoing, including whether the proposed rule change, as amended, is consistent with the Act. Comments may be submitted by any of the following methods:

Electronic comments:

- Use the Commission's Internet comment form (<http://www.sec.gov/rules/sro.shtml>); or
- Send an e-mail to [rule-comments@sec.gov](mailto:rule-comments@sec.gov). Please include File Number SR-NASDAQ-2012-044 on the subject line.

Paper comments:

- Send paper comments in triplicate to Elizabeth M. Murphy, Secretary, Securities and Exchange Commission, 100 F Street, NE, Washington, DC 20549-1090.

All submissions should refer to File Number SR-NASDAQ-2012-044. This file number should be included on the subject line if e-mail is used.

To help the Commission process and review your comments more efficiently, please use only one method. The Commission will post all comments on the Commission's Internet Web site (<http://www.sec.gov/rules/sro.shtml>). Copies of the

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<sup>18</sup> 15 U.S.C. 78s(b)(3)(A)(ii).

submission, all subsequent amendments, all written statements with respect to the proposed rule change that are filed with the Commission, and all written communications relating to the proposed rule change between the Commission and any person, other than those that may be withheld from the public in accordance with the provisions of 5 U.S.C. 552, will be available for website viewing and printing in the Commission's Public Reference Room on official business days between the hours of 10:00 a.m. and 3:00 p.m. Copies of such filing also will be available for inspection and copying at the principal offices of the Exchange. All comments received will be posted without change; the Commission does not edit personal identifying information from submissions. You should submit only information that you wish to make available publicly.

All submissions should refer to File Number SR-NASDAQ-2012-044, and should be submitted on or before [insert date 21 days from publication in the Federal Register].

For the Commission, by the Division of Trading and Markets, pursuant to delegated authority.<sup>19</sup>

Kevin M. O'Neill  
Deputy Secretary

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<sup>19</sup> 17 CFR 200.30-3(a)(12).

**Statement of Janusz Ordoover and Gustavo Bamberger****I. INTRODUCTION.**

1. I, Janusz Ordoover, am a Professor of Economics at New York University and a former Director of the Masters in Economics Program. I served as the Deputy Assistant Attorney General for Economics in the Antitrust Division of the U.S. Department of Justice in 1991-1992. In that post, I was responsible for formulating and implementing the economic aspects of antitrust policy and enforcement of the United States Government, including co-drafting of the 1992 Agency Horizontal Merger Guidelines. I have also served as an advisor on competition and regulatory matters to the Department of Justice, the Federal Trade Commission, the governments of Poland, Russia, Hungary and Australia, as well as to the World Bank, the Organization for Economic Cooperation and Development, the Inter-American Development Bank, the Australian Competition and Consumer Commission and the New Zealand Commerce Commission. I have served on numerous American Bar Association and International Bar Association panels. I also am a Senior Consultant to Compass Lexecon, an economics consulting firm that specializes in the application of economic analysis to legal and regulatory issues.

2. I have authored and co-authored numerous articles on industrial organization economics, law and economics, antitrust, and intellectual property. In particular, I have authored or co-authored several articles dealing with market power and its abuse. In addition, I have written and testified on the issues of pricing of information as well as on the benefits and costs of regulatory interventions in markets. My curriculum vitae, which contains a complete list of my publications, is attached as Appendix A.

3. I, Gustavo Bamberger, am a Senior Vice President of Compass Lexecon. I received a B.A. degree from Southwestern at Memphis, and M.B.A. and Ph.D. degrees from the University of Chicago Graduate School of Business. I have provided expert testimony on a

variety of economic issues to federal courts, the U.S. Senate, the U.S. Federal Energy Regulatory Commission, the U.S. International Trade Commission, the U.S. Department of Transportation, U.S. state regulatory agencies, the Canadian Competition Tribunal, the New Zealand Commerce Commission and the High Court of New Zealand. A copy of my curriculum vitae is attached as Appendix B.

4. We have been asked by counsel for the NASDAQ Stock Market (“NASDAQ”) to evaluate the extent to which competitive forces constrain NASDAQ’s ability to set prices and terms for “proprietary” data products. We have also been asked to comment from an economic perspective on the proposed “Platform Pricing” schedule that offers discounts to non-institutional investors. Our submission builds upon and expands our earlier comments submitted in connection with a Notice of Proposed Order Approving Proposal by NYSE Arca, Inc. To Establish Fees for Certain Market Data and Request for Comment, Release No. 34-57917, June 4, 2008 released by the Securities and Exchange Commission (“the Commission”).<sup>1</sup>

5. We conclude that NASDAQ is subject to significant competitive forces from other platforms. This means, in particular, that competition for orders constrains NASDAQ’s freedom in setting the prices and other terms of proprietary data products. Competition among trading platforms can be expected to constrain the aggregate return each platform earns from the sale of the array of its products, including the joint products at issue here, which are execution services and proprietary data. In particular, cross-platform competition and the adverse effects of increasing the price of proprietary information on the volume of trading on the platform constrain the pricing of proprietary information. Similarly, overpricing of execution services will reduce the volume of trading on the platform and reduce the production of proprietary information. By definition, information that is proprietary to an exchange cannot be obtained elsewhere, but this does not enable the owner of such information to exercise monopoly power

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1. See Statement of Janusz Ordovery and Gustavo Bamberger, filed with the Securities and Exchange Commission, Release No. 34-57917, on behalf of NASDAQ Stock Market, August 1, 2008.

over that information vis-à-vis firms that purchase such information. Besides the fact that similar information can be obtained elsewhere, the feasibility of supra-competitive pricing is constrained by traders' ability to shift their trades elsewhere, which lowers the activity on the exchange and, in the long run, reduces the quality of the information generated by the exchange. The presence of these potent economic forces facing NASDAQ strongly suggests that there is no need to regulate the pricing of proprietary data, including pricing schedules like the proposed "Platform Pricing."

6. In our view, each platform should be free to determine how best to recover the costs – including a return on capital – of its joint products (i.e., execution of trades and proprietary information). This includes "bundling" of discounts across an array of products as contemplated in the "Platform Pricing" proposal being submitted by NASDAQ. Each platform will make its pricing and bundling decisions based on its individual circumstances and the business strategies of the platform. Moreover, these decisions can – and likely will – change over time as the forces of competition reveal whether these strategies are profitable or not. Regulatory forbearance is thus fully warranted in the absence of any showing that the pricing strategies will anti-competitively disadvantage rival platforms and some well-defined customer groups of the investing public.

7. The "Platform Pricing" proposal appears designed to benefit non-professional investors, a group which we understand is predominantly comprised of average (as measured by transaction volumes) individual investors. The discount is provided to NASDAQ members that receive the data and, acting as intermediaries, provide it to their non-professional brokerage customers generally as part of a service. By providing discounts to the intermediaries based on both order activity and qualifying data activity related to non-professional investors, the proposal should encourage the increased provision of data to that set of investors and stimulate their activity on the exchange.

8. As we discuss in this statement, the products at issue in this regulatory proceeding are produced under the conditions of high fixed costs, which are also joint and common to a range of products, and low (or zero) marginal or incremental costs of serving an additional customer. Economics amply demonstrates that marginal cost pricing in an industry with these cost characteristics is not feasible, and some deviations from marginal cost pricing are unavoidable. In general, economic efficiency in these circumstances requires that different customers pay different prices. Economists call this type of pricing structure “differential pricing” or “price discrimination.” Price differentiation in markets with high fixed costs and low incremental costs is common, efficient, and not anticompetitive.

9. One might object perhaps that such pricing is “unfair.” It is important to note that “fairness” is not a core concept of microeconomics or of industrial organization. In this submission, we discuss possible interpretations of a “fairness” standard and conclude that it most plausibly forbids cross subsidies among customers groups and capricious differential treatment that is unrelated to market fundamentals. We find that the rates proposed by NASDAQ in its “Platform Pricing” plan do not violate fairness standards as summarized above.

10. The remainder of our statement is organized as follows. In Section II, we show that competition between trading platforms constrains the price of market data sold by each platform. In Section III, we provide an economic analysis of NASDAQ’s “Platform Pricing” proposal. We summarize our conclusions in Section IV.

## **II. COMPETITION BETWEEN TRADING PLATFORMS CONSTRAINS THE PRICE OF MARKET INFORMATION.**

### **A. Background Information.**

11. Since the Securities Act Amendments of 1975, the volume of equity trading in the United States has increased dramatically. Between 1976 and 1986, for example, total trading in stocks listed on the New York Stock Exchange (“NYSE”) increased from 6.3 billion shares to



42.5 billion shares annually, an increase of about 575 percent. Annual trading in those shares further increased and reached 126.3 billion shares in 1996 and 1.43 trillion shares in 2009.

Thus, between 1976 and 2009, trading in stocks listed on the NYSE increased by a factor of 227 (from 6.3 billion to 1.43 trillion shares per year).<sup>2</sup>

12. Along with the growth of volume, trading in exchange-listed stocks is increasingly occurring over a variety of platforms. In early 2002, for example, approximately 80 percent of trading volume in NYSE-listed stocks took place on the listing exchange (i.e., the NYSE). (For NASDAQ-listed stocks, this percentage was somewhat higher.) By October 2010, only 35.2 percent of trading on NYSE-listed stocks, in the aggregate, took place on the NYSE and NYSE Arca platforms.<sup>3</sup> The NYSE accounted for 22.6 percent of trading in NYSE-listed shares, and NYSE Arca for 12.0 percent.<sup>4</sup> In the same month, NASDAQ's share of trading in NASDAQ-listed securities was 29.5 percent.<sup>5</sup>

13. Furthermore, an exchange's share of trading in a given set of stocks overstates the share of information on total liquidity regarding these stocks that is generated by an exchange because trading platforms only hold a portion of the available liquidity on their books. Other liquidity exists on the trading desks of brokerage firms. We understand that such liquidity is readily available to those firms' clients.

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2. See "Consolidated tape volume by market (thous. of shares) (1976-2003)" and "Volume in NYSE Listed Issues (millions of shares), 2009," [nyxdata.com/factbook](http://nyxdata.com/factbook).

3. See [http://www.nyse.com/pdfs/NYSE\\_Euronext\\_Transactions\\_Data.pdf](http://www.nyse.com/pdfs/NYSE_Euronext_Transactions_Data.pdf).

4. For October 2010, BATS Trading reports "consolidated volume" of 94.8 billion shares on "Tape A" (i.e., the NYSE). Of this amount, BATS Trading reports that the NYSE accounted for 21.4 billion shares (22.6 percent) and NYSE Arca accounted for 11.4 billion shares (12.0 percent). See [http://www.batstrading.com/market\\_summary/](http://www.batstrading.com/market_summary/) (and link to "Download last 30 days" of data). We understand that the NYSE and BATS Trading report trades on a somewhat different basis (e.g., the NYSE-reported consolidated volume for June 2010 for NYSE-listed stocks is about one percent larger than the amount reported by BATS Trading). For this reason, the shares derived from NYSE and BATS Trading data do not align exactly (e.g., the BATS Trading data imply that the aggregate share of the NYSE and NYSE Arca in October 2010 for NYSE-listed stocks was 34.6 percent, while the NYSE reports an aggregate share of 35.2 percent).

5. See <http://www.nasdaqtrader.com/trader.aspx?id=marketshare>.

14. Rapid entry into the platform business is possible, which further constrains any incumbent's ability to act in non-competitive manner. For example, BATS Trading began trading on January 27, 2006.<sup>6</sup> By June 2008, it accounted for 7.5 percent of trading in NYSE-listed stocks and 10.3 percent of trading in NASDAQ-listed stocks.<sup>7</sup>

15. This evidence shows that no trading platform has a "monopoly" on generating market data on shares listed on that platform. As we discuss further later in this report, although any firm can be described as the "exclusive" seller of its branded product, it is not appropriate as a matter of economics to characterize every firm that sells such a product as a "monopolist" in any meaningful sense.

16. In the case of data jointly generated through trading on NASDAQ, the volume and quality of the information depends on the volume of orders and trades on the exchange. Here, by the "quality" of data we mean its informative value. For example, all else equal, the deeper is the "depth-of-book" information on an exchange, the more valuable it is. Consequently, exchanges compete for liquidity and thus for data quality, which, as we have seen, is linked to the volume of transactions.

17. As we discussed in our prior submission and will discuss again later in this statement, the volume of transactions on an exchange in a given stock and in the aggregate is determined in a competitive market for accessing liquidity on various platforms. Each platform's share of trades is not fixed but, rather, results from competition across a broad range of platforms on which the particular stock can be traded. From that perspective, therefore, the volume and quality of data relating to any particular stock is also determined by and as a result of the interplay of economic forces. As long as inter-platform competition is not impeded, NASDAQ neither has monopoly power in trading, even in a stock listed on NASDAQ, nor does it

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6. See [http://www.batstrading.com/data/daily\\_volume.php?period=2006Q1](http://www.batstrading.com/data/daily_volume.php?period=2006Q1). BATS Trading traded 200 shares on January 27, 2006 (and 934,804,026 shares on June 30, 2008).

7. Also see Edgar Ortega, "Yahoo Will Offer Free Real-Time Stock Quotes From Bats Trading," Bloomberg, May 28, 2008 (BATS Trading "handles about 605 million shares a day, representing about 8.9 percent of the shares traded in the U.S.").

have a monopoly over the information pertaining to the depth of book in a stock, because other exchanges also will have such information (albeit determined by the depth-of-book on that exchange). As competition for the execution of trades shifts in response to market signals, so will the quality of information available from the alternative platforms. Hence, competition for listings and trading also affects competitive conditions in the “market” for information.

18. In theory at least, “network” (or “liquidity”) effects could potentially lead to a situation where one platform captures a large share of all trades in one or more stocks or some other financial instrument. In such a case, the exchange would have a “monopoly” in trading in the stock as well over the information pertaining to that stock. Two points are worth making in this context. First, the demonstrated ability of platforms to capture a substantial percentage of trades of stocks listed on other exchanges indicates that such effects are generally mitigated in the market for equity trading, or that such effects have been offset by other forces (including the introduction of Regulation NMS), or that there is sufficient inter-platform product differentiation so that, given the large trading volumes, two or more exchanges can compete alongside each other. If anything, the empirical evidence on platform shares we have discussed indicates that there is no powerful trend towards concentration of trading in a given stock on a single exchange: quite the opposite. Second, at least from the competition (or antitrust) perspective, it is rather implausible that a single stock (or trading in a single stock) would constitute a relevant market. Hence, for the effects we have discussed to be a source of competitive concern, such effects would have to be powerful over a broad range of equities. Empirical evidence clearly shows that this is not the case.

#### **B. Trading Platforms Produce “Joint Products.”**

19. Execution services and market data are an example of “joint products.” This is because every execution of a trade automatically produces another potential product, namely information about that trade (such as the price and quantity traded). Similarly, depth-of-book

information is automatically produced when traders post limit orders on a platform. The production of joint products necessarily involves incurring “joint costs,” i.e., costs that are not uniquely incurred on behalf of any one of the services provided by the exchange.<sup>8</sup> The total return that a trading platform earns reflects the revenues it receives from the sale of these joint products and other services, net of the joint cost and direct costs (i.e., costs that can be directly attributed to the relevant products) it incurs.

20. Trading platforms make simultaneous pricing decisions regarding liquidity rebates, execution fees, and market data fees. Liquidity rebates attract orders that create available liquidity by paying the order submitter a fee when the order executes; execution fees are incurred when an investor’s order interacts with available liquidity resulting in a trade; and market data fees pay for access to information about, for example, currently available liquidity and past trades. All of these decisions are made with the goal of maximizing profits, or fostering other legitimate business objectives, subject to competitive and regulatory constraints.<sup>9</sup>

21. In general, there is no economic basis for placing some arbitrary regulatory caps on prices for one of the joint products in market situations where suppliers face competitive constraints across the range of their offerings.<sup>10</sup> The simple reason is that, in general, an “excessive” price for one of the products will, ultimately, have to be reflected in lower prices for

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8. It is widely accepted that there is no meaningful way to allocate “common” or “joint” costs across different joint products. For this reason, “cost-based” regulation of pricing of market data requires inherently arbitrary cost allocations. Furthermore, it is widely recognized that cost-based regulation can create significant inefficiencies and distortions. At least in part for this reason, such regulation has been widely abandoned or replaced with other forms of regulation in a variety of industries (e.g., telecommunications). For example, common costs are recovered from various services based on customers’ willingness to pay. For a succinct and elegant treatment see, e.g., J-J. Laffont and J. Tirole, *Competition in Telecommunications*, MIT Press, 2000, especially, chapters 1 and 2.

9. For example, regulation requires that some information, such as a platform’s best bid and offer, be provided at non-market determined rates.

10. For a discussion on the conditions under which regulation is appropriate in network industries, see R. D. Willig, “Economic Principles to Guide Post-Privatization Governance,” in F. Besañes et al. (eds), *Can Privatization Deliver?*, Inter-American Bank, 1999.

other products sold by the firm or the firm will otherwise experience a loss in the volume of its sales that will be adverse to the overall profitability of the enterprise.

22. Exchanges compete with each other on a variety of dimensions. For example, U.S. exchanges compete with each other (and foreign exchanges) initially for new listings and subsequently for listing switches. With respect to a given stock, unless a stock is listed on an exchange, other platforms have nothing to produce, no market data and no executions. Once a stock has been listed on a particular exchange, rival exchanges and other trading platforms – such as electronic communications networks – compete to execute trades of shares in that stock. Thus, a listing exchange bestows a positive externality on its potential rivals.

23. Different platforms may choose different pricing strategies and ways of recovering total costs and earning a return on their investments. Some platforms may choose to pay rebates to attract orders, charge relatively low prices for market information (or provide market information “at no cost”) and charge relatively high prices for accessing posted liquidity. Other platforms may choose a strategy of not paying liquidity rebates to attract orders, setting relatively high prices for market information and relatively low prices for accessing posted liquidity. Others may choose to foster trading on a platform by establishing ownership interests among customers that provide liquidity and consume market data. These strategies can vary over time in response to changing market, life-cycle, and regulatory factors. BATS Trading, for example, has chosen an initial strategy of setting low (or zero) prices for market data, mid-range prices for executions, and relatively high liquidity rebates.<sup>11</sup>

24. The economic evidence shows that exchanges and other trading platforms compete with each other on pricing. To illustrate, in 2007, NYSE Euronext changed its prices to compete more effectively with rival trading platforms:

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11. Pricing of services on an exchange may vary over the life of the exchange in response to its changing market position. For example, at the time of entry, pricing on an exchange may be motivated by the need to attract liquidity. At later stages, as the information flows from an exchange become richer and more relevant to consumers, the exchange may introduce fees for data, which help to recoup in part the initial up-front investments in the platform..

NYSE Euronext introduced new pricing on [September 12, 2007], including higher rebates for stock trades on its exchanges, to better compete with aggressive pricing set by electronic rivals such as BATS Trading.

Under the new pricing system effective Oct. 1, customers trading on the Big Board's all-electronic NYSE Arca platform will get a rebate of 25 cents for every 100 shares of NYSE-listed stocks traded, 5 cents more than the current rebate.

...

The exchange also lowered the charge for customers taking liquidity in Nasdaq-listed stocks out of its market by 5 cents, from 30 cents to 25 cents. Liquidity providers in Nasdaq-listed stocks will continue to get a rebate of 20 cents.

...

Upstart electronic platform BATS Trading recently introduced a pricing structure providing a rebate of 34 cents per 100 shares for customers providing liquidity in NYSE-listed stocks, and a charge of 24 cents per 100 shares for customers taking liquidity in NYSE-listed stocks away from BATS.

"We're pleased at this reaction to BATS's consistently aggressive pricing," said Randy Williams, a spokesman [for BATS].<sup>12</sup>

25. Some trading platforms pay substantial sums in the form of liquidity rebates to induce customers to "post orders" on their platform.<sup>13</sup> For example, in 2009, NASDAQ paid \$1.394 billion in liquidity rebates.<sup>14</sup> These posted orders allow NASDAQ to attract additional "order flow" that interacts with the posted orders by taking available liquidity and results in trades executing on its exchange. Posted orders, the liquidity-taking order flow, and the executed trades produce information that is valuable to investors.<sup>15</sup> Other platforms do not offer

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12. Anupreeta Das, "NYSE Euronext changes equities transaction pricing," Reuters, September 12, 2007.

13. In 2008, the National Stock Exchange ("NSX") introduced a new pricing structure that included "market data rebates embedded in liquidity rebates" (<http://www.nsx.com/content/news/story/91#January312008>). That is, NSX uses revenue it receives from selling market data to increase the rebates it pays for liquidity.

14. Form 10-K for NASDAQ Stock Market Inc., February 18, 2010, at 54.

15. Some commentators suggest that fees for proprietary data must be set "at cost." As we explain in this submission, there is no need to impose a cost-based pricing standard for such data and there is no unique cost basis that could be used for such a purpose. As we have discussed, the latter conclusion follows from the fact that the information at issue is a joint product and since the incremental cost of providing such information to an additional customer is small (or zero), marginal cost pricing is not feasible. Additionally, those commentators ignore that NASDAQ paid over a billion dollars in liquidity rebates in 2009 to

rebates to liquidity providers but instead offer lower fees or even free executions to liquidity-taking order flow. We understand that some exchanges, including the National Stock Exchange and the American Stock Exchange, offer equity ownership as an incentive/reward for active trading on their platforms.

26. Platforms also compete on data fees. For example, in June 2008, NASDAQ launched two proprietary “Last Sale” products. In each case, the terms included subscription rates and an “enterprise cap” rate designed for Web portals. The enterprise cap rates for the two products were \$100,000 per month and \$50,000 per month for the two products (i.e., a cap of \$150,000 per month for customers who purchased both products). The majority of NASDAQ’s sales were at the cap level. We understand that in early 2009 BATS offered an alternative product (BATS PITCH data) as a “free” alternative to the NASDAQ Last Sale products. Also in early 2009, NYSE Arca announced the launch of a competitive product with an enterprise price of \$30,000 per month. In response, in April 2009, NASDAQ combined the two Last Sale products into one and reduced the enterprise cap to \$50,000 per month (i.e., a reduction of \$100,000 per month).

27. The fact that different exchanges adopt dissimilar pricing strategies suggests that customers have different preferences over the services provided by the exchanges as well as different willingness (or ability) to pay for these services. Thus, pricing heterogeneity partly reflects customer heterogeneity and adds to customer value as well as profitability.

28. Information on trading volumes further confirms that platforms compete actively for trading in listed stocks. For example, as we have noted, the NYSE accounted for about 80 percent of trading in NYSE-listed stocks in 2006; by October 2010, NYSE’s share of trading in those stocks has fallen to as low as 22.6 percent, and the NYSE Group’s share – i.e., the NYSE

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induce trading on its platform and thereby generate the information that such commenters apparently want to obtain at a price that reflects only the cost of creating the proprietary data products (i.e., ignoring the costs of rebates and other joint costs).

and NYSE Arca – has fallen to 35.2 percent. Such large shifts in trading volumes across platforms indicate that traders can, and do, quickly move their orders from one exchange to another in response to market signals, which is clear evidence that platforms compete with each other. This intense competition among trading platforms can be expected to constrain the aggregate return each platform earns from its sale of all of its products.

29. Further increases in the price of proprietary data by a platform can be expected to reduce the volume of trading on that platform, which reduces the profitability of such a price increase and thus constrains the pricing of proprietary information. Conversely, a platform might reduce prices for proprietary information in order to maintain or increase the volume of trading on that platform. For example, we understand that in late 2009, a member notified NASDAQ that in the absence of a fee reduction for “non-displayed use” of depth data, the member would move order flow from NASDAQ to a competing platform. After meeting with the member and analyzing the potential loss of trading volume, NASDAQ sought and obtained SEC approval for an Enterprise License for non-displayed use of certain depth data.<sup>16</sup> NASDAQ’s decision linked data revenue to transactions revenue, reflecting platform-based pricing and the nature of joint products.

### **C. The Role of Market Information in Trading Platform Competition.**

30. Prior Commission rules mandate that certain types of market information must be made available to all customers. For example, in 1978, the Commission implemented the “Display Rule” which required information vendors and broker-dealers “to display a consolidated array of information for each stock including the single best quotation available in the reporting markets or a montage of all markets’ best quotations, and the last sale data including price,

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16. See Securities Exchange Act Release No. 61700 (March 12, 2010); 75 F.R. 13172 (March 18, 2010) (approving SR-NASDAQ-2010-034).



place and volume.”<sup>17</sup> Exchanges and other trading platforms are required to provide their trade (or “core”) information to a “securities information processor” (“SIP”) which consolidates data from all platforms to produce the mandated information.<sup>18</sup>

31. In addition to the information that trading platforms are required to provide to SIPs, exchanges and other platforms can, but are not required to, individually make available additional market data – sometimes referred to as non-core, or “proprietary”, information. As we have discussed, the posting of trades on a platform, the execution of those trades, and market information about order flow to the platform and trades on the platform, are joint products.

32. There is no question that core data are valuable, which is reflected in the Commission’s requirement that this base information be provided at reasonable fees to all parties. There is, of course, value in additional information flowing from the exchange. But there is no evidence that this additional information is of the same fundamental value to the financial markets as the information that exchanges are required to provide. Whether or not a customer purchases the incremental information depends on the cost/benefit analysis of the individual customer. Moreover, the decision of an individual customer not to purchase this incremental information is not likely to create a material negative externality on the trading public and thus a decision to buy or not is best left to individual customers while ensuring that competition among exchanges creates effective constraints on the pricing of proprietary data.

33. Market information is useful in a number of ways, including as an input into trading activities, for valuing securities and portfolios, and for evaluating the performance of a broker or trader.<sup>19</sup> Depth-of-book market information can help investors make better trading

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17. Sharon Brown-Hruska, “Competing Models for Market Data Dissemination: A Comparison of Stock and Futures Markets,” at 7 (describing Rule 11Ac1-2).

18. Trade information is consolidated into three data streams – referred to as Tape A (for NYSE-listed shares); Tape B (for shares listed on the AMEX and regional exchanges); and Tape C (for NASDAQ-listed shares). One SIP compiles Tape A and Tape B information; a different SIP compiles Tape C information.

19. Market information can be useful to firms that act as intermediaries between trading

decisions. The decision to post an order that would be disseminated by a depth-of-book feed reflects a trade-off between the cost of offering a “free option” to the market and the benefit of attracting a taking order and thereby creating an execution.<sup>20</sup> The costs and benefits of posting an order will depend on the attributes of the platform where the order can be posted, including the platform fees, data quality and price and distribution of its data products. Without the prospect of a taking order seeing and reacting to a posted order on a platform with a depth-of-book feed, there would be little incentive to post a displayed order. Independent of trading, depth-of-book data also may be useful as a barometer of market sentiment. For example, a “deep” book with many orders at numerous prices near the current price may be considered to be a sign of investor confidence; conversely, a “thin” book with few orders may be considered a sign of investor uncertainty. Whether depth-of-book data are used for trading or not, a platform must attract orders, both posting and taking, to generate depth-of-book information.

34. It is important to keep in mind that a trader can participate in trading even without proprietary information from a particular platform regarding a particular stock or array of stocks. That is, while it is conceivable that proprietary information generated by NASDAQ could be potentially quite valuable to certain traders who wish to trade on NASDAQ, the key point is that a trader is not compelled to trade on NASDAQ in NASDAQ-listed stocks. Such a trader, while potentially benefiting from information generated by traders who trade on NASDAQ, contributes nothing to the recovery of joint costs incurred by NASDAQ.

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platforms and the trading public but do not trade themselves. For example, web sites like Google and Yahoo! benefit in a variety of ways from attracting more visitors because such visitors are likely to “stick” to the website and generate other business and thus incremental revenues. Such web sites would not have an incentive to buy non-core data products if they were of no value to ultimate consumers. These web sites are thus engaged in joint production and have devised sophisticated pricing mechanisms to monetize their investments in the production of content.

20. See, for example, Notice of Proposed Order Approving Proposal by NYSE Arca, Inc. To Establish Fees for Certain Market Data and Request for Comment, Release No. 34-57917, June 4, 2008, released by the Securities and Exchange Commission, Appendix A, at 51-53.

35. Ubiquitous access to core data (e.g., National Best Bid and Offer, or NBBO, information) is perceived by the regulatory authorities as essential to the efficient functioning of the equity markets.<sup>21</sup> This conclusion does not, however, apply to proprietary products which are valuable to some traders but are not required to ensure baseline efficiency of the trading system. This being the case, and given that all costs of an exchange have to be recovered on a forward-looking basis, it makes economic sense that the beneficiaries of such proprietary information help to defray some portion of the joint and common costs incurred by the exchange.

36. Although proprietary data are jointly produced with trading activity on the exchange, such raw data needs to be further processed and stored in order to be usable to customers. Exchanges would have little or no economic incentive to expend resources on developing, processing, and maintaining proprietary data unless it were valuable to at least some customers and could generate income for the exchange directly or indirectly. For example, an exchange that offered for sale additional information – beyond what is mandated by regulatory fiat – must incur the costs of collecting, preparing and marketing that data, but would gain no commensurate revenues unless at least some customers considered it valuable and were willing to pay for it either directly or through fees on trades.<sup>22</sup>

37. Thus, even if certain information is generated every time customers post buy/sell orders or execute trades, that information has to be maintained and continuously updated on databases, processed using software packages, and disseminated out to the public, all at substantial cost. This alone suggests that such proprietary data should not be made available

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21. We understand that NASDAQ receives a share of the revenue generated from the sale of core data at regulated rates.

22. As we have discussed, different trading platforms may choose different pricing strategies. For example, a platform owner may choose to distribute non-core market information “at no cost” to increase demand for trade execution services on that platform. All else equal, that owner will thus be able to charge more for trade execution services than a platform owner that sells market information.

for free. Even more importantly, proprietary data are generated by the exchange using an expensive software and hardware infrastructure. These costs, together with the costs of executing trades, have to be recovered. As we shall explain in more detail later, sale of proprietary data should be called upon to contribute to the recovery of all the costs incurred by the exchange on behalf of all its products.<sup>23</sup>

38. Even if a trading platform had some unique information that is potentially valuable to (some) consumers, the total price of trading on that platform – which includes the price of market data available from the platform that the trader elects to purchase – is constrained by the total price of trading on rival platforms. Therefore, it is incorrect as a matter of economics to focus on whether any given information can only be obtained from a particular platform in order to gauge that platform's "market power." Proper economic assessment focuses on inter-platform competition which is driven by a variety of factors, including the availability and quality of platform-generated data and the extent to which that competition constrains pricing.

39. Because customers can choose between competing trading platforms, the competitive constraints faced by sellers of market data differ from the constraints faced by the sellers of regulated "monopoly" inputs. For example, consider the case of a Regional Bell Operating Company ("RBOC") that sold access to its "local loop" for residential customers (i.e., the connection to a customer's home). Beginning in the 1980s, residential customers could choose among long-distance operators, but typically had no choice of providers for local-loop service because each home was reached by only one "wire." Thus, a firm that wanted to offer

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23. This point was recognized over a century ago by the British economist Alfred Marshall who noted that the total cost of raising and maintaining a sheep should be recovered from wool and mutton and not from either one alone, even though it is unavoidable that a sheep will produce both, unless there is no demand for mutton, for example. See, Alfred Marshall, *Principles of Economics*, Cambridge University Press, 1890. There is no danger in the instant case that there will be no demand for either execution or proprietary data on NASDAQ. The whole point is that there is demand for such data, but those who have such demand have balked (apparently) at paying for it.

long-distance service to a consumer had to buy “access” to that local-loop service from the monopoly provider in that area (i.e., the only way into a customer’s home was through the wire owned by the local phone company).<sup>24</sup>

40. In contrast to the case of RBOCs selling local-loop access, individuals who want market data can obtain it from a variety of platforms, some of it even at no cost. Even though market information from one platform may not be a perfect substitute for market information from other platform(s), the existence of alternative sources of information can be expected to constrain the prices platforms charge for market data, especially when reinforced by inter-platform competition.<sup>25</sup>

41. For competitive concerns to conceivably arise in a setting like this, the quality (breadth and depth) of information from other platforms would have to be so inferior (and the incremental benefit from proprietary information so overwhelming), that the competitive viability of the alternative platforms would be undermined if traders had to pay market prices for the “dominant” platform’s proprietary information. In such a case, these other platforms would not be in a position to offer attractive opportunities for traders and would not exercise a meaningful constraint on the dominant platform. This was precisely the market situation facing carriers that wished to connect to an RBOC’s network. In essence, these carriers had to either pay the monopoly price or invest in costly and inefficient by-pass technologies. Regulatory constraint on pricing of access at the time may have been the most effective solution to the RBOCs’ monopoly power. However, this concern is not present here because, as we have seen, other exchanges have been able to enter, flourish, and divert business from NASDAQ.

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24. More recently, cable firms started providing a competitive alternative to RBOC local-loop access in some areas.

25. Competition among platforms is similar to “source competition” that keeps railroad rates down – if an electric utility can get coal from two sources, each of which is served by a “monopoly” railroad then both apparent railroad monopolies are undermined. Similarly, if a customer can purchase power from two different generators, each served by a single railroad, both apparent railroad monopolies are undermined.

#### IV. ECONOMIC ANALYSIS OF NASDAQ'S "PLATFORM PRICING" PROPOSAL.

##### A. Summary of NASDAQ's "Platform Pricing."

42. We understand that the "Platform Pricing" program introduces tiered pricing that reflects customers' *joint* activity on the exchange through trading volumes and purchases of proprietary data. A customer who is an active trader *and* an active consumer of data receives an aggregated discount relative to the fees paid by other customers. NASDAQ already offers volume discounts on trades and proprietary data spend. Hence, the only novel element of this proposal is the discounting based on the customer's aggregate activity. As such, in general, it should not trigger any regulatory concerns. However, below we comment on the possible situation in which such concerns could arise and find that these are not present in the instant case.

43. NASDAQ is introducing a discount of its proprietary depth-of-book products (TotalView, OpenView and Level2) sold to "non-professional" investors. "Non-professional" investors include traditional retail brokers such as AG Edwards, Raymond James and Merrill Lynch and online brokers such as Scottrade, Schwab, Fidelity, TD Ameritrade and E\*Trade. Such investors can purchase depth-of-book information that will be used by their clients (i.e., retail investors) to make trading and other decisions. That is, customers who could qualify for "Platform Pricing" discounts purchase information on behalf of retail investors and will attempt to recover the costs of these valuable purchases from the ultimate consumer whether directly or indirectly (e.g., through increased trading). The likely effect of the volume discounts in the "Platform Pricing" proposal will be to "pass through" lower fees to the ultimate non-professional investors on whose behalf NASDAQ's customers purchase proprietary data.<sup>26</sup>

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26. We understand that non-professional proprietary spending includes expenditures associated with the distribution of the following products: TotalView, OpenView and Level2. This calculation includes the monthly usage, distributor fees and enterprise license fees for the firm. Members must meet both the volume requirement and the proprietary data

44. The “Platform Pricing” discounts are not available to “Professional” investors, which include trading firms that can connect directly to the NASDAQ trading platform (e.g., high frequency traders). Even prior to the introduction of “Platform Pricing,” NASDAQ charged different fees for its depth-of-book products to “professional” and “non-professional” investors. In particular, “professionals” pay substantially higher fees than “non-professionals.” For example, we understand that NASDAQ currently charges \$15 per terminal for its TotalView product to non-professionals, while professional investors pay roughly five times the non-professional rate. Such pricing reflects the value of the service in a manner that is consistent with pricing rules advocated by economists in the presence of large joint and common costs and low incremental costs, as we discuss next.

**B. The Economics of Pricing Products in the Presence of Scale Economies Stemming from Large Joint and Common Costs and Low Marginal Costs.**

45. The products at issue in this regulatory proceeding are produced under the conditions of high fixed costs, which are also joint and common to a range of products, and low (or zero) marginal or incremental costs of serving an additional customer. In addition, other incremental costs (such as developing information on the depth of book of an additional security) are also low when compared to the volume of costs associated with operating an exchange, including the underlying information technology. Indeed, state-of-the art information technology is at the heart of a competitive and efficiently operated financial market (such as an exchange).

46. This cost structure characterizes content production and distribution industries. For example, in the software industry, developing new software typically requires a large initial investment (and continuing large investments to “upgrade” the software), but once the software is developed, the incremental cost of providing that software to an additional user is typically

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requirement to be eligible for the discount.

small, or even zero (e.g., if the software can be downloaded over the internet after being purchased).<sup>27</sup> The same is true of newspapers, motion pictures, books, and so forth.

47. In the case of NASDAQ, the production process at the heart of this regulatory matter is even more complicated. In particular, besides being characterized by low incremental costs and high fixed costs, the products produced by NASDAQ (e.g., trade execution services and market data) are produced “jointly.” There is no question that it is costly to build and maintain data bases that are needed to produce proprietary data, but providing that information to an additional customer involves little or no additional costs. Similarly, the incremental cost of trading an additional share of stock on an existing platform is likely to be low once the platform has been developed. The relevant products are produced jointly in the sense that the activities of trading and placing orders are *the* source of information that can be (and is) distributed to the interested parties and are subject to significant scale economies.<sup>28</sup>

48. There is a substantial economic literature that addresses the pricing principles for products and services in industries with this type of cost structure: i.e., scale economies and joint and common costs.<sup>29</sup> Economic analysis shows that charging prices equal to marginal cost is the most efficient pricing rule. However, given the cost structures noted above, marginal cost pricing is not economically feasible. That is, marginal cost pricing is not feasible when there are increasing returns to scale because if all sales were priced at marginal cost, the vendor would be unable to defray the forward-looking costs of providing the service and would (ultimately) go

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27. See William J. Baumol and Daniel G. Swanson, “The New Economy and Ubiquitous *Competitive Price Discrimination: Identifying Defensible Criteria of Market Power*,” *Antitrust Law Journal*, Vol. 70, No. 3 (2003).

28. This is not the case with Marshall’s sheep farming. Sheep are likely produced with constant or increasing marginal cost and the pricing complication is confined to the most efficient recovery of the marginal cost of a sheep.

29. See, e.g., R. R. Braeutigam, “Optimal Policies for Natural Monopolies,” in R. Schmalensee and R.D. Willig (eds.), *Handbook of Industrial Organization*, vol. I, North Holland Publishers, 1989, for a review of pricing rules in the presence of scale and scope economies.



bankrupt and would have to exit the industry. Stated simply, pricing services at marginal cost in an industry with a cost structure like that of NASDAQ is a prescription for bankruptcy.<sup>30</sup>

49. For this reason, the services provided by a trading platform cannot be priced at marginal cost. Moreover, as we have discussed, execution services and market data are joint products. This does not mean that if one product is regarded as simply a by-product of another activity, it should be priced at a zero. Far from it: insofar as there is demand for that product at a positive price, the price for that product should be positive. Thus, even if information could be produced at zero marginal cost, economic principles mandate that it nevertheless be priced to the willing buyers at a price higher than the associated marginal cost.<sup>31</sup> That is, it is economically appropriate for such information to carry a positive price.

50. It is economically appropriate for information to carry a positive price in this context because if the platform incurs joint and common costs, “giving away” one product means that the other product(s) must cover all the joint and common costs.<sup>32</sup> This is potentially inefficient because it requires that the price of these services be raised above their respective marginal costs by more than would be necessary if the “free” product or service made some contribution to the recovery of the joint and common costs. Of course, as we have discussed, different platforms may choose different cost recovery strategies and may price one joint product at marginal cost (e.g., a platform may provide market data at “no cost”) but will have to price another joint product (e.g., execution services) significantly above the appropriate marginal cost in order to remain viable.

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30. The marginal cost that we are focusing on is the additional cost incurred by the exchange in providing the information to an additional customer.

31. See, e.g., W.J. Baumol and J.A. Ordover, “On the Optimality of Public Goods Pricing with Exclusion Devices,” *Kyklos*, Fasc. 1, 5-21 (1977).

32. It is uncontroverted that in the absence of a platform for trading, there would be no information regarding the depth-of-book or information about prices at which trades occur. Thus, a trading platform is a “cost center” for both trade execution services and market data.

**C. “Price Differentiation” in Markets with High Fixed Costs and Low Incremental Costs is Common, Efficient, and not Anticompetitive.**

51. Given that marginal cost pricing is generally not feasible in high fixed cost industries, some deviations from marginal cost pricing are unavoidable. One alternative might be to charge all customers a price equal to average total cost (including a return to capital). It is, however, well known that uniform average cost pricing – that is, charging the same price equal to average cost to all customers – is not socially efficient. In general, economic efficiency in these circumstances requires that customers whose demand is more responsive to price changes pay prices closer to marginal cost as opposed to customers who are less responsive to price changes. By offering a lower price to customers whose demand is more responsive to price, the seller stimulates demand, increases overall revenue, and in fact can offer a discount off the starting price (set at an average cost) even to the less responsive customers. Economists call this type of pricing structure “differential pricing” or “price discrimination.” Incidentally, this type of pricing reflects the underlying values that different consumers place on the product. To illustrate, a buyer whose demand is very responsive to price changes likely does not value the product very much above the available alternatives. Hence, this type of differentiated pricing is really a “value-driven” pricing. There is nothing problematic with such pricing once it is realized that neither marginal cost pricing nor uniform pricing are desirable from efficiency principles; and there is a great deal to recommend it.

52. Another form of differential pricing entails quantity (volume) discounts. In this pricing scenario, the incremental price (that is, the price for incremental units) falls with volume. This makes business and efficiency sense as long as the incremental price exceeds the incremental cost of the additional sales. In this case, the total volume of sales expands, which

is socially efficient, and consumers and the firm benefit.<sup>33</sup> In fact, volume discounts are ubiquitous in industries characterized by high fixed costs and low marginal costs.

53. Differential pricing (price discrimination) can benefit all groups of customers, provided it is implemented within some limits.<sup>34</sup> In particular, when competition constrains the overall profits earned by a supplier, such as is the case with trading platforms, differential pricing will, on balance, tend to benefit all customers as compared to, for example, uniform pricing. As we have discussed, competition in the provision of trading platform services is fierce. Hence, in the industry discussed here, differential pricing involving volume discounts should be encouraged rather than discouraged.

54. Differential pricing allows a provider to recover more of its fixed costs from some customers than from others and more on some units of sale than on others. For example, as we have discussed, professional investors' fees for market data generally are many times larger than fees paid by non-professional investors for the same product. That is, with this type of pricing structure both types of investors contribute to fixed costs but, all else equal, professional investors contribute more than non-professional investors on each unit purchased.

55. As we have discussed, NASDAQ's "Platform Pricing" differentiation strategy is based on two distinct criteria: (1) trading volume and (2) purchases of market information. The current proposal envisages that the marginal price (which is the increment that the customer has to pay for additional data and access to liquidity) falls with the volume of the activity and with the total volume of the trader's dealings with NASDAQ. That is, the proposed schedule exhibits effective volume discounts and also certain "bundling" of discounts. As we have discussed, volume discounts are generally procompetitive and efficiency enhancing, especially in situations like here where the marginal cost of the activity (e.g., providing market information

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33. It is also possible to combine price differentiation across customer groups with volume discounts. That is, it is possible to have different discount schedules for different customer categories.

34. This has been shown by R. D. Willig, "Pareto-Superior Non-linear Price Schedules," *Bell Journal of Economics* (1978).

to an additional consumer) is likely to be low or zero while the fixed costs are substantial. The reason is that with marginal costs low (or even zero), any price above this low marginal cost (say, equal to the average cost), suppresses output and thus lowers economic welfare. Hence, it is desirable to stimulate demand by offering volume discounts.

56. Volume discounts can improve a firm's profits *and* consumers' welfare. The firm's profit increases because additional purchases at any price above marginal cost help the firm recoup high fixed costs. Consumers' welfare increases where the policy causes consumers to purchase incremental units, which reveals that consumers obtain a net benefit from incremental purchases. This is true because the purchase of incremental units is voluntary, as is the case for depth-of-book data.

**D. "Bundling" is Common and Generally Procompetitive.**

57. The proposed NASDAQ price schedule provides for discounts that depend not only on volume but also on the combined spend on providing liquidity as well as the use of data. This type of pricing structure is sometimes referred to as "bundled" discounts.

58. It is not unusual for firms to offer discounts that are linked to total spend across a number of products. These types of pricing plans often reflect the fact that customers are differentiated on more than one dimension in terms of their willingness to spend on any given product. Here such differences might be differences in the willingness to pay for data and for accessing liquidity. In such a case, combining different products into one package makes it easier to design a plan that will appeal to a broader group of potential customers and stimulate overall sales than would a plan that offered discounts based only on the volume of one kind of activity or another. For example, some customers purchase substantial amounts of data but are not active in the market (e.g., market data vendors, independent software vendors, service bureaus, internet portals). Other customers may be active in the market but purchase little or no proprietary data (e.g., a small firm whose primary focus is trading at high frequencies). By

conditioning the discount on both activities, the “Platform Pricing” plan can achieve improved participation from both categories of users as compared to disaggregated plans.

59. Competitive concerns from a practice of bundling discounts across a range of products may potentially arise when such bundling-cum-discounting is used to foreclose entry (expansion) of rival firms which may not be able to offer an array of products as broad as that offered by the incumbent. In the instant case it is not likely that the combined offer will induce rival exchanges to exit (or become less competitively potent due to a reduction in volume). It is also not likely that the combined offer will have the effect of creating significant barriers to entry or expansion for new exchanges.

**E. Price Differentiation is Consistent with “Fairness.”**

60. “Fairness” is a concept that is often referenced in regulatory settings; however, it does not have a clear meaning in economics. Various definitions of what “fair” means have been provided in the economics literature but they are, in the end, arbitrary. The underlying idea is to propose a definition of “fairness” and then test its implications for public policy. In the current context, because we are dealing with pricing of services to different customers, the concept of fairness could be related to the permissible price differences for the same products charged to different customers (or customer groups).

61. From this perspective, one highly restrictive interpretation of the concept of fairness would be a requirement that all customers pay the same price for the same service, unless there are differences in the costs of serving them (i.e., fairness would be equated to the absence of price discrimination). In this interpretation of the fairness concept, the only permissible source of different treatment is the difference in the marginal (or incremental) cost of providing the product (service) to a customer. This view is consistent with the purely theoretical benchmark of perfect competition where all buyers pay the “marginal cost” of the good.

62. However, as we have discussed, marginal cost pricing is not feasible in a variety of realistic market settings and thus this pricing rule is not appropriate in situations like those considered in this submission. In the alternative, if all consumers have to pay the same price, non-discriminatory might mean pricing all services at an average cost.<sup>35</sup> There are two problems with this prescription. First, when there are joint and common costs, all calculations of average cost are arbitrary because the allocation of joint costs to different products is arbitrary. Second, such pricing is inefficient in the sense that it represses output and economic welfare relative to what could be realized with more complex pricing rules. From this brief discussion it follows that some differential treatment of different customers or customer classes should be allowed in order to promote overall economic efficiency which conduces to overall economic well-being and also serves to improve the profitability of firms.

63. So the question arises as to how far such differentiation should be allowed to go without violating some principle of fairness. Professor Gerald Faulhaber proposed that fair prices are those that are free of “cross-subsidy” of one customer group by another.<sup>36</sup> Cross-subsidy can be defined as a situation in which a customer (or customer group) pays more for what it purchases from a firm than what it would pay if it were not part of a broader customer group buying from that firm. In theory, the simplest benchmark for the absence of cross-subsidy is whether the price the buyer pays is below the marginal cost. If one customer pays less than the marginal cost of being served, another customer has to make up the difference by paying more than would be required if every customer covered (at least) the relevant marginal cost. In the current context, the marginal cost of serving an additional customer – be it accessing liquidity (transaction), posting offers, or obtaining information – are likely to be low, or perhaps even zero. Consequently, the rates proposed by NASDAQ in the “Platform Pricing” plan do not

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35. Since average cost depends on the volume of sales, which in turn depends on prices, the average cost is calculated at the volume at which the market clears, when the price is set at average cost. There is always such an equilibrium price.

36. Gerald Faulhaber, “Cross-Subsidization: Pricing in Public Enterprises,” *American Economic Review* (1975).

violate a fairness standard defined as systematically pricing below marginal cost to some customers on some purchases.

64. Professor Faulhaber also advanced a somewhat stricter definition of cross-subsidy which has been elaborated by William Baumol and Greg Sidak.<sup>37</sup> These authors propose that fairness requires that no group of customers should pay more for the service obtained than the incremental cost of serving them. This standard has been successfully applied for years in railroad regulation (following the passage of the Staggers Act) under the rubric of the “stand-alone cost test.” Under such a test, prices to some customer groups could be conceivably quite high but even these high-paying customers obtain some benefits from sharing the facilities (such as the platform and the services it provides) with other customers.<sup>38</sup> Consequently, a plausible standard of fair pricing is that all customers of the vendor (such as NASDAQ) share in the benefits from participating on the platform, even if the sharing in the benefits may not be necessarily equal.<sup>39</sup>

65. In sum, fairness is not a core concept of microeconomics or of industrial organization. It can perhaps be best interpreted as forbidding cross subsidies among customers groups. After all is said and done, the metric of what is fair or unfair has to be imported from elsewhere from outside of the model.

66. More importantly, perhaps, differential pricing and bundled discounts should not be assessed against some abstract concept of fairness as long as these pricing practices arise

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37. William J. Baumol and J. Gregory Sidak, *Toward Competition in Local Telephony*, MIT Press, 1994.

38. In the railroad setting, shippers who are the least responsive to price – those that buy coal, for example – pay the most. Here the large buyers pay the least which is reasonable since they are likely to be relatively price-responsive demanders.

39. Some potential purchasers of depth-of-book data are distributors (e.g., Google). These customers “consume” (i.e., purchase) data without trading. However, such distributors purchase data on behalf of retail investors who can be expected to trade (i.e., a distributor would have no incentive to purchase data unless it were valued by at least some of its customers).

in a market in which there is effective competition and the practices at issue are unlikely to lead to the diminution of competition and exclusion of more or equally efficient rivals. Because there is no plausible worry that the "Platform Pricing" plan will so disadvantage some customers of NASDAQ as to distort the workings of competition in the downstream market, the proposed pricing plan raises no competition concerns.

#### **IV. CONCLUSIONS.**

67. Significant competitive forces constrain the prices charged for non-core products by NASDAQ and other platforms. At least two types of competitive forces constrain the prices that platforms can charge for non-core market information. First, a trading platform cannot generate market information unless it receives trade orders. For this reason, a platform can be expected to use its market data product as a tool for attracting liquidity and trading to its exchange. Second, even though market information from one platform may not be a perfect substitute for market information from one or more other platforms, the existence of alternative sources of information can be expected to constrain the prices platforms charge for market data.

68. There are high fixed costs of supplying the products at issue in this regulatory proceeding. Moreover, these fixed costs are also joint and common to a range of products provided by the exchanges (such as NASDAQ). Finally, the marginal or incremental costs of serving an additional customer are low or close to zero. In industries with these cost characteristics, charging all customers the same price is not economically efficient. Instead, differential pricing which includes volume discounts and "bundling" can lead to improved economic welfare and market performance.

69. NASDAQ's "Platform Pricing" is an example of this type of "differential pricing" and "bundling." Differential pricing in markets with high fixed costs and low incremental costs is common, efficient, and not anticompetitive. "Bundling" also is common and generally procompetitive. Finally, differential pricing is consistent with "fairness".



A handwritten signature in black ink, appearing to read "J Ordover". The signature is written in a cursive style with a large initial "J".

Janusz Ordover

A handwritten signature in black ink, appearing to read "Gustavo Bamberger". The signature is written in a cursive style with a large initial "G".

Gustavo Bamberger

December 29, 2010

## **Appendix A**

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**EDUCATION**

- 1968-1973 Columbia University, New York, New York  
Graduate Department of Economics and European Institute of the School of International Affairs  
Doctoral Dissertation: Three Essays on Economic Theory (May 1973). Ph.D 1973.
- 1967-1968 McGill University, Montreal, Canada  
Departments of Economics and Political Science
- 1963-1966 Warsaw University, Warsaw, Poland  
Department of Political Economy. B.A. (equiv.), 1966.

**HONORS**

- 1973 Columbia University: Highest distinction for the doctoral dissertation
- 1971-1972 Columbia University: Honorary President's Fellow
- 1969-1971 Columbia University: President's Fellow
- 1967-1968 McGill University: Honors Student
- 1964, 1965 Warsaw University: Award for Academic Achievement, Department of Political Economy
- Who's Who in the World  
Who's Who in America  
Who's Who in the East

**PROFESSIONAL EXPERIENCE**

- June 1982 - present Professor of Economics  
Department of Economics, New York University, New York, New York
- Sept. 1996 - Aug. 2001 Director of Masters in Economics Program  
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Summer 1996-2000    Lecturer  
 International Program on Privatization and Reform  
 Institute for International Development, Harvard University, Cambridge, Massachusetts

Aug. 1991 - Oct. 1992    Deputy Assistant Attorney General for Economics  
 Antitrust Division  
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 School of Management, Yale University, New Haven, Connecticut

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Mar. 1984 - June 1988    Visiting Professor of Economics  
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June 1978 - June 1982    Associate Professor of Economics  
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Sept. 1979 - May 1990    Lecturer in Economics and Antitrust  
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Sept. 1977 - June 1978    Member, Technical Staff  
 Bell Laboratories, Holmdel, New Jersey

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**OTHER PROFESSIONAL ACTIVITIES**

2010 – present Member, ABA Section of Antitrust Law, Economics Task Force

2006 - present Special Consultant, Compass Lexecon (formerly Compass)/FTI Company, Washington, D.C.

2003 - 2006 Director, Competition Policy Associates, Inc. (“Compass”), Washington, D.C.

1997 – 1999 Consultant, Inter-American Development Bank, Washington, D.C.

1997 – present Board of Editors, *Antitrust Report*

1995 – 2001 Consultant, The World Bank, Washington, D.C.

1998 – 2004 Senior Consultant  
Applied Economic Solutions, Inc., San Francisco, California

1995 - 2000 Senior Affiliate  
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1994 - 1996 Senior Affiliate  
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1993 - 1994 Director  
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1992 - 1993 Vice-Chair (*pro tempore*)  
Economics Committee, American Bar Association, Chicago, Illinois

1990 - 1991 Senior Consultant  
1992 - 1995 Organization for Economic Cooperation and Development, Paris, France

1991 Member  
*Ad hoc* Working Group on Bulgaria's Draft Antitrust Law  
The Central and East European Law Initiative  
American Bar Association

1990 - 1991 Advisor  
Polish Ministry of Finance and Anti-Monopoly Office  
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1990 - 1991 Member  
Special Committee on Antitrust  
Section of Antitrust Law, American Bar Association

1990 - 1991 Director and Senior Advisor  
Putnam, Hayes & Bartlett, Inc., Washington, D.C.

1990 - 1996	Member Predatory Pricing Monograph Task Force Section of Antitrust Law, American Bar Association
1989	Hearings on Competitive Issues in the Cable TV Industry Subcommittee on Monopolies and Business Rights of the Senate Judiciary Committee Washington, D.C.
1989	Member EEC Merger Control Task Force, American Bar Association
1988 - present	Associate Member American Bar Association
1987 - 1989	Adjunct Member Antitrust and Trade Regulation Committee, The Association of the Bar of the City of New York
1984	Speaker, "Industrial and Intellectual Property: The Antitrust Interface" National Institutes, American Bar Association, Philadelphia, Pennsylvania
1983 - 1990	Director Consultants in Industry Economics, Inc
1982	Member Organizing Committee Tenth Annual Telecommunications Policy Research Conference, Annapolis, Maryland
1981	Member Section 7 Clayton Act Committee, Project on Revising Merger Guidelines American Bar Association
1980	Organizer Invited Session on Law and Economics American Economic Association Meetings, Denver, Colorado
1978 - 1979	Member Department of Commerce Technical Advisory Board Scientific and Technical Information Economics and Pricing Subgroup
1978 – present	Referee for numerous scholarly journals, publishers, and the National Science Foundation

#### **MEMBERSHIPS IN PROFESSIONAL SOCIETIES**

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## PUBLICATIONS

### A. Journal Articles

"Coordinated Effects in Merger Analysis: An Introduction," *Columbia Bus. Law Review*, No. 2, 2007, 411-36.

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## **B. Books and Monographs**

*Proceedings of the Tenth Annual Telecommunications Policy Research Conference*, editor with O. Gandy and P. Espinosa, ABLEX Publishers, 1983.

*Obstacles to Trade and Competition*, with L. Goldberg, OECD, Paris, 1993.

*Predatory Pricing*, with William Green, *et al.*, American Bar Association, Section of Antitrust Law, Monograph 22, 1996.

### C. Book Chapters

"Coordinated Effects," chap. 27, in *Issues in Competition Law and Policy*, vol. 2, American Bar Association, 2008, 1359-1384.

"Practical Rules for Pricing Access in Telecommunications," with R. D. Willig, Chap. 6, in *Second-Generations Reforms in Infrastructure Services*, F. Besanes and R. D. Willig (eds.), Inter-American Development Bank, Washington, D.C., April 2002, 149-76.

"Sustainable Privatization of Latin American Infrastructure: The Role of Law and Regulatory Institutions," with Evamaria Uribe, Chap. 1 in F. Basanes, E. Uribe, R. D. Willig (eds.), *Can Privatization Deliver? Infrastructure for Latin America*, The Johns Hopkins U. P. for Inter-American Development Bank, 1999, 9-32.

"Access and Bundling in High-Technology Markets," with R. D. Willig, Chap. 6, in J. A. Eisenach and T. M. Leonard, (eds.), *Competition, Innovation, and the Microsoft Monopoly: The Role of Antitrust in the Digital Marketplace*, Kluwer Academic Press, 1999, 103-29.

"The Harmonization of Competition and Trade Law," with E. Fox, Chap. 15 in L. Waverman, *et al.* (eds.), *Competition Policy in the Global Economy*, Routledge, 1997, 407-439.

"Transition to a Market Economy: Some Industrial Organization Issues," with M. Iwanek, Chap. 7 in H. Kierzkowski, *et al.* (eds.), *Stabilization and Structural Adjustment in Poland*, Routledge, 1993, 133-170.

"Competition Policies for Natural Monopolies in a Developing Market Economy," with Russell Pittman, *Butterworth's Trade and Finance in Central and Eastern Europe*, Butterworth Law Publishers Ltd., 1993, 78-88, Reprinted in *Journal for Shareholders* (published by the Russian Union of Shareholder), Moscow, January 1993, 33-36; *Versenyfelügyeleti Értesítő* (Bulletin of Competition Supervision), Budapest, vol. 3, no. 1-2, January 1993, 30-41; *Narodni Hospodarstvi* (National Economy), Prague; *ICE: Revista de Economia*, No. 736 (December 1994) (in Spanish), 69-90.

"Antitrust: Source of Dynamic and Static Inefficiencies?" with W.J. Baumol, in T. Jorde and D. Teece (eds.), *Antitrust, Innovation, and Competitiveness*, Oxford University Press, 1992, 82-97. Reprinted in "The Journal of Reprints for Antitrust Law and Economics," vol. 26, no. 1, 1996.

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"The Department of Justice 1988 Guidelines for International Operations: An Economic Assessment," with A.O. Sykes, in B. Hawk (ed.), *European/American Antitrust and Trade Laws*, Matthew Bender, 1989, 4.1-4.18.

"Predation, Monopolization, and Antitrust," with G. Saloner, in R. Schmalensee and R.D. Willig (eds.), *Handbook of Industrial Organization*, vol. 1, North Holland, 1989, 538-596.

"Supervision Technology, Firm Structure, and Employees' Welfare," in *Prices, Competition and Equilibrium*, M. Peston and R.E. Quandt (eds.), Philip Allan Publishers, Ltd., 1986, 142-163.

"Perspectives on Mergers and World Competition," with R.D. Willig, in *Antitrust and Regulation*, R. Grieson (ed.), Lexington Books, 1986, 201-218.

"Transnational Antitrust and Economics," in *Antitrust and Trade Policies in International Trade*, B. Hawk (ed.), Matthew Bender, 1985, 233-248.

"Pricing of Interexchange Access: Some Thoughts on the Third Report and Order in FCC Docket No. 78-72," in *Proceedings of the Eleventh Annual Telecommunications Policy Research Conference*, Vincent Mosco (ed.), ABLEX Publishers, 1984, 145-161.

"Non-Price Anticompetitive Behavior by Dominant Firms Toward the Producers of Complementary Products," with A.O. Sykes and R.D. Willig, in *Antitrust and Regulation: Essays in Memory of John McGowan*, F. Fisher (ed.), MIT Press, 1985, 315-330.

"Local Telephone Pricing in a Competitive Environment," with R.D. Willig, in *Regulating New Telecommunication Networks*, E. Noam (ed.), Harcourt Brace Jovanovich, 1983, 267-289.

"An Economic Definition of Predatory Product Innovation," with R.D. Willig, in *Strategy, Predation and Antitrust Analysis*, S. Salop (ed.), Federal Trade Commission, 1981, 301-396.

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"Regulation of Credit Card Interchange Fees and Incentives for Network Investments," with Y. Wang, Competition Policy Associates WP, Washington D.C. September 2005.

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"An Echo or a Choice: Product Variety Under Monopolistic Competition," with A. Weiss; presented at the Bell Laboratories Conference on Market Structures, February 1977.

#### **GRANTS RECEIVED**

Regulation and Policy Analysis Program, National Science Foundation, Collaborative Research on Antitrust Policy, Principal Investigator, July 15, 1985 - December 31, 1986.

Regulation of Economic Activity Program, National Science Foundation, Microeconomic Analysis of Antitrust Policy, Principal Investigator, April 1, 1983 - March 31, 1984.

Economics Division of the National Science Foundation, "Political Economy of Taxation," Principal Investigator, Summer 1982.

Sloan Workshop in Applied Microeconomics (coordinator), with W.J. Baumol (Principal Coordinator), September 1977 - August 1982.

Economics Division of the National Science Foundation, "Collaborative Research on the Theory of Optimal Taxation and Tax Reform," July 1979 to September 1980, with E.S. Phelps.

Division of Science Information of the National Science Foundation for Research on "Scale Economies and Public Goods Properties of Information," W.J. Baumol, Y.M. Braunstein, M.I. Nadiri, Fall 1974 to Fall 1977.

National Science Foundation Institutional Grant to New York University for Research on Taxation and Distribution of Income, Summer 1974.

## **Appendix B**

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**EDUCATION**

Ph.D., UNIVERSITY OF CHICAGO, 1987, GRADUATE SCHOOL OF BUSINESS

M.B.A., UNIVERSITY OF CHICAGO, 1984, GRADUATE SCHOOL OF BUSINESS

B.A., SOUTHWESTERN AT MEMPHIS, 1981

**EMPLOYMENT**COMPASS LEXECON (formerly Lexecon), Chicago, Illinois (3/87-Present): Senior Vice  
President

UNIVERSITY OF CHICAGO, (1984, 1986): Lecturer

GOVERNORS STATE UNIVERSITY, (1986): Community Professor

UNIVERSITY OF CHICAGO, (1982-1986): Teaching Assistant

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**ACADEMIC HONORS AND FELLOWSHIPS**

University of Chicago Fellowship, 1981-1984

H.B. Earhart Fellowship, 1985-1986

**RESEARCH PAPERS**

“Antitrust and Higher Education: Was There a Conspiracy to Restrict Financial Aid?”  
co-authored with D. Carlton and R. Epstein, RAND Journal of Economics, (Vol. 26, No.  
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Direct Testimony of Gustavo E. Bamberger in Re: Consideration of the Provision of In-Region InterLATA Services By BellSouth Telecommunications, Inc. Pursuant to Section 271 of the Telecommunications Act of 1996: Before the Mississippi Public Service Commission, Docket No. 97-AD-0321, June 15, 2001.

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Joint Declaration and Joint Reply Declaration of Robert H. Gertner, Gustavo E. Bamberger and Michael P. Bandow in the Matter of: Application by Verizon Pennsylvania Inc., Verizon Long Distance, Verizon Enterprise Solutions, Verizon Global Networks Inc., and Verizon Select Services Inc., for Authorization To Provide In-Region, InterLATA Services in Pennsylvania. Before the Federal Communications Commission, CC Docket No. 01-138, June 21, 2001 (Declaration); and August 6, 2001 (Reply Declaration).

Direct Testimony of Gustavo E. Bamberger in Re: BellSouth Telecommunications, Inc.'s Entry into Long Distance (interLATA Service) in Tennessee Pursuant to Section 271 of the Telecommunications Act of 1996. Before the Tennessee Regulatory Authority, Docket No. 97-00309, July 30, 2001.

Expert Report and Testimony of Gustavo E. Bamberger in Re: In the Arbitration of Legend Healthcare, Inc. v. United Healthcare Services, Inc., et al.: American Arbitration Association, Commercial Arbitration No. 65 Y 193 00194 00, August 1, 2001 (Report); and September 27, 2001 (Testimony).

Reply Declaration of Dennis W. Carlton, Hal S. Sider and Gustavo E. Bamberger in the Matter of: Review of Regulatory Requirements for Incumbent LEC Broadband Telecommunications Services. Before the Federal Communications Commission, CC Docket No. 01-337, April 22, 2002.

Expert Preliminary Report, Supplemental Expert Report, Rebuttal Expert Report, Deposition, Declaration, Supplemental Declaration and Declaration of Gustavo E. Bamberger in Re: Nobody in Particular Presents, Inc., v. Clear Channel Communications, Inc., Clear Channel Entertainment, Inc., Clear Channel Radio, Inc., Clear Channel Broadcasting Inc., KBCO-FM, KBPI-FM, KFMD-FM, KRFX-FM, and KTCL-FM, In the U.S. District Court for the District of Colorado, Civil Action No. 01-N-1523, May 3, 2002 (Preliminary Report); July 26, 2002 (Supplemental Report); August 20, 2002 (Rebuttal Report); September 17, 2002 (Deposition); October 31, 2002 (Declaration); January 24, 2003 (Supplemental Declaration); and July 21, 2003 (Declaration).

Comments Regarding Regulation of Broadband Internet Access Services in the Matter of: Inquiry Concerning High-Speed Access to Internet Over Cable and other Facilities, GN Docket No. 00-185; in the Matter of: Deployment of Wireline Services Offering Advanced Telecommunications Capability, CC Docket No. 98-147; in the Matter of: Computer III Further Remand Proceedings: Bell Operating Company Provision of Enhanced Services, CC Docket No. 95-20; and in the Matter of: 1998 Biennial Regulatory Review: Review of Computer III and ONA Safeguards and Requirements, CC Docket No. 98-10 (with Kenneth Arrow, Gary Becker, Dennis Carlton, Daniel Fischel, Robert Gertner, Joseph Kalt and Hal Sider), May 3, 2002.

Expert Report, Reply Expert Report and Declaration of William Landes, Hal Sider and Gustavo Bamberger, and Declaration, Deposition and Supplemental Declaration of Gustavo E. Bamberger in Re: Vitamin Antitrust Litigation: In the U.S. District Court for the District of Columbia, M.D.L. No. 1285, May 23, 2002 (Report); July 17, 2002 (Reply Report); August 1, 2002 (Declaration with Landes and Sider); August 5, 2002 (Declaration); August 9, 2002 (Deposition); and September 27, 2002 (Supplemental Declaration).

Deposition of Gustavo E. Bamberger in Re: Devin Daniels, et al. v. Philip Morris Companies, Inc., et al.: In San Diego Superior Court, Case No. 719446, June 10, 2002.

Declaration of Gustavo E. Bamberger and Michael P. Bandow in Re: EB-01-1H-0352, Supplemental Response to Questions Posed by the Commission in its May 21, 2002 Letter re Verizon's Provisioning of Special Access Services, submitted to the Federal Communications Commission, July 31, 2002.

Affidavit, Expert Report and Deposition of Gustavo E. Bamberger in Re: National Association for the Advancement of Colored People (NAACP) and National Spinal Cord Injury Association (NSCIA) v. Acusport Corporation; Ellet Brothers, Inc., RSR Management Company, and RSR Group, Inc., individually and on behalf of similarly situated entities; and National Association for the Advancement of Colored People (NAACP) et al., v. American Arms, Inc., et al.: In the U.S. District Court for the Eastern District of New York, CV 99-7037 and CV 99-3999, August 20, 2002 (Affidavit); February 19, 2003 (Report); and March 6, 2003 (Deposition).

Report of Gustavo E. Bamberger in Re: Nevada Power Company v. Lexington Insurance Company et al.: In the U.S. District Court for the Southern District of Nevada, CV-S-01-0045-PMP-PAL, October 23, 2002.

Deposition of Gustavo E. Bamberger in Re: Firearm Cases: In Superior Court of the State of California, County of San Diego, Judicial Council Coordination Proceeding No. 4095, November 6, 2002.

Expert Rebuttal Report, Expert Report and Deposition of Gustavo E. Bamberger in Re: Baum Research and Development, Inc. and Steve Baum v. Hillerich & Bradsby Co., Inc.; Easton Sports, Inc.; Worth, Inc.; National Collegiate Athletic Association; and Sporting Goods Manufacturers Association: In the U.S. District Court for the Eastern District of Michigan, 98-72946, January 13, 2003 (Expert Rebuttal Report and Expert Report); and May 28-29, 2003 (Deposition).

Declaration of Gustavo E. Bamberger and Michael P. Bandow in Re: EB-01-1H-0352, Supplemental Response to Questions Posed by the Commission in its January 24, 2003 Letter re: Verizon's Provisioning of Special Access Services, submitted to the Federal Communications Commission, March 14, 2003.

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Expert Report, Deposition, Declaration and Testimony of Gustavo Bamberger in Re: Western Asbestos Company; Western MacArthur Company; and Mac Arthur Company, Debtors: In United States Bankruptcy Court, Northern District of California, Oakland Division, Nos. 02-46284, 02-46285, 02-46286, September 15, 2003 (Expert Report); October 21, 2003 (Deposition); November 17, 2003 (Declaration); and November 21, 2003 (Testimony).

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Declaration of Gustavo Bamberger in Re: Gas Plus, a California Corporation; and Gas Plus San Marcos, Inc., a California Corporation vs. Exxon Mobil Corporation, a Corporation; Mark McEnomy, an individual; Anthony Moss, an individual; and Does 1-50, inclusive: In the Superior Court of the State of California in and for the County of San Diego, North County Division, Case No. GIN 032455, February 14, 2005.

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Declaration of Gustavo Bamberger in Re: USG Corporation, a Delaware corporation, et al., Debtors, USG Corporation, et al., Movant v. Official Committee of Asbestos Personal Injury Claimants, Official Committee of Unsecured Creditors, Official Committee of Asbestos Property Damage Claimants and Legal Representative for Future Claimants, Respondents: In The U.S. District Court For The District Of Delaware, Chapter 11, Jointly Administered, Case No. 01-2094 (JKF), Civil Action No. 04-1559 (JFC) Civil Action No. 04-1560 (JFC), September 28, 2005.

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Rebuttal Testimony of Gustavo Bamberger on Damages and Deposition in Re: Tessera, Inc. vs. Micron Technology, Inc., Micron Semiconductor Products, Inc., Infineon Technologies AG, Infineon Technologies Richmond, LP, and Infineon Technologies North America Corp. and Qimonda AG: In the U.S. District Court for the Eastern District of Texas, Marshall Division, Case No. 2:05CV-94, June 23, 2006 (Rebuttal Testimony) and July 22, 2006 (Deposition).

Expert Report and Deposition of Gustavo Bamberger in Re: Electronic Data Systems Corporation and EDS Information Services, L.L.C. v. MCI Communications Services, Inc.: American Arbitration Association, Arbitration No. 13 181 00976 06, July 20, 2006 (Expert Report); and August 11, 2006 (Deposition).

Declaration, Revised Declaration and Deposition of Gustavo Bamberger in Re: Jason Feuerabend, a Wisconsin resident, on behalf of himself and all others similarly situated v. UST Inc., U.S. Smokeless Tobacco Brands Inc., U.S. Smokeless Tobacco Co., U.S. Smokeless Tobacco Manufacturing Limited Partnership, and Does 1-20 inclusive: In the Circuit Court of Milwaukee County, Wisconsin, Case No. 02CV007124, September 21, 2006 (Declaration); December 1, 2006 (Revised Declaration); and December 5, 2006 (Deposition).

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Expert Report of Daniel R. Fischel and Gustavo E. Bamberger in Re: Genetically Modified Rice Litigation: In the United States District Court, Eastern District of Missouri, Eastern Division, Texana Rice Mill, Ltd., et al. v. Bayer CropScience, LP, et al., Case No. 4:07-cv-00416 CDP; Gulf Pacific Rice Co., Inc., et al. v. Bayer CropScience, LP, et al., Case No. 4:08-cv-1545-CDP; Phoenix Advisors Limited v. Bayer CropScience, LP, et al., Case No. 4:08-cv-1794-CDP; Farmers Rice Milling Co., Inc. v. Bayer CropScience, LP, et al., Case No. 4:07-cv-01780-CDP; Kennedy Rice Dryers, L.L.C. v. Bayer CropScience, LP, et al., Case No. 4:07-cv-01773-CDP; Planters Rice Mill, L.L.C. v. Bayer CropScience, LP, et al., Case No. 4:07-cv-01795-CDP; Beaumont Rice Mills, Inc. v. Bayer CropScience, LP, et al., Case No. 4:07-cv-00524-CDP; Master Case No. 4:06 MD 1811 CDP, April 23, 2010.

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Declaration of Gustavo Bamberger in Re: Credit/Debit Card Tying Cases: In the Superior Court for the State of California, City and County of San Francisco, J.C.C.P. No.: 4335, July 29, 2010.

Expert Report of Daniel R. Fischel, Gustavo E. Bamberger and David K.A. Mordecai in Response to the Reports of Professors Carter and Babcock in Re: Genetically Modified Rice Litigation: In the United States District Court, Eastern District of Missouri, Eastern Division, Master Case No. 4:06 MD 1811 CDP, July 30, 2010.

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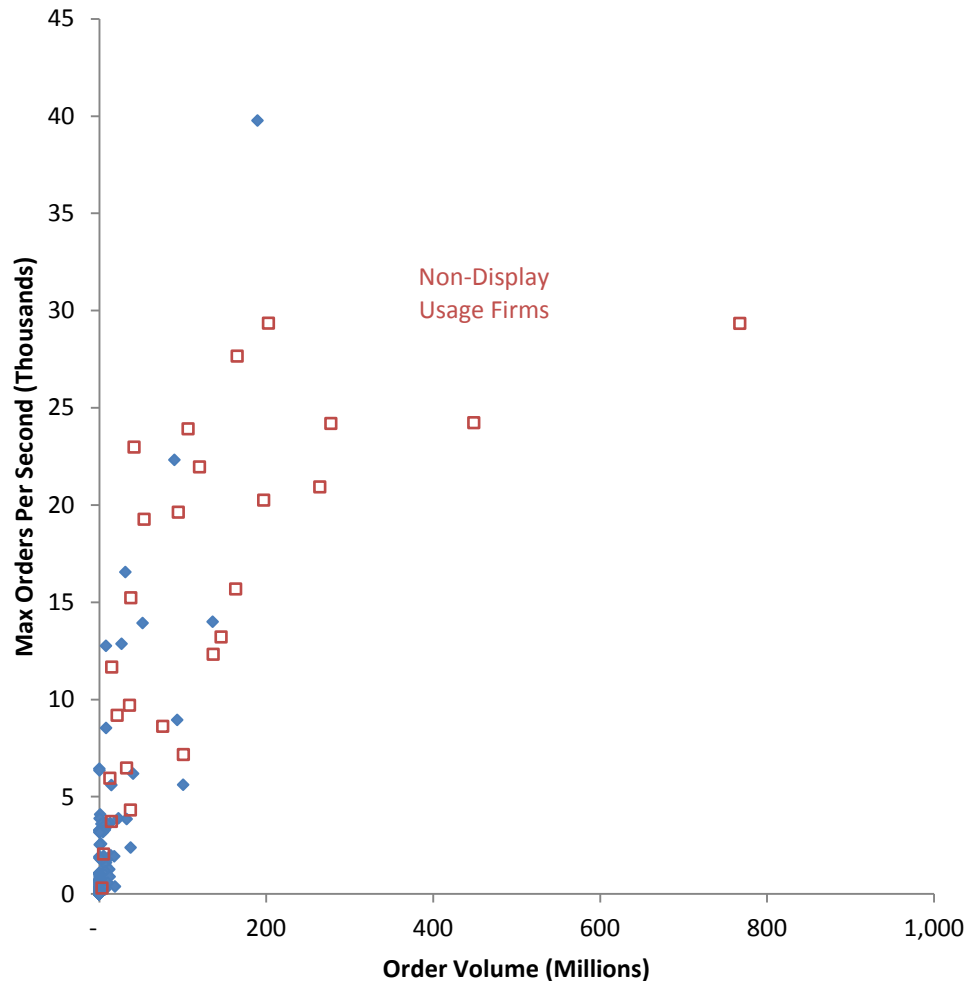
Expert Report of Gustavo Bamberger in Re: JOC Inc. T/A Summit Exxon and Sung Eel Chang Auto, Inc. T/A Ashwood Exxon vs. ExxonMobil Oil Corporation: In the United States District Court for the District of New Jersey, Civil Action No.: 08-05344 (FSH) (PS), September 27, 2010.

## Order Intensity

This chart displays NASDAQ order volume over January 2012 on the x-axis against maximum orders received per second over the same time period on the y-axis. There are 370 firms in this sample with positive order volume for this time period. One firm is removed from the data as an outlier with 5 times the next greatest firm's maximum orders per second. Of the remaining 369 firms, 27 are highlighted red, representing the likely Non-Display Usage firms.

If we look at firms with over 5,000 orders per second we see 23 of 38 firms are target firms (61%).

## Order Intensity

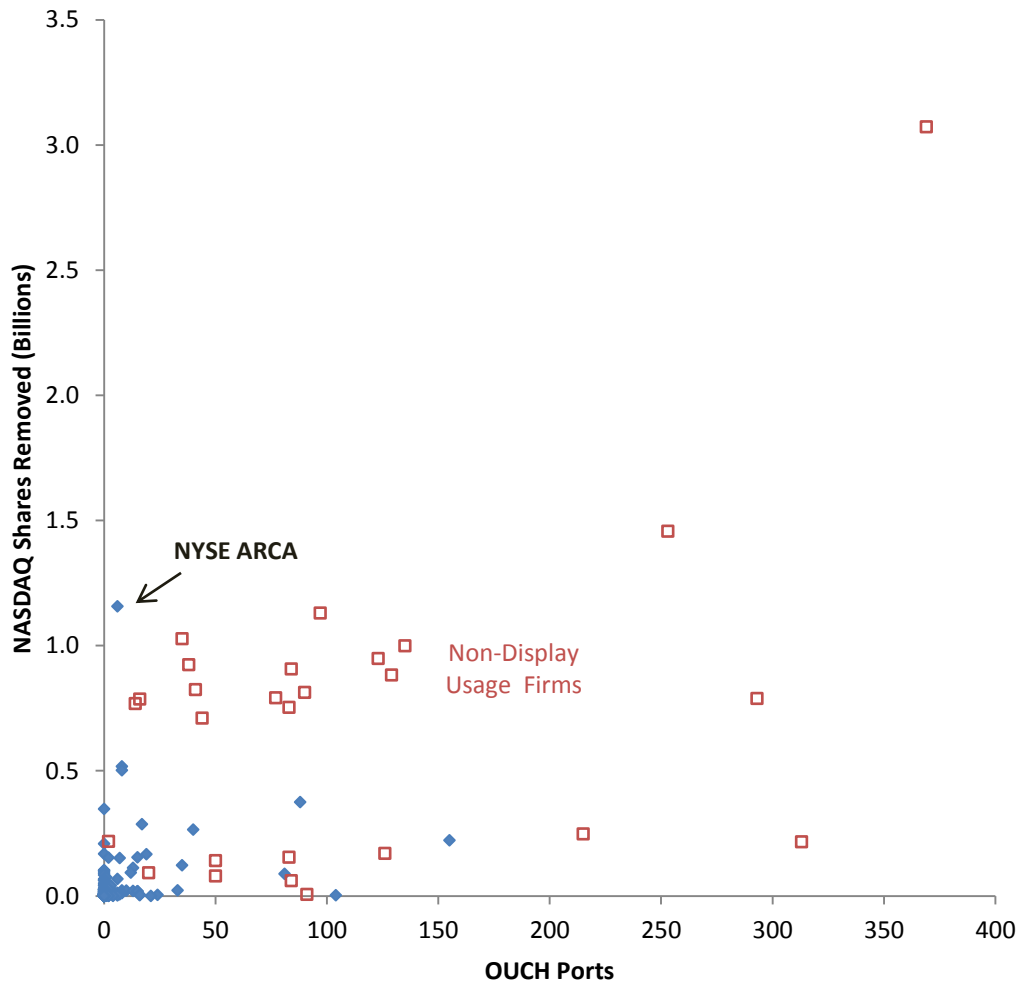


## NASDAQ Liquidity Removal

This graph plots NASDAQ shares removed by taking liquidity versus OUCH ports by firm for January 2012. Likely Non-Display Usage firms are highlighted in red. Firms removing more than 100,000 shares over the time period were included in this graph, for a total of 272. Likely Non-Display Usage firms are highlighted in red, 27 in total.

Higher numbers of OUCH ports allow a firm to send more messages per second to NASDAQ without experiencing queuing of these messages. Of the top 18 firms removing liquidity from NASDAQ 18 are Likely Non-Display Usage firms, with the remaining one being another exchange.

## NASDAQ Taking

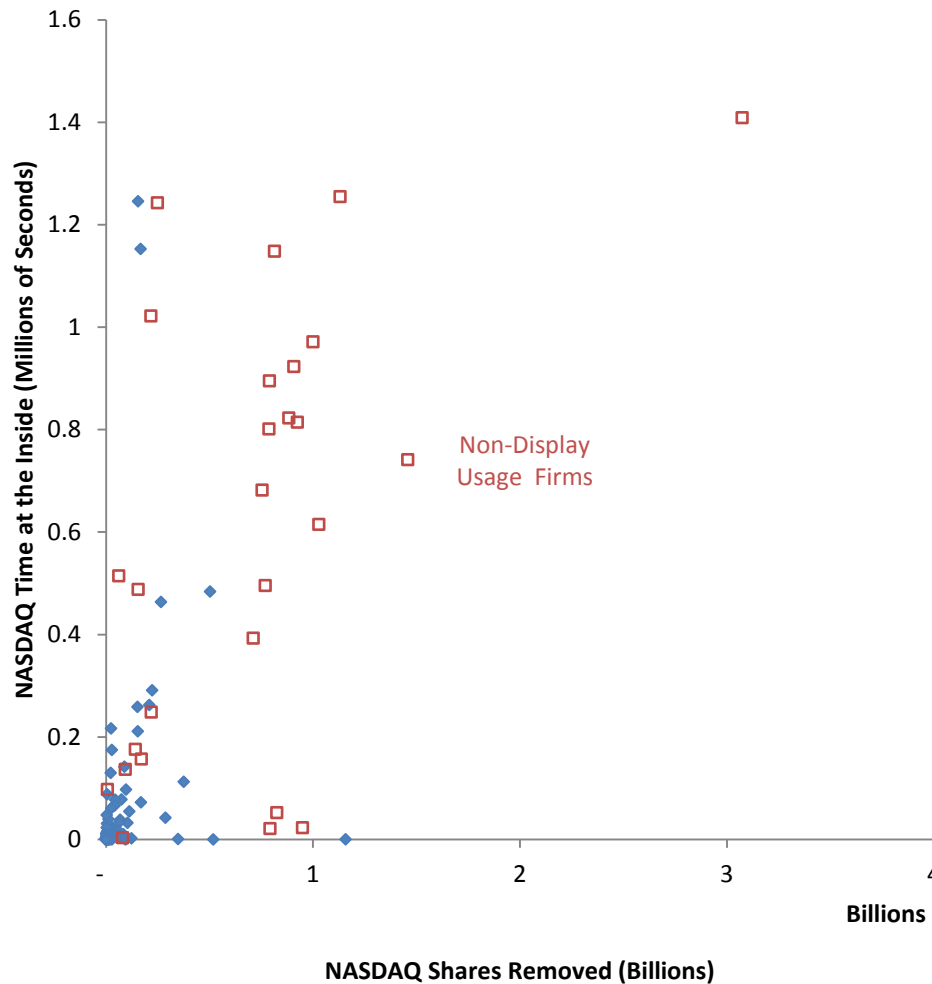




## Time at the Inside Quote

This graph plots NASDAQ time at the inside quote versus NASDAQ shares removed through liquidity taking for January 2012. There are 351 firms represented here with 27 Likely Non-Display Usage firms highlighted in red. Firms must constantly update their quotes to stay at the inside bid and offer, resulting in higher data traffic for those firms that spend the most time at the inside. Time at the inside is an effective measure for passive order volumes, and in contrast, liquidity removal is a good measure of active order volumes.

## Time at the Inside



## Co-Location Services

### Co-Location Connections

This graph buckets firms co-located in NASDAQs data center split out by connection used. The categories are 10 GB, 1 GB, and not co-located. These are then broken down into Likely Non-Display Usage firms and non-target firms. The data measured is overall message traffic for January 2012.

Co-located Likely Non-Display Usage firms, of which there are 23, account for 70% of message traffic. Other firms, of which there are 359, account for 26% in total.

