

Required fields are shown with yellow backgrounds and asterisks.

Proposed Rule Change by NASDAQ Stock Market  
Pursuant to Rule 19b-4 under the Securities Exchange Act of 1934

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|--|--|--|--|--|---|---|---|---|
| Initial *<br><input checked="" type="checkbox"/> | Amendment *<br><input type="checkbox"/>                                      | Withdrawal<br><input type="checkbox"/> | Section 19(b)(2) *<br><input type="checkbox"/> | Section 19(b)(3)(A) *<br><input checked="" type="checkbox"/> | Section 19(b)(3)(B) *<br><input type="checkbox"/> |   |   |   |
|  |  |  | Rule   |  |   |   |   |   |
| Pilot<br><input checked="" type="checkbox"/>     | Extension of Time Period for Commission Action *<br><input type="checkbox"/> | Date Expires *<br><input type="text"/> | 19b-4(f)(1)<br><input type="checkbox"/>        | 19b-4(f)(2)<br><input checked="" type="checkbox"/>           | 19b-4(f)(3)<br><input type="checkbox"/>           | 19b-4(f)(4)<br><input type="checkbox"/> | 19b-4(f)(5)<br><input type="checkbox"/> | 19b-4(f)(6)<br><input type="checkbox"/> |

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| Exhibit 2 Sent As Paper Document<br><input type="checkbox"/> | Exhibit 3 Sent As Paper Document<br><input type="checkbox"/> |
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**Description**  
Provide a brief description of the proposed rule change (limit 250 characters, required when Initial is checked \*).  
A proposal to extend for three months the fee pilot pursuant to which NASDAQ distributes the NASDAQ Last Sale market data products.

**Contact Information**  
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 \* Vice President  
E-mail \* john.yetter@nasdaqomx.com  
Telephone \* (301) 978-8497 Fax (301) 978-8472

**Signature**  
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 09/24/2012  
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 the “Exchange”) is filing with the Securities and Exchange Commission (“Commission”) a proposal to extend for three months the fee pilot pursuant to which NASDAQ distributes the NASDAQ Last Sale (“NLS”) market data products. NLS allows data distributors to have access to real-time market data for a capped fee, enabling those distributors to provide free access to the data to millions of individual investors via the internet and television. Specifically, NASDAQ offers the “NASDAQ Last Sale for NASDAQ” and “NASDAQ Last Sale for NYSE/Amex” data feeds containing last sale activity in U.S. equities within the NASDAQ Market Center and reported to the FINRA/NASDAQ Trade Reporting Facility (“FINRA/NASDAQ TRF”), which is jointly operated by NASDAQ and the Financial Industry Regulatory Authority (“FINRA”). The purpose of this proposal is to extend the existing pilot program for three months, from October 1, 2012 to December 31, 2012.

This pilot program supports the aspiration of Regulation NMS to increase the availability of proprietary data by allowing market forces to determine the amount of proprietary market data information that is made available to the public and at what price. During the pilot period, the program has vastly increased the availability of NASDAQ proprietary market data to individual investors. Based upon data from NLS distributors, NASDAQ believes that since its launch in July 2008, the NLS data has been viewed by

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

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

over 50,000,000 investors on websites operated by Google, Interactive Data, and Dow Jones, among others.

The text of the proposed rule change is below. Proposed new language is underlined; proposed deletions are in brackets.

\* \* \* \* \*

### **7039. NASDAQ Last Sale Data Feeds**

(a) For a three month pilot period commencing on [July] October 1, 2012, NASDAQ shall offer two proprietary data feeds containing real-time last sale information for trades executed on NASDAQ or reported to the NASDAQ/FINRA Trade Reporting Facility.

(1) – (2) No change.

(b) - (c) No change.

\* \* \* \* \*

### 2. Procedures of the Self-Regulatory Organization

The Board of Directors of The NASDAQ Stock Market LLC approved the submission of this proposed rule change at its meeting on September 4, 2008. No further action is necessary for the filing of the proposal.

Questions regarding this rule proposal may be directed to John M. Yetter, Vice President and 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

Prior to the launch of NLS, public investors that wished to view market data to monitor their portfolios generally had two choices: (1) pay for real-time market data or (2) use free data that is 15 to 20 minutes delayed. To increase consumer choice,

NASDAQ proposed a pilot to offer access to real-time market data to data distributors for a capped fee, enabling those distributors to disseminate the data at no cost to millions of internet users and television viewers. NASDAQ now proposes a three-month extension of that pilot program, subject to the same fee structure as is applicable today.

NLS consists of two separate “Level 1” products containing last sale activity within the NASDAQ market and reported to the jointly-operated FINRA/NASDAQ TRF. First, the “NASDAQ Last Sale for NASDAQ” data product is a real-time data feed that provides real-time last sale information including execution price, volume, and time for executions occurring within the NASDAQ system as well as those reported to the FINRA/NASDAQ TRF. Second, the “NASDAQ Last Sale for NYSE/Amex” data product provides real-time last sale information including execution price, volume, and time for NYSE- and NYSE Amex-securities executions occurring within the NASDAQ system as well as those reported to the FINRA/NASDAQ TRF. By contrast, the securities information processors (“SIPs”) that provide “core” data consolidate last sale information from all exchanges and trade reporting facilities (“TRFs”). Thus, NLS replicates a subset of the information provided by the SIPs.

NASDAQ established two different pricing models, one for clients that are able to maintain username/password entitlement systems and/or quote counting mechanisms to account for usage, and a second for those that are not. Firms with the ability to maintain username/password entitlement systems and/or quote counting mechanisms are eligible for a specified fee schedule for the NASDAQ Last Sale for NASDAQ Product and a separate fee schedule for the NASDAQ Last Sale for NYSE/Amex Product. Firms that are unable to maintain username/password entitlement systems and/or quote counting

mechanisms also have multiple options for purchasing the NASDAQ Last Sale data. These firms choose between a “Unique Visitor” model for internet delivery or a “Household” model for television delivery. Unique Visitor and Household populations must be reported monthly and must be validated by a third-party vendor or ratings agency approved by NASDAQ at NASDAQ’s sole discretion. In addition, to reflect the growing confluence between these media outlets, NASDAQ offered a reduction in fees when a single distributor distributes NASDAQ Last Sale Data Products via multiple distribution mechanisms.

NASDAQ also established a cap on the monthly fee, currently set at \$50,000 per month for all NASDAQ Last Sale products. The fee cap enables NASDAQ to compete effectively against other exchanges that also offer last sale data for purchase or at no charge.

As with the distribution of other NASDAQ proprietary products, all distributors of the NASDAQ Last Sale for NASDAQ and/or NASDAQ Last Sale for NYSE/Amex products pay a single \$1,500/month NASDAQ Last Sale Distributor Fee in addition to any applicable usage fees. The \$1,500 monthly fee applies to all distributors and does not vary based on whether the distributor distributes the data internally or externally or distributes the data via both the internet and television.

b. Statutory Basis

NASDAQ believes that the proposed rule change is consistent with the provisions of Section 6 of the Act,<sup>3</sup> in general, and with Section 6(b)(4) of the Act,<sup>4</sup> in particular, in

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<sup>3</sup> 15 U.S.C. 78f.

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

that it provides an equitable allocation of reasonable fees among users and recipients of the data. In adopting Regulation NMS, the Commission granted self-regulatory organizations (“SROs”) and broker-dealers (“BDs”) 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.

NASDAQ believes that its NASDAQ Last Sale market data products are precisely the sort of market data product that the Commission envisioned when it adopted Regulation NMS. The Commission concluded that Regulation NMS—by lessening regulation of 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>5</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 BDs at all, it follows that the price at which such data is sold should be set by the market as well.

The recent decision of the United States Court of Appeals for the District of Columbia Circuit in NetCoalition v. SEC, 615 F.3d 525 (D.C. Cir. 2010), upheld the

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<sup>5</sup> Securities Exchange Act Release No. 51808 (June 9, 2005), 70 FR 37496 (June 29, 2005).

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 535 (quoting H.R. Rep. No. 94-229, at 92 (1975), as reprinted in 1975 U.S.C.C.A.N. 321, 323). The court agreed with the Commission's conclusion that "Congress intended that 'competitive forces should dictate the services and practices that constitute the U.S. national market system for trading equity securities.'"<sup>6</sup>

The Court in NetCoalition, while upholding the Commission's conclusion that competitive forces may be relied upon to establish the fairness of prices, nevertheless concluded that the record in that case did not adequately support the Commission's conclusions as to the competitive nature of the market for NYSEArca's data product at issue in that case. As explained below in NASDAQ's Statement on Burden on Competition, however, NASDAQ believes that there is substantial evidence of competition in the marketplace for data that was not in the record in the NetCoalition case, and that the Commission is entitled to rely upon such evidence in concluding that the fees established in this filing are the product of competition, and therefore in accordance with the relevant statutory standards.<sup>7</sup> Moreover, NASDAQ further notes

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<sup>6</sup> NetCoalition, at 535.

<sup>7</sup> It should also be noted that Section 916 of the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 ("Dodd-Frank Act") has amended paragraph (A) of Section 19(b)(3) of the Act, 15 U.S.C. 78s(b)(3), to make it clear that all exchange fees, including fees for market data, may be filed by exchanges



that the product at issue in this filing – a NASDAQ last sale data product that replicates a subset of the information available through “core” data products whose fees have been reviewed and approved by the SEC – is quite different from the NYSEArca depth-of-book data product at issue in NetCoalition. Accordingly, any findings of the court with respect to that product may not be relevant to the product at issue in this filing.

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. NASDAQ’s ability to price its Last Sale Data Products is constrained by (1) competition between exchanges and other trading platforms that compete with each other in a variety of dimensions; (2) the existence of inexpensive real-time consolidated data and market-specific data and free delayed consolidated data; and (3) the inherent contestability of the market for proprietary last sale data.

The market for proprietary last sale data products is currently 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

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on an immediately effective basis. Although this change in the law does not alter the Commission’s authority to evaluate and ultimately disapprove exchange rules if it concludes that they are not consistent with the Act, it unambiguously reflects a conclusion that market data fee changes do not require prior Commission review before taking effect, and that a proceeding with regard to a particular fee change is required only if the Commission determines that it is necessary or appropriate to suspend the fee and institute such a proceeding.

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.

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 trade executions, exchange data products cannot exist. Moreover, data products are valuable to many end users only insofar as they provide information that end users 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, the operation of the exchange is characterized by high fixed costs and low marginal costs. This cost structure is common in content and content distribution industries such as software, where 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 small, or even zero (e.g., if the software can be downloaded over the

internet after being purchased).<sup>8</sup> In NASDAQ's case, it is costly to build and maintain a trading platform, but the incremental cost of trading each additional share on an existing platform, or distributing an additional instance of data, is very low. Market information and executions are each produced jointly (in the sense that the activities of trading and placing orders are the source of the information that is distributed) and are each subject to significant scale economies. In such cases, marginal cost pricing is not feasible because if all sales were priced at the margin, NASDAQ would be unable to defray its platform costs of providing the joint products.

An exchange's BD customers view the costs of transaction executions and of data as a unified cost of doing business with the exchange. A BD 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 BD 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 BD will choose not to buy it. Moreover, as a BD chooses to direct fewer orders to a particular exchange, the value of the product to that BD decreases, for two reasons. First, the product will contain less information, because executions of the BD's trading activity will not be reflected in it. Second, and perhaps more important, the product will be less valuable to that BD because it does not provide information about the venue to which it is directing its orders. Data

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<sup>8</sup> 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).

from the competing venue to which the BD is directing orders will become correspondingly more valuable.

Similarly, in the case of products such as NLS that are distributed through market data vendors, the vendors provide price discipline for proprietary data products because they control the primary means of access to end users. Vendors impose price restraints based upon their business models. For example, vendors such as Bloomberg and Reuters that assess a surcharge on data they sell may refuse to offer proprietary products that end users 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 BDs, 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. Moreover, NASDAQ believes that products such as NLS can enhance order flow to NASDAQ by providing more widespread distribution of information about transactions in real time, thereby encouraging wider participation in the market by investors with access to the internet or television. Conversely, the value of such products to distributors and investors decreases if order flow falls, because the products contain less content.

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. NASDAQ pays rebates to attract orders, charges relatively low prices for market information and charges relatively high prices for accessing posted liquidity. Other platforms may choose a strategy of paying lower liquidity rebates to attract orders, setting relatively low prices for accessing posted liquidity, and setting relatively high prices for market information. Still others may provide most data free of charge and rely exclusively on transaction fees to recover their costs. Finally, some platforms may incentivize use by providing opportunities for equity ownership, which may allow them to charge lower direct fees for executions and data.

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. Such regulation is unnecessary because an "excessive" price for one of the joint products will ultimately have to be reflected in lower prices for

other products sold by the firm, or otherwise the firm will experience a loss in the volume of its sales that will be adverse to its overall profitability. In other words, an increase in the price of data will ultimately have to be accompanied by a decrease in the cost of executions, or the volume of both data and executions will fall.

The level of competition and contestability in the market is evident in the numerous alternative venues that compete for order flow, including thirteen SRO markets, as well as internalizing 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 TRFs compete to attract internalized transaction reports. It is common for BDs to further and exploit this competition by sending their order flow and transaction reports to multiple markets, rather than providing them all to a single market. 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, NYSEAmex, NYSEArca, BATS, and Direct Edge.

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 BDs' 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 a core data product, an SRO proprietary product, and/or a non-SRO proprietary product, the data available in proprietary products is exponentially greater than the actual number of orders and transaction reports that exist in the marketplace. Indeed, in the case of NLS, the data provided through that product appears both in (i) real-time core data products offered by the SIPs for a fee, and (ii) free SIP data products with a 15-minute time delay, and finds a close substitute in last-sale products of competing venues.

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. Today, BATS and Direct Edge provide data at no charge in order to attract order flow, and use market data revenue rebates from the resulting executions to maintain low execution charges for their users. A proliferation of dark pools and other ATs 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 BDs have previously published their proprietary data individually, Regulation NMS encourages market data vendors and BDs 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.

Moreover, consolidated data provides two additional measures of pricing discipline for proprietary data products that are a subset of the consolidated data stream. First, the consolidated data is widely available in real-time at \$1 per month for non-professional users. Second, consolidated data is also available at no cost with a 15- or 20- minute delay. Because consolidated data contains marketwide information, it effectively places a cap on the fees assessed for proprietary data (such as last sale data) that is simply a subset of the consolidated data. The mere availability of low-cost or free consolidated data provides a powerful form of pricing discipline for proprietary data products that contain data elements that are a subset of the consolidated data, by highlighting the optional nature of proprietary products.

The competitive nature of the market for products such as NLS is borne out by the performance of the market. In May 2008, the internet portal Yahoo! began offering its website viewers real-time last sale data (as well as best quote data) provided by BATS Trading. In response, in June 2008, NASDAQ launched NLS, which was initially subject to an “enterprise cap” of \$100,000 for customers receiving only one of the NLS products, and \$150,000 for customers receiving both products. The majority of NASDAQ’s sales were at the capped level. In early 2009, BATS expanded its offering of free data to



include depth-of-book data. Also in early 2009, NYSEArca announced the launch of a competitive last sale product with an enterprise price of \$30,000 per month. In response, NASDAQ combined the enterprise cap for the NLS products and reduced the cap to \$50,000 (i.e., a reduction of \$100,000 per month). Although each of these products offers only a specific subset of data available from the SIPs, NASDAQ believes that the products are viewed as substitutes for each other and for core last-sale data, rather than as products that must be obtained in tandem. For example, while the internet portal Yahoo! continues to disseminate only the BATS last sale product, Google disseminates only NASDAQ's product.

In this environment, 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. The existence of fierce competition for order flow implies a high degree of price sensitivity on the part of BDs with order flow, since they may readily reduce costs by directing orders toward the lowest-cost trading venues. A BD 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. If a platform increases its market data fees, the change will affect the overall cost of doing business with the platform, and affected BDs will assess whether they can lower their trading costs by directing orders elsewhere and thereby lessening the need for the more expensive data. Similarly, increases in the cost of NLS would impair the willingness of distributors to take a product for which there are numerous alternatives, impacting NLS data revenues, the value of NLS as a tool for attracting order flow, and

ultimately, the volume of orders routed to NASDAQ and the value of its other data products.

In establishing the price for the NASDAQ Last Sale Products, NASDAQ considered the competitiveness of the market for last sale data and all of the implications of that competition. NASDAQ believes that it has considered all relevant factors and has not considered irrelevant factors in order to establish fair, reasonable, and not unreasonably discriminatory fees and an equitable allocation of fees among all users. The existence of numerous alternatives to NLS, including real-time consolidated data, free delayed consolidated data, and proprietary data from other sources ensures that NASDAQ cannot set unreasonable fees, or fees that are unreasonably discriminatory, without losing business to these alternatives. Accordingly, NASDAQ believes that the acceptance of the NLS product in the marketplace demonstrates the consistency of these fees with applicable statutory standards.

5. Self-Regulatory Organization's Statement on Comments on the Proposed Rule Change Received from Members, Participants, or Others

Three comment letters were filed regarding the proposed rule change as originally published for comment. NASDAQ responded to these comments in a letter dated December 13, 2007. Both the comment letters and NASDAQ's response are available on the SEC website at <http://www.sec.gov/comments/sr-nasdaq-2006-060/nasdaq2006060.shtml>. In addition, in response to prior filings to extend the NLS pilot,<sup>9</sup> the Securities Industry and Financial Markets Association ("SIFMA") and

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<sup>9</sup> Securities Exchange Act Release No. 67376 (July 9, 2012), 77 FR 41467 (July 13, 2012) (SR-NASDAQ-2012-078); Securities Exchange Act Release No. 65488 (October 5, 2011), 76 FR 63334 (October 21, 2011) (SR-NASDAQ-2011-132); Securities Exchange Act Release No. 64856 (July 12, 2011), 76 FR 41845 (July

NetCoalition filed comment letters contending that the SEC should suspend and institute disapproval proceedings with respect to the filing. Last year, SIFMA and NetCoalition filed a petition seeking review by the United States Court of Appeals for the District of Columbia Circuit with respect to the NLS pricing pilots in effect from July 1, 2011 through September 30, 2011 and from October 1, 2011 through December 31, 2011. These appeals have been stayed pending resolution of the consolidated case NetCoalition v. SEC, Nos. 10-1421, 10-1422, 11-1001, and 11-1065 (“NetCoalition II”), which is scheduled for oral argument in November 2012.

While containing a few superficial modifications from prior letters, SIFMA and NetCoalition’s most recently submitted letter continues to mischaracterize the import of the original NetCoalition case. Specifically, the court made findings about the extent of the Commission’s record in support of determinations about a depth-of-book product offered by NYSEArca. In making this limited finding, the court nevertheless squarely rejected contentions that cost-based review of market data fees was required by the Act:

The petitioners believe that the SEC’s market-based approach is prohibited under the Exchange Act because the Congress intended “fair and reasonable” to be determined using a cost-based approach. The SEC counters that, because it has statutorily-granted flexibility in evaluating market data fees, its market-based approach is fully consistent with the Exchange Act. We agree with the SEC.<sup>10</sup>

While the court noted that cost data could sometimes be relevant in determining the reasonableness of fees, it acknowledged that submission of cost data may be inappropriate where there are “difficulties in calculating the direct costs ... of market data,” Id. at 539. That is the case here, due to the fact that the fixed costs of market data

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15, 2011) (SR-NASDAQ-2011-092); Securities Exchange Act Release No. 64188 (April 5, 2011), 76 FR 20054 (April 11, 2011) (SR-NASDAQ-2011-044).

<sup>10</sup> NetCoalition, 615 F3d. at 534.

production are inseparable from the fixed costs of providing a trading platform, and the marginal costs of market data production are minimal or even zero. Because the costs of providing execution services and market data are not unique to either of the provided services, there is no meaningful way to allocate these costs among the two “joint products” – and any attempt to do so would result in inherently arbitrary cost allocations.<sup>11</sup>

SIFMA and NetCoalition further contend the prior filing lacked evidence supporting a conclusion that the market for NLS is competitive, asserting that arguments about competition for order flow and substitutability were rejected in NetCoalition. While the court did determine that the record before it was not sufficient to allow it to endorse those theories on the facts of that case, the court did not itself make any conclusive findings about the actual presence or absence of competition or the accuracy of these theories: rather, it simply made a finding about the state of the SEC’s record. Moreover, analysis about competition in the market for depth-of-book data is only tangentially relevant to the market for last sale data. As discussed above and in prior filings, perfect and partial substitutes for NLS exist in the form of real-time core market data, free delayed core market data, and the last sale products of competing venues, additional competitive entry is possible, and evidence of competition is readily apparent

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<sup>11</sup> The court also explicitly acknowledged that the “joint product” theory set forth by NASDAQ’s economic experts in NetCoalition (and also described in this filing) could explain the competitive dynamic of the market and explain why consideration of cost data would be unavailing. The court found, however, that the Commission could not rely on the theory because it was not in the Commission’s record. Id. at 541 n.16. For the purpose of providing a complete explanation of the theory, NASDAQ is further submitting as Exhibit 3 to this filing a study that was submitted to the Commission in SR-NASDAQ-2011-010. See Statement of Janusz Ordoover and Gustavo Bamberger at 2-17 (December 29, 2010).

in the pricing behavior of the venues offering last sale products and the consumption patterns of their customers. Thus, although NASDAQ believes that the competitive nature of the market for all market data, including depth-of-book data, will ultimately be established, SIFMA and NetCoalition's letters not only mischaracterize the NetCoalition decision, they also fail to address the characteristics of the product at issue and the evidence already presented.

6. Extension of Time Period for Commission Action

Not applicable.

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>12</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.

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.

3. Statement of Janusz Ordoover and Gustavo Bamberger, Compass Lexacon LLC, dated December 29, 2010.

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<sup>12</sup> 15 U.S.C. 78s(b)(3)(A)(ii).

**EXHIBIT 1**

SECURITIES AND EXCHANGE COMMISSION  
(Release No. 34- ; File No. SR-NASDAQ-2012-108)

Self-Regulatory Organizations; The NASDAQ Stock Market LLC; Notice of Filing and Immediate Effectiveness of Proposed Rule Change to Extend Fee Pilot Program for NASDAQ Last Sale

September \_\_, 2012

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 September 24, 2012, The NASDAQ Stock Market LLC (“NASDAQ” or the “Exchange”) filed with the Securities and Exchange Commission (“Commission”) a proposed rule change as described in Items I, II, and III below, which Items have been prepared by the Exchange. 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 Substance of the Proposed Rule Change

NASDAQ is proposing to extend for three months the fee pilot pursuant to which NASDAQ distributes the NASDAQ Last Sale (“NLS”) market data products. NLS allows data distributors to have access to real-time market data for a capped fee, enabling those distributors to provide free access to the data to millions of individual investors via the internet and television. Specifically, NASDAQ offers the “NASDAQ Last Sale for NASDAQ” and “NASDAQ Last Sale for NYSE/Amex” data feeds containing last sale activity in U.S. equities within the NASDAQ Market Center and reported to the

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

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

FINRA/NASDAQ Trade Reporting Facility (“FINRA/NASDAQ TRF”), which is jointly operated by NASDAQ and the Financial Industry Regulatory Authority (“FINRA”). The purpose of this proposal is to extend the existing pilot program for three months, from October 1, 2012 to December 31, 2012.

This pilot program supports the aspiration of Regulation NMS to increase the availability of proprietary data by allowing market forces to determine the amount of proprietary market data information that is made available to the public and at what price. During the pilot period, the program has vastly increased the availability of NASDAQ proprietary market data to individual investors. Based upon data from NLS distributors, NASDAQ believes that since its launch in July 2008, the NLS data has been viewed by over 50,000,000 investors on websites operated by Google, Interactive Data, and Dow Jones, among others.

The text of the proposed rule change is below. Proposed new language is underlined; proposed deletions are in brackets.

\* \* \* \* \*

**7039. NASDAQ Last Sale Data Feeds**

(a) For a three month pilot period commencing on [July] October 1, 2012, NASDAQ shall offer two proprietary data feeds containing real-time last sale information for trades executed on NASDAQ or reported to the NASDAQ/FINRA Trade Reporting Facility.

(1) – (2) No change.

(b) - (c) No change.

\* \* \* \* \*

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

In its filing with the Commission, the self-regulatory organization 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 those statements may be examined at the places specified in Item IV below. The Exchange has prepared summaries, set forth in sections A, B, and C below, of the most significant parts of such statements.

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

1. Purpose

Prior to the launch of NLS, public investors that wished to view market data to monitor their portfolios generally had two choices: (1) pay for real-time market data or (2) use free data that is 15 to 20 minutes delayed. To increase consumer choice, NASDAQ proposed a pilot to offer access to real-time market data to data distributors for a capped fee, enabling those distributors to disseminate the data at no cost to millions of internet users and television viewers. NASDAQ now proposes a three-month extension of that pilot program, subject to the same fee structure as is applicable today.

NLS consists of two separate "Level 1" products containing last sale activity within the NASDAQ market and reported to the jointly-operated FINRA/NASDAQ TRF. First, the "NASDAQ Last Sale for NASDAQ" data product is a real-time data feed that provides real-time last sale information including execution price, volume, and time for executions occurring within the NASDAQ system as well as those reported to the FINRA/NASDAQ TRF. Second, the "NASDAQ Last Sale for NYSE/Amex" data product provides real-time last sale information including execution price, volume, and



time for NYSE- and NYSE Amex-securities executions occurring within the NASDAQ system as well as those reported to the FINRA/NASDAQ TRF. By contrast, the securities information processors (“SIPs”) that provide “core” data consolidate last sale information from all exchanges and trade reporting facilities (“TRFs”). Thus, NLS replicates a subset of the information provided by the SIPs.

NASDAQ established two different pricing models, one for clients that are able to maintain username/password entitlement systems and/or quote counting mechanisms to account for usage, and a second for those that are not. Firms with the ability to maintain username/password entitlement systems and/or quote counting mechanisms are eligible for a specified fee schedule for the NASDAQ Last Sale for NASDAQ Product and a separate fee schedule for the NASDAQ Last Sale for NYSE/Amex Product. Firms that are unable to maintain username/password entitlement systems and/or quote counting mechanisms also have multiple options for purchasing the NASDAQ Last Sale data. These firms choose between a “Unique Visitor” model for internet delivery or a “Household” model for television delivery. Unique Visitor and Household populations must be reported monthly and must be validated by a third-party vendor or ratings agency approved by NASDAQ at NASDAQ’s sole discretion. In addition, to reflect the growing confluence between these media outlets, NASDAQ offered a reduction in fees when a single distributor distributes NASDAQ Last Sale Data Products via multiple distribution mechanisms.

NASDAQ also established a cap on the monthly fee, currently set at \$50,000 per month for all NASDAQ Last Sale products. The fee cap enables NASDAQ to compete

effectively against other exchanges that also offer last sale data for purchase or at no charge.

As with the distribution of other NASDAQ proprietary products, all distributors of the NASDAQ Last Sale for NASDAQ and/or NASDAQ Last Sale for NYSE/Amex products pay a single \$1,500/month NASDAQ Last Sale Distributor Fee in addition to any applicable usage fees. The \$1,500 monthly fee applies to all distributors and does not vary based on whether the distributor distributes the data internally or externally or distributes the data via both the internet and television.

## 2. Statutory Basis

NASDAQ believes that the proposed rule change is consistent with the provisions of Section 6 of the Act,<sup>3</sup> in general, and with Section 6(b)(4) of the Act,<sup>4</sup> in particular, in that it provides an equitable allocation of reasonable fees among users and recipients of the data. In adopting Regulation NMS, the Commission granted self-regulatory organizations (“SROs”) and broker-dealers (“BDs”) 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.

NASDAQ believes that its NASDAQ Last Sale market data products are precisely the sort of market data product that the Commission envisioned when it adopted Regulation NMS. The Commission concluded that Regulation NMS—by lessening

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<sup>3</sup> 15 U.S.C. 78f.

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

regulation of 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>5</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 BDs at all, it follows that the price at which such data is sold should be set by the market as well.

The recent decision of the United States Court of Appeals for the District of Columbia Circuit in NetCoalition v. SEC, 615 F.3d 525 (D.C. Cir. 2010), 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 535 (quoting H.R. Rep. No. 94–229, at 92 (1975), as reprinted in 1975 U.S.C.C.A.N. 321, 323). The court agreed with the Commission’s conclusion that “Congress intended that ‘competitive

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<sup>5</sup> Securities Exchange Act Release No. 51808 (June 9, 2005), 70 FR 37496 (June 29, 2005).

forces should dictate the services and practices that constitute the U.S. national market system for trading equity securities.’ ”<sup>6</sup>

The Court in NetCoalition, while upholding the Commission’s conclusion that competitive forces may be relied upon to establish the fairness of prices, nevertheless concluded that the record in that case did not adequately support the Commission’s conclusions as to the competitive nature of the market for NYSEArca’s data product at issue in that case. As explained below in NASDAQ’s Statement on Burden on Competition, however, NASDAQ believes that there is substantial evidence of competition in the marketplace for data that was not in the record in the NetCoalition case, and that the Commission is entitled to rely upon such evidence in concluding that the fees established in this filing are the product of competition, and therefore in accordance with the relevant statutory standards.<sup>7</sup> Moreover, NASDAQ further notes that the product at issue in this filing – a NASDAQ last sale data product that replicates a subset of the information available through “core” data products whose fees have been reviewed and approved by the SEC – is quite different from the NYSEArca depth-of-

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<sup>6</sup> NetCoalition, at 535.

<sup>7</sup> It should also be noted that Section 916 of the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 (“Dodd-Frank Act”) has amended paragraph (A) of Section 19(b)(3) of the Act, 15 U.S.C. 78s(b)(3), to make it clear that all exchange fees, including fees for market data, may be filed by exchanges on an immediately effective basis. Although this change in the law does not alter the Commission’s authority to evaluate and ultimately disapprove exchange rules if it concludes that they are not consistent with the Act, it unambiguously reflects a conclusion that market data fee changes do not require prior Commission review before taking effect, and that a proceeding with regard to a particular fee change is required only if the Commission determines that it is necessary or appropriate to suspend the fee and institute such a proceeding.

book data product at issue in NetCoalition. Accordingly, any findings of the court with respect to that product may not be relevant to the product at issue in this filing.

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. NASDAQ's ability to price its Last Sale Data Products is constrained by (1) competition between exchanges and other trading platforms that compete with each other in a variety of dimensions; (2) the existence of inexpensive real-time consolidated data and market-specific data and free delayed consolidated data; and (3) the inherent contestability of the market for proprietary last sale data.

The market for proprietary last sale data products is currently 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.

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 trade executions, exchange data products cannot exist. Moreover, data products are valuable to many end

users only insofar as they provide information that end users 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, the operation of the exchange is characterized by high fixed costs and low marginal costs. This cost structure is common in content and content distribution industries such as software, where 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 small, or even zero (e.g., if the software can be downloaded over the internet after being purchased).<sup>8</sup> In NASDAQ's case, it is costly to build and maintain a trading platform, but the incremental cost of trading each additional share on an existing platform, or distributing an additional instance of data, is very low. Market information and executions are each produced jointly (in the sense that the activities of trading and placing orders are the source of the information that is distributed) and are each subject to significant scale economies. In such cases, marginal cost pricing is not feasible because if all sales were priced at the margin, NASDAQ would be unable to defray its platform costs of providing the joint products.

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<sup>8</sup> 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).

An exchange's BD customers view the costs of transaction executions and of data as a unified cost of doing business with the exchange. A BD 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 BD 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 BD will choose not to buy it. Moreover, as a BD chooses to direct fewer orders to a particular exchange, the value of the product to that BD decreases, for two reasons. First, the product will contain less information, because executions of the BD's trading activity will not be reflected in it. Second, and perhaps more important, the product will be less valuable to that BD because it does not provide information about the venue to which it is directing its orders. Data from the competing venue to which the BD is directing orders will become correspondingly more valuable.

Similarly, in the case of products such as NLS that are distributed through market data vendors, the vendors provide price discipline for proprietary data products because they control the primary means of access to end users. Vendors impose price restraints based upon their business models. For example, vendors such as Bloomberg and Reuters that assess a surcharge on data they sell may refuse to offer proprietary products that end users 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 BDs, 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. Moreover, NASDAQ believes that products such as NLS can enhance order flow to NASDAQ by providing more widespread distribution of information about transactions in real time, thereby encouraging wider participation in the market by investors with access to the internet or television. Conversely, the value of such products to distributors and investors decreases if order flow falls, because the products contain less content.

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. NASDAQ pays rebates to attract orders, charges relatively low prices for market information and charges relatively high prices for accessing posted liquidity. Other platforms may choose a strategy of paying lower liquidity rebates to attract orders, setting relatively low prices for accessing posted liquidity, and setting relatively high prices for market information. Still others may provide most data free of charge and rely exclusively on transaction fees to recover their costs. Finally, some platforms may incentivize use by providing opportunities for equity ownership, which may allow them to charge lower direct fees for executions and data.

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. Such regulation is unnecessary because an “excessive” price for one of the joint products will ultimately have to be reflected in lower prices for other products sold by the firm, or otherwise the firm will experience a loss in the volume of its sales that will be adverse to its overall profitability. In other words, an increase in the price of data will ultimately have to be accompanied by a decrease in the cost of executions, or the volume of both data and executions will fall.

The level of competition and contestability in the market is evident in the numerous alternative venues that compete for order flow, including thirteen SRO markets, as well as internalizing 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 TRFs compete to attract internalized transaction reports. It is common for BDs to further and exploit this competition by sending their order flow and

transaction reports to multiple markets, rather than providing them all to a single market. 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 ATSS 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, NYSEAmex, NYSEArca, BATS, and Direct Edge.

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

The fact that proprietary data from ATSS, 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 a core data product, an SRO proprietary product, and/or a non-SRO proprietary product, the data available in proprietary products is exponentially greater than the actual number of orders and transaction reports that exist in the marketplace. Indeed, in the case of NLS, the data provided through that product appears both in (i) real-time core data products offered by

the SIPs for a fee, and (ii) free SIP data products with a 15-minute time delay, and finds a close substitute in last-sale products of competing venues.

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. Today, BATS and Direct Edge provide data at no charge in order to attract order flow, and use market data revenue rebates from the resulting executions to maintain low execution charges for their users. 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 BDs have previously published their proprietary data individually, Regulation NMS encourages market data vendors and BDs 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.

Moreover, consolidated data provides two additional measures of pricing discipline for proprietary data products that are a subset of the consolidated data stream. First, the consolidated data is widely available in real-time at \$1 per month for non-professional users. Second, consolidated data is also available at no cost with a 15- or 20- minute delay. Because consolidated data contains marketwide information, it

effectively places a cap on the fees assessed for proprietary data (such as last sale data) that is simply a subset of the consolidated data. The mere availability of low-cost or free consolidated data provides a powerful form of pricing discipline for proprietary data products that contain data elements that are a subset of the consolidated data, by highlighting the optional nature of proprietary products.

The competitive nature of the market for products such as NLS is borne out by the performance of the market. In May 2008, the internet portal Yahoo! began offering its website viewers real-time last sale data (as well as best quote data) provided by BATS Trading. In response, in June 2008, NASDAQ launched NLS, which was initially subject to an “enterprise cap” of \$100,000 for customers receiving only one of the NLS products, and \$150,000 for customers receiving both products. The majority of NASDAQ’s sales were at the capped level. In early 2009, BATS expanded its offering of free data to include depth-of-book data. Also in early 2009, NYSEArca announced the launch of a competitive last sale product with an enterprise price of \$30,000 per month. In response, NASDAQ combined the enterprise cap for the NLS products and reduced the cap to \$50,000 (i.e., a reduction of \$100,000 per month). Although each of these products offers only a specific subset of data available from the SIPs, NASDAQ believes that the products are viewed as substitutes for each other and for core last-sale data, rather than as products that must be obtained in tandem. For example, while the internet portal Yahoo! continues to disseminate only the BATS last sale product, Google disseminates only NASDAQ’s product.

In this environment, 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. The existence of fierce competition for order flow implies a high degree of price sensitivity on the part of BDs with order flow, since they may readily reduce costs by directing orders toward the lowest-cost trading venues. A BD 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. If a platform increases its market data fees, the change will affect the overall cost of doing business with the platform, and affected BDs will assess whether they can lower their trading costs by directing orders elsewhere and thereby lessening the need for the more expensive data. Similarly, increases in the cost of NLS would impair the willingness of distributors to take a product for which there are numerous alternatives, impacting NLS data revenues, the value of NLS as a tool for attracting order flow, and ultimately, the volume of orders routed to NASDAQ and the value of its other data products.

In establishing the price for the NASDAQ Last Sale Products, NASDAQ considered the competitiveness of the market for last sale data and all of the implications of that competition. NASDAQ believes that it has considered all relevant factors and has not considered irrelevant factors in order to establish fair, reasonable, and not unreasonably discriminatory fees and an equitable allocation of fees among all users. The existence of numerous alternatives to NLS, including real-time consolidated data, free delayed consolidated data, and proprietary data from other sources ensures that NASDAQ cannot set unreasonable fees, or fees that are unreasonably discriminatory, without losing business to these alternatives. Accordingly, NASDAQ believes that the

acceptance of the NLS product in the marketplace demonstrates the consistency of these fees with applicable statutory standards.

C. Self-Regulatory Organization's Statement on Comments on the Proposed Rule Change Received From Members, Participants or Others

Three comment letters were filed regarding the proposed rule change as originally published for comment. NASDAQ responded to these comments in a letter dated December 13, 2007. Both the comment letters and NASDAQ's response are available on the SEC website at <http://www.sec.gov/comments/sr-nasdaq-2006-060/nasdaq2006060.shtml>. In addition, in response to prior filings to extend the NLS pilot,<sup>9</sup> the Securities Industry and Financial Markets Association ("SIFMA") and NetCoalition filed comment letters contending that the SEC should suspend and institute disapproval proceedings with respect to the filing. Last year, SIFMA and NetCoalition filed a petition seeking review by the United States Court of Appeals for the District of Columbia Circuit with respect to the NLS pricing pilots in effect from July 1, 2011 through September 30, 2011 and from October 1, 2011 through December 31, 2011. These appeals have been stayed pending resolution of the consolidated case NetCoalition v. SEC, Nos. 10-1421, 10-1422, 11-1001, and 11-1065 ("NetCoalition II"), which is scheduled for oral argument in November 2012.

While containing a few superficial modifications from prior letters, SIFMA and NetCoalition's most recently submitted letter continues to mischaracterize the import of

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<sup>9</sup> Securities Exchange Act Release No. 67376 (July 9, 2012), 77 FR 41467 (July 13, 2012) (SR-NASDAQ-2012-078); Securities Exchange Act Release No. 65488 (October 5, 2011), 76 FR 63334 (October 21, 2011) (SR-NASDAQ-2011-132); Securities Exchange Act Release No. 64856 (July 12, 2011), 76 FR 41845 (July 15, 2011) (SR-NASDAQ-2011-092); Securities Exchange Act Release No. 64188 (April 5, 2011), 76 FR 20054 (April 11, 2011) (SR-NASDAQ-2011-044).

the original NetCoalition case. Specifically, the court made findings about the extent of the Commission's record in support of determinations about a depth-of-book product offered by NYSEArca. In making this limited finding, the court nevertheless squarely rejected contentions that cost-based review of market data fees was required by the Act:

The petitioners believe that the SEC's market-based approach is prohibited under the Exchange Act because the Congress intended "fair and reasonable" to be determined using a cost-based approach. The SEC counters that, because it has statutorily-granted flexibility in evaluating market data fees, its market-based approach is fully consistent with the Exchange Act. We agree with the SEC.<sup>10</sup>

While the court noted that cost data could sometimes be relevant in determining the reasonableness of fees, it acknowledged that submission of cost data may be inappropriate where there are "difficulties in calculating the direct costs ... of market data," Id. at 539. That is the case here, due to the fact that the fixed costs of market data production are inseparable from the fixed costs of providing a trading platform, and the marginal costs of market data production are minimal or even zero. Because the costs of providing execution services and market data are not unique to either of the provided services, there is no meaningful way to allocate these costs among the two "joint products" – and any attempt to do so would result in inherently arbitrary cost allocations.<sup>11</sup>

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<sup>10</sup> NetCoalition, 615 F3d. at 534.

<sup>11</sup> The court also explicitly acknowledged that the "joint product" theory set forth by NASDAQ's economic experts in NetCoalition (and also described in this filing) could explain the competitive dynamic of the market and explain why consideration of cost data would be unavailing. The court found, however, that the Commission could not rely on the theory because it was not in the Commission's record. Id. at 541 n.16. For the purpose of providing a complete explanation of the theory, NASDAQ is further submitting as Exhibit 3 to this filing a study that was submitted to the Commission in SR-NASDAQ-2011-010. See Statement of Janusz Ordover and Gustavo Bamberger at 2-17 (December 29, 2010).

SIFMA and NetCoalition further contend the prior filing lacked evidence supporting a conclusion that the market for NLS is competitive, asserting that arguments about competition for order flow and substitutability were rejected in NetCoalition. While the court did determine that the record before it was not sufficient to allow it to endorse those theories on the facts of that case, the court did not itself make any conclusive findings about the actual presence or absence of competition or the accuracy of these theories: rather, it simply made a finding about the state of the SEC's record. Moreover, analysis about competition in the market for depth-of-book data is only tangentially relevant to the market for last sale data. As discussed above and in prior filings, perfect and partial substitutes for NLS exist in the form of real-time core market data, free delayed core market data, and the last sale products of competing venues, additional competitive entry is possible, and evidence of competition is readily apparent in the pricing behavior of the venues offering last sale products and the consumption patterns of their customers. Thus, although NASDAQ believes that the competitive nature of the market for all market data, including depth-of-book data, will ultimately be established, SIFMA and NetCoalition's letters not only mischaracterize the NetCoalition decision, they also fail to address the characteristics of the product at issue and the evidence already presented.

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

The foregoing rule change has become effective pursuant to Section 19(b)(3)(A)(ii) of the Act.<sup>12</sup> At any time within 60 days of the filing of the proposed rule change, the Commission summarily may temporarily suspend such rule change if it

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<sup>12</sup> 15 U.S.C. 78s(b)(3)(A)(ii).



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 the Act. If the Commission takes such action, the Commission shall institute proceedings to determine whether the proposed rule should be approved or disapproved.

#### IV. Solicitation of Comments

Interested persons are invited to submit written data, views, and arguments concerning the foregoing, including whether the proposed rule change 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-2012-108 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-2012-108. 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 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-2012-108, 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>13</sup>

Kevin M. O'Neill  
Deputy Secretary

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<sup>13</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 Ordoover 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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(...continued)

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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(...continued)

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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(...continued)

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.**

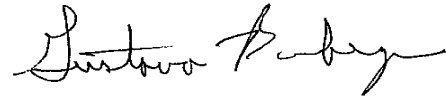
67. Significant competitive forces constrain the prices charged for non-core products by NASDAQ and other platforms. At least two types of competitive forces constrain the prices that platforms can charge for non-core market information. First, a trading platform cannot generate market information unless 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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- 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  
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- 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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                               International Program on Privatization and Reform  
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Aug. 1991 -            Deputy Assistant Attorney General for Economics  
 Oct. 1992             Antitrust Division  
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Sept. 1989 -          Visiting Professor of Economics  
 July 1990             School of Management, Yale University, New Haven, Connecticut

                              Lecturer in Law  
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Mar. 1984 -          Visiting Professor of Economics  
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Sept. 1977 -          Member, Technical Staff  
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Summer 1976        Fellow, Legal Institute for Economists,  
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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  
Cornerstone Research, Inc., Palo Alto, California

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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  
Warsaw, Poland

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<br>Predatory Pricing Monograph Task Force<br>Section of Antitrust Law, American Bar Association  |
| 1989              | Hearings on Competitive Issues in the Cable TV Industry<br>Subcommittee on Monopolies and Business Rights of the Senate Judiciary Committee<br>Washington, D.C. |
| 1989              | Member<br>EEC Merger Control Task Force, American Bar Association   |
| 1988 -<br>present | Associate Member<br>American Bar Association  |
| 1987 - 1989       | Adjunct Member<br>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"<br>National Institutes, American Bar Association, Philadelphia, Pennsylvania           |
| 1983 - 1990       | Director<br>Consultants in Industry Economics, Inc  |
| 1982              | Member<br>Organizing Committee<br>Tenth Annual Telecommunications Policy Research Conference, Annapolis, Maryland   |
| 1981              | Member<br>Section 7 Clayton Act Committee, Project on Revising Merger Guidelines<br>American Bar Association  |
| 1980              | Organizer<br>Invited Session on Law and Economics<br>American Economic Association Meetings, Denver, Colorado   |
| 1978 - 1979       | Member<br>Department of Commerce Technical Advisory Board<br>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**

American Economic Association  
American Bar Association

## PUBLICATIONS

### A. Journal Articles

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

"Wholesale access in multi-firm markets: When is it profitable to supply a competitor?" with Greg Shaffer, *International Journal of Industrial Organization*, vol. 25 (5), October 2007, 1026-45.

"Merchant Benefits and Public Policy towards Interchange: An Economic Assessment," with M. Guerin-Calvert, *Review of Network Economics: Special Issue*, vol. 4 (4), December 2005, 381-414.

"All-Units Discounts in Retail Contracts," with S. Kolay and G. Shaffer, *J. of Economics and Management Strategy*, vol. 13 (3), September 2004, 429-59.

"Archimedean Leveraging and the GE/Honeywell Transaction," with R. J. Reynolds, *Antitrust Law Journal*, vol. 70, no. 1, 2002, 171-98.

"Entrepreneurship, Access Policy and Economic Development: Lessons from Industrial Organizations," with M. A. Dutz and R. D. Willig, *European Economic Review*, vol. 4, no. 4-6, May 2000.

"Parity Pricing and its Critics: Necessary Condition for Efficiency in Provision of Bottleneck Services to Competitors," with W. J. Baumol and R. D. Willig, *Yale Journal on Regulation*, vol. 14, Winter 1997, 146-63.

"Competition and Trade Law and the Case for a Modest Linkage," with E. Fox, *World Competition, Law and Economics Review*, vol. 19, December 1995, 5-34.

"On the Perils of Vertical Control by a Partial Owner of Downstream Enterprise," with W.J. Baumol, *Revue D'économie industrielle*, No. 69, 3<sup>e</sup> trimestre 1994, 7-20.

"Competition Policy for Natural Monopolies in Developing Market Economy," with R.W. Pittman and P. Clyde, *Economics of Transition*, vol. 2, no. 3, September 1994, 317-343. Reprinted in B. Clay (ed), *De-monopolization and Competition Policy in Post-Communist Economies*, Westview Press 1996, 159-193.

"The 1992 Agency Horizontal Merger Guidelines and the Department of Justice's Approach to Bank Merger Analysis," with M. Guerin-Calvert, *Antitrust Bulletin*, vol. 37, no. 3, 667-688. Reprinted in *Proceedings of the 1992 Conference on Bank Structure and Competition: Credit Markets in Transition*, Federal Reserve Bank of Chicago, 1992, 541-560.

"Entry Analysis Under the 1992 Horizontal Merger Guidelines," with Jonathan B. Baker, *Antitrust Law Journal*, vol. 61, no. 1, Summer 1992, 139-146.

"Economics and the 1992 Merger Guidelines: A Brief Survey," with Robert D. Willig, *Review of Industrial Organization*, vol. 8, 139-150, 1993. Reprinted in E. Fox and J. Halverson (eds.), *Collaborations Among Competitors: Antitrust Policy and Economics*, American Bar Association, 1992, 639-652.

"Equilibrium Vertical Foreclosure: A Reply," with G. Saloner and S.C. Salop, *American Economic Review*, vol. 82, no. 3, 1992, 698-703.

"A Patent System for Both Diffusion and Exclusion," *Journal of Economic Perspectives*, vol. 5, Winter 1991, 43-60.

"R&D Cooperation and Competition," with M. Katz, *Brookings Papers on Economic Activity: Microeconomics*, 1990, 137-203.

"Equilibrium Vertical Foreclosure," with G. Saloner and S. Salop, *American Economic Review*, vol. 80, March 1990, 127-142.

"Antitrust Policy for High-Technology Industries," with W.J. Baumol, *Oxford Review of Economic Policy*, vol. 4, Winter 1988, 13-34. Reprinted in E. Fox and J. Halverson (eds.), *Collaborations Among Competitors: Antitrust Policy and Economics*, American Bar Association, 1991, 949-984.

"Conflicts of Jurisdiction: Antitrust and Industrial Policy," *Law and Contemporary Problems*, vol. 50, Summer 1987, 165-178.

"Market Structure and Optimal Management Organization," with C. Bull, *Rand Journal of Economics*, vol. 18, no. 4, Winter 1987, 480-491.

"A Sequential Concession Game with Asymmetric Information," with A. Rubinstein, *Quarterly Journal of Economics*, vol. 101, no.4, November 1986, 879-888.

"The G.M.-Toyota Joint Venture: An Economic Assessment," with C. Shapiro, *Wayne Law Journal*, vol. 31, no. 4, 1985, 1167-1194.

"Economic Foundations and Considerations in Protecting Industrial and Intellectual Property: An Introduction," *ABA Antitrust Law Journal*, vol. 53, no. 3, 1985. 503-518, Comments, 523-532.

"Antitrust for High-Technology Industries: Assessing Research Joint Ventures and Mergers," with R.D. Willig, *Journal of Law and Economics*, vol. 28, May 1985, 311-334.

"Use of Antitrust to Subvert Competition," with W.J. Baumol, *Journal of Law and Economics*, vol. 28, May 1985, 247-266. Reprinted in *Journal of Reprints for Antitrust Law and Economics*, vol. 16, no. 2.

"Advances in Supervision Technology and Economic Welfare: A General Equilibrium Analysis," with C. Shapiro, *Journal of Public Economics*, vol. 25/3, 1985, 371-390.

"Predatory Systems Rivalry: A Reply," with A. O. Sykes and R. D. Willig, 83 *Columbia Law Review*, June 1983, 1150-1166. Reprinted in *Corporate Counsel*, Matthew Bender & Company, 1984, 433-450.

"The 1982 Department of Justice Merger Guidelines: An Economic Assessment," with R. D. Willig, 71 *California Law Review*, March 1983, 535-574. Reprinted in *Antitrust Policy in Transition: The Convergence of Law and Economics*, E. Fox and J. Halverson (eds.), American Bar Association Press, 1984, 267-304.

"Unfair International Trade Practices," with A. O. Sykes and R. D. Willig, 15 *Journal of International Law and Politics*, Winter 1983, 323-338.

"On Non-linear Pricing of Inputs," with J. Panzar, *International Economic Review*, October 1982, 659-675.

"Herfindahl Concentration, Rivalry and Mergers," with A. O. Sykes and R. D. Willig, *Harvard Law Review*, vol. 95, June 1982, 1857-1875.

"A Reply to 'Journals as Shared Goods: Comment,'" with R. D. Willig, *American Economic Review*, June 1982, 603-607.

"Proposed Revisions to the Justice Department's Merger Guidelines," with S. Edwards, *et al.*, *Columbia Law Review*, vol. 81, December 1981, 1543-1591.

"An Economic Definition of Predation: Pricing and Product Innovation," with R.D. Willig, *Yale Law Journal*, vol. 91, November 1981, 8-53.

"On the Consequences of Costly Litigation in the Model of Single Activity Accidents: Some New Results," *Journal of Legal Studies*, June 1981, 269-291.

"On the Political Sustainability of Taxes," with A. Schotter, *American Economic Review Papers and Proceedings*, May 1981, 278-282.

"Information and the Law: Evaluating Legal Restrictions on Competitive Contracts," with A. Weiss, *American Economic Review Papers and Proceedings*, May 1981, 399-404.

"Redistributing Incomes: *Ex Ante* or *Ex Post*," *Economic Inquiry*, April 1981, 333-349.

"On the Nonexistence of *Pareto Superior* Outlay Schedules," with J. Panzar, *The Bell Journal of Economics*, Spring 1980, 351-354.

"The Role of Information in the Design of Public Policy Towards Externalities," with R. D. Willig, *Journal of Public Economics*, December 1979, 271-299.

"On the Concept of Optimal Taxation in the Overlapping-Generations Model of Efficient Growth," with E.S. Phelps, *Journal of Public Economics*, August 1979, 1-27.

"Products Liability in Markets With Heterogeneous Consumers," *Journal of Legal Studies*, June 1979, 505-525.

"Costly Litigation and the Tort Law: Single Activity Accidents," *Journal of Legal Studies*, June 1978, 243-261.

"On the Optimal Provision of Journals Qua Excludable Public Goods," with R. D. Willig, *American Economic Review*, June 1978, 324-338.

"Distortionary Wage Differentials in a Two-Sector Growth Model: Some Theorems on Factor Earnings," *International Economic Review*, June 1978, 321-333.

"On the Optimality of Public-Goods Pricing with Exclusion Devices," with W.J. Baumol, *Kyklos*, Fasc. 1, 1977, 5-21.

"Public Good Properties in Reality: The Case of Scientific Journals," with W.J. Baumol, *Proceedings of the ASIS Meetings*, San Francisco, October 1976.

"Merger Illusions and Externalities: A Note," with A. Schotter, *Eastern Economic Review*, November 1976, 19-21.

"Distributive Justice and Optimal Taxation of Wages and Interest in a Growing Economy," *Journal of Public Economics*, January 1976, 139-160.

"Linear Taxation of Wealth and Wages for Intragenerational Lifetime Justice: Some Steady-State Cases," with E.S. Phelps, *American Economic Review*, September 1975, 660-673.

## **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 Ertesito* (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.

"Economic Foundations of Competition Policy: A Review of Recent Contributions," in W. Comanor, *et al.*, *Competition Policy in Europe and North America: Economic Issues and Institutions, Fundamentals of Pure and Applied Economics* (Vol. 43), Harwood Academic Publishers, 1990, 7-42.

"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.

"Marginal Cost," in *Encyclopedia of Economics*, D. Greenwald (ed.), McGraw-Hill, 2nd ed. 1994, 627-630.

"Understanding Economic Justice: Some Recent Development in Pure and Applied Welfare Economics," in *Economic Perspectives*, M. Ballabon (ed.) Harwood Academic Publishers, vol. 1, 1979, 51-72.

"Problems of Political Equilibrium in the Soviet Proposals for a European Security Conference," in *Columbia Essays in International Affairs*, Andrew W. Cordier (ed.) Columbia University Press, New York, 1971, 1951-197

#### **D. Other Publications**

"The 2010 Horizontal Merger Guidelines: A Static Compass in a Dynamic World," with Jay Ezrielev, *Antitrust Source*, October 2010, available at [www.antitrustsource.com](http://www.antitrustsource.com)

"The Economics of Price Discrimination," with Doug Fontaine and Greg Shaffer, in *The Economics of the Internet, The Vodafone Policy Paper Series*, No. 11, April 11, 2010, 27-51.

"How Loyalty Discounts Can Perversely Discourage Discounting: Comment," with Assaf Eilat, et al, *The CPI Antitrust Journal*, April 2010 (1).

"Economic Analysis in Antitrust Class Certification: *Hydrogen Peroxide*," with Paul Godek, *Antitrust Magazine*, vol. 24, No. 1, Fall 2009, pp. 62-65.

"Comments on Evans & Schmalensee's 'The Industrial Organization of Markets with Two-Sided Platforms'," *Competition Policy International*, vol. 3(1), Spring 2007, 181-90.

"Safer Than A Known Way? A Critique of the FTC's Report on Competition and Patent Law and Policy," with I. Simmons and D. A. Applebaum, *Antitrust Magazine*, Spring 2004, 39-43.

"Predatory Pricing," in Peter Newman (ed.), *The New Palgrave Dictionary of Economics and the Law*, Grove Dictionaries, New York, 1999. Revised in *The New Palgrave Dictionary of Economics*, 2<sup>nd</sup> edition, S. Durlauf and L. Blume (editors) (forthcoming 2007).

Book review of L. Philips, *Competition Policy: A Game Theoretic Perspective*, reviewed in *Journal of Economic Literature*, vol. 35, No.3, September 1997, 1408-9.

"The Role of Efficiencies in Merger Assessment: The 1997 Guidelines," *Antitrust Report*, September 1997, 10-17.

"Bingaman's Antitrust Era," *Regulation*, vol. 20, No. 2, Spring 1997, 21-26.

"Competition Policy for High-Technology Industries," *International Business Lawyer*, vol. 24, No. 10, November 1996, 479-82.

"Internationalizing Competition Law to Limit Parochial State and Private Action: Moving Towards the Vision of World Welfare," with E.M. Fox, *International Business Lawyer*, vol. 24, No. 10, November 1996, 458-62.

"Economists' View: The Department of Justice Draft for the Licensing and Acquisition of Intellectual Property," *Antitrust*, vol. 9, No. 2, Spring 1995, 29-36.

"Competition Policy During Transformation to a Centrally Planned Economy: A Comment," with R.W. Pittman, in B. Hawk (ed.), *1992 Fordham Corporate Law Institute*, 533-38.

"Poland: The First 1,000 Days and Beyond," *Economic Times*, vol. 3, no. 9, October 1992, 6-7.

"Interview: Janusz A. Ordover: A Merger of Standards? The 1992 Merger Guidelines," *Antitrust*, vol. 6, no. 3, Summer 1992, 12-16.

"Interview: U.S. Justice Department's New Chief Economist: Janusz A. Ordover," *International Merger Law*, no. 14, October 1991.

"Poland: Economy in Transition," *Business Economics*, vol. 26, no. 1, January 1991, 25-30.

"Economic Analysis of Section 337: Protectionism versus Protection of Intellectual Property," with R.D. Willig, in *Technology, Trade and World Competition*, JEIDA Conference Proceedings, Washington, D.C., 1990, 199-232.

"Eastern Europe Needs Antitrust Now," with E. Fox, *New York Law Journal*, November 23, 1990, 1-4.

"Understanding Econometric Methods of Market Definition," with D. Wall, *Antitrust*, vol. 3, no. 3, Summer 1989, 20-25.

"Proving Entry Barriers: A Practical Guide to Economics of Entry," with D. Wall, *Antitrust*, vol. 2, no. 2, Winter 1988, 12-17.

"Proving Predation After Monfort and Matsushita: What the New 'New Learning' has to Offer," with D. Wall, *Antitrust*, vol. 1, no. 3, Summer 1987, 5-11.

"The Costs of the Tort System," with A. Schotter, Economic Policy Paper No. PP-42, New York University, March 1986. Reprinted in *Congressional Record*, U.S. Government Printing Office, Washington, D.C., 1987.

"An Economic Definition of Predation: Pricing and Product Innovation," with R.D. Willig, Report for the Federal Trade Commission, October 1982, 131 pp.

"Market Power and Market Definition," with R.D. Willig, Memorandum for ABA Section 7 Clayton Act Committee, Project on Revising the Merger Guidelines, May 1981.

"Herfindahl Concentration Index," with R.D. Willig, Memorandum for ABA Section 7 Clayton Act Committee, Project on Revising the Merger Guidelines, March 1981.

"Public Interest Pricing of Scientific and Technical Information," Report for the Department of Commerce Technical Advisory Board, September 1979.

"Economics of Property Rights as Applied to Computer Software and Databases," with Y.M. Braunstein, D.M. Fischer, W.J. Baumol, prepared for the National Commission on New Technological Uses of Copyrighted Works, June 1977, 140 pp. Reprinted in part in *Technology and Copyright*, R.H. Dreyfuss (ed.), Lemond Publications, 1978.

Book review of O. Morgenstern and G.L. Thompson, *Economic Theory of Expanding and Contracting Economies*, reviewed in *Southern Economic Journal*, September 1978.

"Manual of Pricing and Cost Determination for Organizations Engaged in Dissemination of Knowledge," with W.J. Baumol, Y.M. Braunstein, D.M. Fischer, prepared for the Division of Science Information, NSF April 1977, 150 pp.

#### UNPUBLISHED PAPERS

"Exclusionary Discounts," with Greg Shaffer, August 2006.

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

"Economics, Antitrust and the Motion Picture Industry," C.V. Starr Center Policy Paper, July 1983.

"On Bargaining, Settling, and Litigating: A Problem in Multiperiod Games With Imperfect Information," with A. Rubinstein, C.V. Starr Working Paper, December 1982.

"Supervision and Social Welfare: An Expository Example," C.V. Starr Center Working Paper, January 1982.

"Should We Take Rights Seriously: Economic Analysis of the Family Education Rights Act," with M. Manove, November 1977.

"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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**Economist****September 2010**

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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

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

**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. 1, Spring 1995, pp. 131-147).

“Antitrust and Higher Education: MIT Financial Aid (1993),” co-authored with D. Carlton, in The Antitrust Revolution: Economics, Competition, and Policy, John Kwoka and Lawrence White, eds., 1998.

“Airline Networks and Fares”, co-authored with D. Carlton, in Handbook of Airline Economics, 2nd ed., Darryl Jenkins, ed., 2003.

“Revisiting Maximum Resale Price Maintenance: State Oil v. Khan (1997), in The Antitrust Revolution: Economics, Competition, and Policy, John Kwoka and Lawrence White, eds., 2004.

“An Empirical Investigation of the Competitive Effects of Domestic Airline Alliances,” co-authored with D. Carlton and L. Neumann, Journal of Law and Economics, (Vol. 47, No. 1, April 2004, pp. 195-222).

“Predation and the Entry and Exit of Low-Fare Carriers,” co-authored with D. Carlton, in Advances in Airline Economics: Competition Policy and Antitrust, Darin Lee, ed., 2006.

#### TESTIMONIAL EXPERIENCE

Direct, Rebuttal and Cross-Examination Testimony of Gustavo E. Bamberger on behalf of Producer - Marketers Transportation Group, before the Illinois Commerce Commission in Docket No. 90-0007, April 24, 1990 (Direct); July 6, 1990 (Rebuttal); and May 30, 1990 and August 3, 1990 (Cross-Examination).

Testimony of Gustavo E. Bamberger in Re: United States of America v. Irving A. Rubin: In the U.S. District Court for the Northern District of Illinois, Eastern Division, No. 91 CR 44-2, December 3, 1993.

Testimony of Gustavo E. Bamberger in Re: Center for Public Resources Arbitration, E. Merck and EM Industries, Incorporated, against Abbott Laboratories, February 8, 1994.

Deposition and Testimony of Gustavo E. Bamberger in the Matter of: Michael R. Sparks, Debtor: In the United States Bankruptcy Court for the Northern District of Illinois, Eastern Division, No. 92 B 21692, May 9, 1994 (Deposition and Testimony).

Joint Affidavit and Joint Reply Affidavit of John P. Gould and Gustavo E. Bamberger in Re: In the Matters of Review of the Pioneer’s Preference Rules and Amendment of the Commission’s Rules to Establish New Personal Communications Services: Proceedings before the Federal Communications Commission, ET Docket 93-266, Gen. Docket 90-314, July 26, 1994 (Affidavit); and August 8, 1994 (Reply Affidavit).

Statement of John P. Gould and Gustavo E. Bamberger on Implementing Legislation for the Uruguay Round of GATT (S. 2467) (Pioneer Preference Provisions) Before the Senate Commerce Commission, November 14, 1994.

Report and Deposition of Gustavo E. Bamberger in Re: Khan, et al. v. State Oil Company; In the U.S. District Court for the Northern District of Illinois, Eastern Division, No. 94 C 00035, May 30, 1995 (Report); and July 27, 1995 (Deposition).

Statement and Supplemental Statement of Alan O. Sykes and Gustavo E. Bamberger in Re: Fresh Tomatoes and Bell Peppers, Investigation No. TA-201-66, United States International Trade Commission, June 3, 1996 (Statement); and June 10, 1996 (Supplemental Statement).

Testimony of Gustavo E. Bamberger in Re: Wisconsin Public Service Corporation; WPS Energy Services, Inc.; and WPS Power Development, Inc.: Before the Federal Energy Regulatory Commission, Docket No. ER96-1088-000, July 22, 1996.

Pre-Filed Direct, Rebuttal and Re-Direct Testimony of Gustavo E. Bamberger in Re: Disapproval of Rate Filings for American Casualty Company of Reading, Pennsylvania, and Continental Casualty Company, Before the State Office of Administrative Hearings (Texas), SOAH Docket No. 454-96-0800, September 10, 1996 (Direct); September 16, 1996 (Rebuttal); and September 27, 1996 (Re-Direct).

Affidavit of Gustavo E. Bamberger in Re: Summit Family Restaurants Inc., a Delaware Corporation; HTB Restaurants Inc., a Delaware Corporation; and CKE Restaurants Inc., a Delaware Corporation vs. HomeTown Buffet, Inc., a Delaware Corporation; and Buffets, Inc., a Minnesota Corporation: In the U.S. District Court for the District of Utah, Central Division, No. 96 CV 0688B, September 17, 1996.

Report, Supplemental Report, Affidavit, Deposition and Affidavit of Gustavo E. Bamberger in Re: Blue Cross & Blue Shield United of Wisconsin, and Compcare Health Services Insurance Corporation v. The Marshfield Clinic and Security Health Plan of Wisconsin, Inc.: In the U.S. District Court for the Western District of Wisconsin, No. 94-C-0137-C, December 19, 1996 (Report with William J. Lynk); February 10, 1997 (Supplemental Report William J. Lynk); March 10, 1997 (Affidavit with William J. Lynk); March 18, 1997 (Deposition); and April 4, 1997 (Affidavit).

Affidavit of Dennis W. Carlton and Gustavo E. Bamberger in Re: Pacific Gas & Electric Company, San Diego Gas & Electric Company, and Southern California Edison Company: United States of America Before the Federal Energy Regulatory Commission, FERC Docket No. ER96-1663-000, January 16, 1997.

Testimony and Prepared Statement of Gustavo E. Bamberger on behalf of Sacramento Municipal Utility District in Re: Pacific Gas and Electric Company, San Diego Gas & Electric Company and Southern California Edison Company: Before the Federal Energy Regulatory Commission Technical Conference on Structural Mitigation Options, Docket No. ER96-1663-000, January 17, 1997.

Affidavit, Report, Rebuttal Report and Deposition of Gustavo E. Bamberger in Re: Henry & Joann Rozema, Island Sports Center, Inc., Mark McKay, Lawrence Halida, Harriet Halida, and Kathleen Malek, on behalf of themselves and all others similarly situated v. The Marshfield Clinic, Security Health Plan of Wisconsin, Inc., North Central Health Protection Plan, and Rhinelander Medical Center, S.C.: In the U.S. District Court for the Western District of Wisconsin, No. 94-C-592-C, July 11, 1997 (Affidavit); July 23, 1997 (Report with William J. Lynk); September 2, 1997 (Rebuttal Report); and September 11-12, 1997 (Deposition).



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