August 1, 2008

Via email to rule-comments@sec.gov

Florence Harmon
Acting Secretary
U.S. Securities and Exchange Commission
100 F Street, NE
Washington, DC 20549

Re: Proposed Order Regarding NYSE Arca "Market Data" Product Release No. 34-57917, File No. SR-NYSEArca-2006-021

Dear Ms. Harmon:

The NASDAQ OMX Group, Inc. ("Nasdaq") sees much to applaud in the Commission's Notice of Proposed Order Approving Proposal by NYSE Arca, Inc. To Establish Fees for Certain Market Data, dated June 4, 2008.[1] ***First***, the Notice and Proposed Order signal the end of a two-year process surrounding this proposal, and the end of an undeclared "moratorium" on approval of new market data products or fees that has existed during that period. This moratorium is contrary to the agency's obligation under the Securities Exchange Act of 1934, and has damaged the competitiveness of U.S. capital markets both domestically and internationally. It has denied investors not only the innovative market data products that have been blocked, but also, and more importantly, it has denied investors their right to choose which market data to purchase.

Second, the Notice and Proposed Order signal the end of a nine-year debate over the principles that should guide the Commission's review of proposed market data products and fees: competition and market forces on the one hand or command-and-control, "cost plus" rate-making on the other. The debate has had many settings: the Concept Release on Market Information was debated in 1999 and 2000[2]; the Seligman Commission debated into 2001[3]; the proposal and adoption of Regulation NMS carried

[1] Securities Exchange Act Release 57917 (June 4, 2008) ("Notice and Proposed Order").
[2] Securities Exchange Act Release 42208 (Dec. 9, 1999) ("Concept Release").
[3] Report of the Advisory Committee on Market Information: A Blueprint for Responsible Change (September 14, 2001) ("Seligman Report").

the debate from 2004 through 2005[4]; and the NetCoalition Petition brought the debate from 2006 to today.[5] The Notice and Proposed Order affirms the principle that prices are best set by market forces where possible and it unequivocally slams the door on "cost plus" rate-making as should have occurred years ago.

Third, the Notice and Proposed Order re-iterate the Commission's commitment to a fulsome administrative process. The Commission is offering interested parties their third opportunity to comment on the NYSE Arca depth-of-book product: (a) publication of the original proposal in July of 2006; (b) publication of the NetCoalition Petition in December of 2006; and (c) publication of this Notice and Proposed Order in 2008. Opponents of the NSYE Arca proposal have submitted numerous comment letters throughout this lengthy process. The Commission has analyzed and addressed all comment letters filed to date, and Nasdaq is confident that it will carefully consider and address all new comments received during this third and final comment period.

For example, the Commission analyzed and addressed in detail the regulatory and competitive importance of depth-of-book data, an issue raised in several of SIFMA's eight comment letters, in two of the NetCoalition's four comment letters, and in Schwab's comment letter. After analyzing each argument in each comment letter, the Commission concluded, at pages 5 of the Notice and 67 of the Draft Approval Order, that "broker-dealers are not required to obtain depth-of-book order data, including the NYSE Arca data, to meet their duty of best execution." The Commission analyzed the statistical evidence regarding Depth-of-Book data and found compelling that "[a]pproximately 420,000 securities industry professionals subscribe to the core data products of the joint-industry plans, while only about 5% of these professionals have chosen to subscribe to the non-core data products of exchanges." As the Commission explained at page 58, "The fact that 95% of the professional users of core data choose not to purchase the depth-of-book order data of a major exchange strongly suggests that no exchange has monopoly pricing power for its depth-of-book order data." The Commission took the unusual step of asking commentors (at page 5 of the Notice) how the Commission could make that point clearer.

Opponents of the NYSE Arca Proposal have urged further delay for the Commission to continue studying this issue. In light of the two-year delay that has already occurred as well as the voluminous record already compiled during the three comment periods, further delay is not warranted.

Fourth, the Notice and Proposed Order signal the start of a new era in which the Commission engages in searching and rigorous economic analysis. The Proposed Order is an impressive and sturdy 82-page document that consists in large part of careful consideration of forces that govern the production, sale, and purchase of market data products produced or capable of being produced by exchanges, broker-dealers, and others. The Commission's approach to this analysis of the market for new market data

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4 Securities Exchange Act Release No. 51808 (June 9, 2005) (June 29, 2005) ("Regulation NMS Release").

5 Securities Exchange Act Release No. 55011 (Dec. 27, 2006) ("NetCoalition Order").

products contrasts with prior Commission actions that commentors and courts have criticized for a lack of detailed inquiry and analysis.

For example, the Commission dedicated 9 pages of its analysis to competition for order flow among and between exchanges, ECNs, broker-dealers, and other trading systems, before concluding that there is substantial competition for order flow in today's markets. (See pages 45 to 53 of the Draft Approval Order). Thus, for instance, the chart on page 49 shows that "non-exchange trading venues collectively have a larger share of trading than any single exchange. Much of this volume is attributable to ECNs such as BATS and Direct Edge, noted above." The Commission also noted that market share of trading changes rapidly—for example, NYSE's market share declined from almost 80% to almost 40% in less than three years. In May 2008, the NYSE executed only 32% of the volume in NYSE-listed stocks, while Nasdaq executed 21% of volume in NYSE-listed stocks. That same month, Nasdaq executed 42% of volume in Nasdaq-listed stocks.

To further supplement the record, Nasdaq commissioned an independent economic study to assess the validity and rigor of the Commission's analysis of competitive forces in the production, sale and purchase of market data products. *See* Statement of Janusz Ordover and Gustavo Bamberger ("Statement"), attached hereto as Exhibit 1. The Statement categorically supports the Commission's analysis and conclusions. Specifically, the Statement:

1. Agrees with the Commission that when possible, reliance on competitive forces is the most appropriate and effective means to assess whether terms for the distribution of non-core data are equitable, fair and reasonable, and not unreasonably discriminatory." The authors note that if competition is effective, regulation is not only not needed, but can distort the operations of the market and lead to unforeseen and unintended consequences that can harm the trading public.

2. Agrees with the Commission that significant competitive forces constrain the prices charged for non-core products by NYSE Arca. At least two types of competitive forces constrain the prices that NYSE Arca and other platforms can charge for non-core market information. First, a trading platform cannot generate market information unless it receives 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.

3. Agrees that the Commission's economic analysis applies to non-core market data products offered by platforms other than NYSE Arca, including NASDAQ. Trading platforms would have no economic incentive to develop and sell market information unless it was valuable to customers. If an

> exchange developed an innovative non-core market data product that was valuable to potential customers, the successful introduction of such a new product would be expected to benefit the public.

* * *

The Commission has prepared a thorough record that a competitive market exists for market data products. It has done so, moreover, during a period of more than two years in which highly-motivated parties have had multiple opportunities to provide comment and have done so extensively. The Commission should thoroughly assess all comments received during the third comment period in this matter but should then promptly adopt the proposed draft approval order and apply it to the long queue of filings that have been delayed for the past two years.

Respectfully submitted,

Jeffrey S. Davis
Vice President and
Deputy General Counsel

cc: Chairman Christopher Cox
Commissioner Paul S. Atkins
Commissioner Luis A. Aguilar
Commissioner Kathleen L. Casey
Commissioner Elisse B. Walter
Erik Sirri, Director, SEC Division of Trading and Markets
Robert L.D. Colby, Deputy Director, SEC Division of Trading and Markets
Daniel Gallagher, Deputy Director, SEC Division of Trading and Markets

Statement of Janusz Ordover and Gustavo Bamberger

I. INTRODUCTION

1. I, Janusz Ordover, 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 review and evaluate the recent 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 ("Notice of Proposed Order") released by the Securities and Exchange Commission ("the Commission"). In its Notice of Proposed Order, the Commission evaluates the fees NYSE Arca, Inc. ("NYSE Arca") proposes to set for "non-core market data." In particular, the Commission evaluates "whether the exchange was subject to significant competitive forces in setting the terms of its proposal for non-core data, including the level of any fees."[1] The "Commission believes that, when possible, reliance on competitive forces is the most appropriate and effective means to assess whether terms for the distribution of non-core data are equitable, fair and reasonable, and not unreasonably discriminatory."[2] We agree, and note that if competition is effective, regulation is not only not needed, but can distort the operations of the market and lead to unforeseen and unintended consequences that can harm the trading public.

5. The Commission concludes "that at least two broad types of significant competitive forces applied to NYSE Arca in setting the terms of its proposal: (1) NYSE Arca's compelling need to attract order flow from market participants; and (2) the availability to market participants of alternatives to purchasing its data."[3] As we discuss in this statement, we agree with the Commission's conclusion. Furthermore, the Commission's market-based approach

1. Notice of Proposed Order, at 3.
2. Notice of Proposed Order, Appendix A, at 43.
3. Notice of Proposed Order, at 4.

applies to other potential sellers of non-core market data, including NASDAQ, and to other products in addition to the specific NYSE Arca data products analyzed by the Commission. In particular, we show that the same type of economic analysis applies to other new non-core market data products introduced by an exchange or platform, and thus that sellers of new such products face effective competitive constraints. Moreover, regulatory constraints on the pricing of new products can be especially pernicious because: (i) such products, by definition, have to compete with the existing sets of offerings; (ii) introduction of new products is risky; and (iii) regulatory burdens can thus create disincentives for the introduction of products that would benefit the public. We also show that NASDAQ faces competitive constraints for two specific types of non-core market information – "depth-of-book" data and "last sale" data.

6. 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 explain that the Commission's reasoning applies to non-core market data products sold by platforms other than NYSE Arca, including NASDAQ. We summarize our conclusions in Section IV.

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

7. Trading platforms such as exchanges provide a variety of products, including trade execution services and market data. Because market data is both an input to and a byproduct of executing trades on a particular platform, market data and trade execution services are an example of "joint products" with "joint costs."[4] The total return that a trading platform

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4. It is widely accepted that there is no meaningful way to allocate "common costs" across different joint products. For this reason, "cost-based" regulation of the price of market data would require 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).

earns reflects the revenues it receives from such joint products and the joint costs it incurs. Competition among trading platforms can be expected to constrain the aggregate return each platform earns from its sale of joint products, although different platforms may choose different pricing strategies and ways of recovering total costs.

8. Accordingly. trading platforms make 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, current available liquidity and past trades. The existence of these joint products produces a number of possible pricing strategies. For example, 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. BATS Trading, a platform that began trading in January 2006, has chosen an initial strategy of setting low (or zero) prices for market data, mid-range prices for executions, and relatively high liquidity rebates. In general, there is no economic basis for regulating maximum prices for one of the joint products in industries in which suppliers face competitive constraints across the range of their offerings.[5]

A. Background Information.

9. Since the Securities Act Amendments of 1975, 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

5. 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.

shares annually, an increase of about 575 percent. Annual trading in those shares further increased and reached 126.3 billion shares in 1996, and 635.1 billion shares in 2006. Thus, between 1976 and 2006, trading in stocks listed on the NYSE increased by a factor of 100 (from 6.3 billion to 635.1 billion shares).[6]

10. 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), and a somewhat higher percentage of trading in NASDAQ-listed stocks took place on NASDAQ.[7] By June 2008, only 45.6 percent of trading on NYSE-listed stocks, in the aggregate, took place on the NYSE and NYSE Arca platforms.[8] The NYSE accounted for 30.5 percent of trading in

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6. See "Consolidated tape volume by market (thous. of shares) (1976-2003)" and "Volume in NYSE Listed Issues (millions of shares), 2006," nysedata.com/factbook.
7. Until 2006, The NASDAQ Stock Market, Inc. ("NASDAQ") operated as a facility of the National Association of Securities Dealers, Inc. ("NASD"). In January 2006, the SEC approved NASDAQ's application to register as a national securities exchange. In August of 2006, NASDAQ changed its name to The NASDAQ Stock Market LLC and began operating as an exchange with respect to NASDAQ-listed stocks. NASDAQ continued operating as a facility of the NASD with respect to NYSE-listed and Amex-listed stocks until February 2007 when it completed the transition to exchange status. References to NASDAQ for activity in NASDAQ-listed stocks prior to August 2006 or for activity in NYSE/Amex-listed stocks prior to February 2007 are to the facility of the NASD. References to NASDAQ after February 2007 are to the NASDAQ in its capacity as an exchange.
8. We understand that the NYSE reports the sum of trading on two separate platforms (i.e., the NYSE and NYSE Arca platforms). See NYSE Euronext, "Monthly Volume Summary – Cash Products," document attached to http://www.euronext.com/news/press_release/press_release-1731-PT.html?docid=554701 (share of "Matched Volume" for "NYSE Listed Issues").

NYSE-listed shares, and NYSE Arca for 14.0 percent.[9] In the same month, NASDAQ's share of trading in NASDAQ-listed securities was only 42.6 percent.[10]

11. Rapid entry into the platform business also is possible. BATS Trading began trading on January 27, 2006.[11] In June 2008, BATS Trading accounted for 7.5 percent of trading in NYSE-listed stocks and 10.3 percent of trading in NASDAQ-listed stocks.[12] Thus, two and a half years after it started trading shares, BATS Trading is about 25 percent of the size of the NYSE with respect to trading of NYSE-listed shares (i.e., 7.5 percent as compared to 30.5 percent) and about 25 percent of the size of NASDAQ with respect to trading of NASDAQ-listed shares (i.e., 10.3 percent as compared to 42.6 percent).

12. This information shows that no trading platform has a "monopoly" on generating market data on shares listed on that platform. For example, as we have discussed, as of June 2008, only 42.6 percent of the trades in NASDAQ-listed shares were on NASDAQ, and only 30.5 percent of the trades in NYSE-listed shares were on the NYSE (and only 45.6 percent of

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9. For June 2008, BATS Trading reports "consolidated volume" of 96.4 billion shares on "Tape A" (i.e., the NYSE). Of this amount, BATS Trading reports that the NYSE accounted for 29.4 billion shares (30.5 percent) and NYSE Arca accounted for 13.5 billion shares (14.0 percent). See http://www.batstrading.com/market_volume.php (and link to "Download last 90 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 2008 for NYSE-listed stocks is about two 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 June 2008 for NYSE-listed stocks was 44.5 percent, while the NYSE reports an aggregate share of 45.6 percent).
10. See http://www.nasdaqtrader.com/content/MarketStatistics/MarketShare/nyse.xls (tabs "NYSE" and "NASDAQ").
11. See 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).
12. 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.").

the trades in NYSE-listed shares were on the NYSE and NYSE Arca).[13]

13. In general, “network” (or “liquidity”) effects could potentially lead to a situation in which one platform captures a large share of all trades in one or more stocks or some other financial instrument. However, the ability of platforms to capture a substantial percentage of trades of stocks listed on other exchanges indicates that such effects are perhaps mitigated in the market for equity trading, or that such effects have been offset by other effects, including the introduction of Regulation NMS, or that there is sufficient product differentiation so that (given the large trading volumes) two or more exchanges can compete alongside each other.

14. Furthermore, an exchange’s share of trading in stocks listed on that exchange (e.g., NASDAQ’s 42.6 percent of the trades in NASDAQ-listed stocks) overstates the amount of information on liquidity available to 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 liquidity is readily available to those firms’ clients. In addition, the amount of available liquidity in depth-of-book data at prices different from the current National Best Bid and Offer (“NBBO”) is only a fraction of the liquidity that would be available at any particular price if the market-clearing price changed. For this reason, the percentage of trading in one or more stocks accounted for by any particular exchange overstates the relative importance of depth-of-book market data from that exchange for identifying liquidity that would be available at prices other than the current NBBO.

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13. NetCoalition states that “NYSEArca is, to be sure, an exclusive processor with respect to data that is exclusively in its possession and that is the subject of the instant filing, depth-of-market data” (NetCoalition Petition, at 5). Although any firm can be described as the “exclusive” seller of its product, it is not appropriate as a matter of economics to describe every firm that sells a branded product as a monopolist. For example, General Motors is the “exclusive” seller of Chevrolet cars, but is not a monopolist in a market for automobiles.

B. Trading Platforms Compete in a Variety of Ways.

15. Exchanges and other trading platforms compete with each other on a variety of dimensions. For example, U.S. exchanges compete with each other (and foreign exchanges) for listings. Once a stock has 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.

16. The economic evidence also shows that exchanges and other trading platforms compete with each other for orders and transactions. For example, some trading platforms compete for transactions, in part, by paying rebates to customers who provide liquidity by posting orders on the platform. Trading platforms also compete on the fees charged for taking liquidity. To illustrate, in 2007, NYSE Euronext changed its prices to compete more effectively with rival trading platforms:

> 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.
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> "We're pleased at this reaction to BATS's consistently aggressive pricing," said Randy Williams, a spokesman [for BATS].[14]

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

17. Some trading platforms pay substantial sums in the form of liquidity rebates to induce customers to "post orders" on their platform. For example, in 2007, NASDAQ paid liquidity rebates of $1,049.8 million.[15] 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. Other platforms do not offer rebates to liquidity providers but instead offer lower fees or even free executions to liquidity-taking order flow.[16] Both the posted orders, the liquidity-taking order flow, and the executed trades produce information that can be provided to investors.[17] As the Commission notes, order flow is the "without which, not" element of an exchange's competitive success and the exchanges compete vigorously for orders.[18]

18. Information on trading volumes further confirms that platforms compete. For example, as we have discussed, the NYSE accounted for about 80 percent of trading in NYSE-listed stocks in 2006, but the NYSE's share of trading in those stocks has fallen to only 30.5 percent as of June 2008 (and the NYSE Group's share – i.e., the NYSE and NYSE Arca – has fallen to 45.6 percent). Such large shifts in trading volumes across platforms indicate that traders can, and do, quickly move their orders from one exchange to another, which is consistent with the conclusion that platforms compete with each other.

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

19. Prior Commission rules mandate that certain types of market information be made available to all customers. For example, in 1978, the Commission implemented the

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15. Form 10-K for NASDAQ Stock Market Inc., February 25, 2008, at 46.
16. Unlike NASDAQ and NYSE Arca, the NYSE does not pay liquidity rebates (but instead charges relatively low execution fees).
17. NetCoaltion claims that market data is "information that broker-dealers are legally required to provide them at no cost" (NetCoalition Petition, at 17). NetCoalition's statement ignores that broker-dealers are not legally required to make trades on the NASDAQ exchange, and NASDAQ paid over a billion dollars in liquidity rebates in 2007 to induce trading on its platform.
18. Notice of Proposed Order, Appendix A, at 45.

"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, place and volume."[19] Exchanges and other trading platforms are required to provide their trade information to a "securities information processor" ("SIP") which consolidates data from all platforms to produce the mandated information.[20]

20. In addition to the information that trading platforms are required by the Commission to provide to SIPs, exchanges and other platforms can, but are not required to, individually make available that same or additional market data – sometimes referred to as non-core (or "proprietary") information. As we have discussed, the execution of trades on a platform, market information about those trades, and market information about order flow to the platform are joint products. 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.[21]

21. Depth-of-book market information can help investors make better trading decisions. As discussed by the Commission, 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

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19. Sharon Brown-Hruska, "Competing Models for Market Data Dissemination: A Comparison of Stock and Futures Markets," at 7 (describing Rule 11Ac1-2).
20. 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.
21. Market information can be useful to firms that act as intermediaries between trading 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. Such web sites would not have an incentive to buy non-core data products if they were of no value to ultimate consumers.

execution.[22] The cost and benefit 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, the posting of the order would accomplish little. 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.

22. Similarly, last sale data from a platform also may both draw trading to the platform and have non-trading uses. A platform's last sale data can be informative to an investor because it provides an indication about where the investor's order would execute if submitted to that platform, and last sale data also can be used to value a portfolio. Other types of specialty non-core data also may have multiple uses.

23. Exchanges have little or no economic incentive to develop and sell market information unless it is valuable to at least some customers. For example, an exchange that offered for sale additional information – beyond what is mandated by regulatory fiat – would have to 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 what the exchange charged either directly or through fees on trades.[23] Even if a trading platform had some unique information that is potentially valuable to consumers, the

22. Notice of Proposed Order, Appendix A, at 51-53.

23. 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.

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.[24] Therefore, it is incorrect to only examine whether any given piece of data can be obtained only 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.

24. 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 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).[25] In contrast to the case of RBOCs selling local-loop access, however, individuals who want market data can obtain it from a variety of platforms, some of it even for free. 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

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24. In a comment letter filed after its petition, NetCoalition claims that "[c]ompetition in the listing or execution markets is irrelevant to the consideration of whether there is competition in the market data sector" (NetCoalition Comment, March 6, 2007, at 2). This statement is incorrect because it ignores that market data for a particular platform is an input into the activity of trading and affects the total price of trading on that platform.
25. More recently, cable firms started providing a competitive alternative to RBOC local-loop access in some areas.

data.[26] That is, unlike the case of the local phone company, which was typically the sole supplier of a connection to a resident's phone, no one platform is the sole supplier of market data information.

25. As we have discussed, network effects could potentially lead to a situation in which one platform captures a large share of all trades in one or more stocks or some other financial instrument. If one platform captured a large share of all such trades, its rivals might not be able to offer a useful non-core market data product. However, we do not believe this theoretical possibility is relevant to the issue of whether prices for non-core market information products should be regulated.

- First, the economic evidence presented above indicates that competition among trading platforms has increased recently, and that the NYSE – historically the largest trading platform – has lost share to rival platforms, especially in the last two years or so; NASDAQ also has lost share to rival platforms for stocks listed on its exchange. These outcomes suggests that network effects are perhaps mitigated in the market for equity trading, or are offset by other effects.

- Second, even if, as a result of strong network effects, a single trading platform were able to capture a large – even a "monopoly" – percentage of trading, regulating the price of market data would have little or no effect on the market power of the monopoly platform unless the prices of each of the joint products sold by that platform were regulated. That is, a platform with market power that was required to sell market data at a low price could nonetheless exercise its market power by charging relatively high prices for other products.[27]

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26. 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.
27. A platform could increase prices in a variety of ways. For example, a platform that paid liquidity rebates could effectively increase price by reducing rebates.

- Third, although regulating the price of non-core data products likely would have little or no effect on the market power of the monopoly platform, regulation could nonetheless harm the trading public by imposing additional costs on the platform, which likely would be borne, at least in part, by traders.

III. NASDAQ AND OTHER PLATFORMS FACE COMPETITIVE CONSTRAINTS ON THE PRICES THEY CHARGE FOR NON-CORE MARKET DATA PRODUCTS.

26. Our analysis – and the Commission's – applies to non-core market data products offered by platforms other than NYSE Arca, including NASDAQ. In this section of our statement, we first analyze the introduction of new non-core market data products. We then evaluate two specific non-core products developed by NASDAQ.

A. The Introduction of New Non-Core Market Data Products.

27. As we have discussed, trading platforms would have no economic incentive to develop and sell market information unless the product was expected to be valuable to customers. If an exchange developed an innovative non-core market data product that was valuable to potential customers, the successful introduction of such a new product would be expected to benefit traders and other members of the public and thus enhance consumer welfare.

28. The successful introduction of a new non-core market information product also would be expected to increase competition among platforms because rival platforms would have an economic incentive to respond to the new product to maintain their sales. A competitive response by rival platforms could take more than one form. For example, rival platforms could respond by making the investment necessary to develop a competing market data product to that offered by the innovating platform. Alternatively, rival platforms could respond by reducing other fees (or by doing both). For example, we understand that since NYSE and NASDAQ have

requested authorization to charge fees for their last sale products, BATS Trading has introduced a competing product at no charge.

29. Because a platform's share of sales of a particular type of non-core market information does not indicate whether the platform faces competitive constraints, it is not appropriate to use the "Herfindahl-Hirschman Index" ("HHI") of "market concentration" calculated for one or more types of non-core market information to evaluate the competitive constraints faced by platforms that sell such information.[28] The HHI is a common measure of the degree of concentration in a market, and is widely used as a tool in the competitive evaluation of mergers. Although the HHI can be a useful tool in some contexts, we believe that it is not useful for assessing the issues raised in this matter.

- First, an HHI is based on market shares, and so presupposes that the products in the market being analyzed are substitutes (and that products not included in the share calculation are not as good substitutes as the included products). For this reason, an HHI cannot be used to evaluate whether market data products from different platforms are close or poor substitutes for the non-core data product of a given exchange. Such an evaluation is undertaken in the "market definition" step which assesses the competitive closeness of various products relative to the product(s) at issue.

- Second, HHI analysis can be unreliable when the shares of firms in the market can change rapidly (i.e., competition can be vigorous and intense even in markets in which measured HHI is high if firms can rapidly gain or lose share). As we have discussed, the economic evidence shows that trading can rapidly shift substantially across platforms.

- Third, although increases in HHI may indicate a reduction in competition, procompetitive activity in a market also can lead to higher HHIs. Suppose, for example, that a firm with a large share in a market develops and begins to sell an innovative new version of its product. If that product is successful, the innovative firm's share and market HHI may

28. The HHI for a market is calculated as the sum of squared shares of each firm in the market. For example, if a firm consists of three firms, with shares of 50 percent, 30 percent and 20 percent, the HHI for that market equals 50 squared plus 30 squared plus 20 squared, or 3,800. A monopoly market has an HHI of 10,000 (i.e., 100 squared).

both increase. In this example, however, such an increase in HHI would reflect a procompetitive change in the market.[29] Thus, it is inappropriate to conclude that increases in HHI invariably imply reductions in competition.

B. NASDAQ Non-Core Market Information Products.

1. Depth-of-Book Market Information.

30. NetCoalition claims that:

> The NYSE and Nasdaq are the dominant liquidity centers in the United States for equity securities. There is no effective competition possible between the in-depth quote price data controlled by the NYSE and the in-depth quote price data controlled by Nasdaq. An investor who wants to understand fully what is happening in the largest liquidity centers for a given security (i.e., transparency) and to make the best investment decision needs speedy access to current quote pricing information at each of these dominant exchanges. Having data from one is not a substitute for having data from the other.[30]

That is, NetCoalition claims that depth-of-book data information available from NASDAQ and NYSE Arca are not economic substitutes and thus suggests they are akin to economic "complements," and so the availability of depth-of-book information from other trading platforms does not constrain NYSE Arca's or NASDAQ's pricing of depth-of-book information.

31. Technically, two products or services are economic complements if an increase in the price of one of them reduces the demand for the other (for example, tennis balls and tennis rackets are complements). This is because the value of one product to the consumer is higher if the consumer also has the other. In the instant case, NetCoalition has not demonstrated that the value of having information from NASDAQ is higher if the trader also has the relevant information from NYSE Arca (and *vice versa*). This perhaps can be true for some

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29. Suppose a market consists of two firms. Firm A sells 60 units, and Firm B sells 40 units. The HHI in this market equals 5,200. Now suppose that Firm A develops an innovative new product so that its sales increase from 60 to 90, and firm B's sales fall from 40 to 30. Note that market output increases from 100 to 120, and Firm A's share increases from 60 percent to 75 percent. As a result, the market HHI rises to 6,250. That is, a procompetitive increase in output is associated with an increase in HHI.
30. NetCoalition Comment, September 14, 2007, at 10.

traders but not necessarily for all, or even the majority of, traders. Instead, some traders may purchase both because the two products deliver somewhat different information. In general, the fact that a company purchases two or more differentiated products does not show that those products are complements. For example, a firm may advertise its product on television and on the Internet to reach different audiences, but it does not follow that television and Internet advertising are economic complements. Indeed, both advertising modes compete with each other for advertising dollars.

32. Even if some investors do not view depth-of-book information from different platforms as substitutes – and thus would have a relatively "inelastic" demand for a platform's depth-of-book information – we understand that many "professional" traders, however, view depth-of-book information from NYSE Arca and NASDAQ as reasonable substitutes because all depth-of-book products are effectively proxies for liquidity that would be available should the current NBBO change. These types of traders would be expected to switch to a rival's non-core product in response to a price increase by NYSE Arca or NASDAQ for depth-of-book information; thus, these traders can be expected to have a relatively elastic demand for non-core information. The Commission's proscription of "discriminatory" fees for market data would constrain any attempt by NYSE Arca or NASDAQ to price discriminate between different types of customers (i.e., charge higher prices to customers with relatively inelastic demand for non-core data). Currently, NASDAQ charges the same fees for its depth-of-book product to all "professional" traders. We understand that the Commission would have to approve any change in the current schedule of NASDAQ fees for this product.

2. NASDAQ NLS Product.

33. We understand that NASDAQ has proposed a fee structure for its Last Sale ("NLS") product, which consists of:

> Real-time last sale data from the integrated NASDAQ system and the FINRA/NASDAQ Trade Reporting Facility (TRF) for the full range of NASDAQ- and other exchange-listed issues[31]

The information contained in the NLS product (i.e., last sale data) is provided to a data consolidator (i.e., SIP) and is a subset of the information that, pursuant to regulation, must be provided to investors.

34. "Traditional" market vendors (e.g., brokerages) pay SIPs for consolidated last sale price information on a per user or per query basis. NASDAQ's pricing proposal also allows such vendors to pay for the NLS product on a per user or per query basis. In addition, however, the NASDAQ proposal includes other pricing options that are expected to be attractive to other types of firms, such as public Internet sites. In particular, the NASDAQ proposal also allows customers to pay for NLS data on a per Internet unique visitor or per cable television household basis.[32] Furthermore, NASDAQ plans to offer customers the option of "capping" total monthly user fees.[33]

35. Because consolidated information available from a SIP – which includes the same information provided by NASDAQ in its NLS product – is available on a per user or per query basis, NASDAQ's per user and per query prices for its NLS product are constrained by the price charged for consolidated information. Indeed, NASDAQ's proposed per user and per query fees for its NLS product are significantly lower than the fees for the comparable consolidated data that includes the NASDAQ information (and information from other trading

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31. See http://www.nasdaqtrader.com/trader/mds/nasdaqfeeds/feeds.stm.
32. The proposed fees also are "tiered" within each type of charging scheme. For example, for customers choosing to pay per query, rates for 10,000,001 to 20,000,000 queries per month will be lower than for 1 to 10,000,000 queries per month. See "NLS Fact Sheet" link on http://www.nasdaqtrader.com/trader/mds/nasdaqfeeds/NASDAQLastSale.stm.
33. NASDAQ proposes to cap NLS fees at $100,000 per month for NASDAQ-listed shares, and $50,000 per month for NYSE-/Amex-listed shares. See "NLS Fact Sheet" link on http://www.nasdaqtrader.com/trader/mds/nasdaqfeeds/NASDAQLastSale.stm.

platforms).[34]

36. Currently, consolidated real-time last sale information is not available for "broadcast" (e.g., over a cable network, or to any visitor to a web site).[35] Thus, the NASDAQ's proposal to sell its NLS product on a per unique visitor or per cable household basis will make additional information available to the trading public. As such, the proposed offering from NASDAQ expands the range of informational products available to the investing public and is thus welfare-enhancing.

37. Although consolidated real-time last sale information is not currently available on a per unique visitor or per cable household basis, the per unique visitor and per cable household prices proposed by NASDAQ for its NLS product nevertheless are (or will be) constrained by a variety of potential alternatives.

- Delayed consolidated last sales information (e.g., delayed by twenty minutes) is currently available at no cost, and is provided by many Internet web sites (including Google and Yahoo!).
- Real-time last sale information is available from other trading platforms (e.g., BATS Trading).
- SIPs could begin to offer real-time last sale information on a per unique visitor or per cable household basis.

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34. See http://www.nasdaqtrader.com/trader/mds/nasdaqfeeds/NASDAQLastSale.stm ("For traditional market data vendors, NASDAQ plans to offer per user and query-based fees at a significant discount to Level 1 fees").

35. An Internet site can purchase consolidated real-time last sale data to provide visitors who maintain an account with that site (i.e., and pay the SIP for that information on a per user basis). For example, if an individual creates a Yahoo! ID, that individual can be tracked as a "user" and Yahoo! could pay fees for consolidated last sale data on a per user basis, and so provide consolidated last sale data to that user. However, Yahoo! is not able to provide that information to an individual who, for example, looks up stock price information from the Yahoo! Finance web site (without creating a Yahoo! ID).

IV. CONCLUSIONS.

38. We agree with the Commission that significant competitive forces constrain the prices charged for non-core products by NYSE Arca. At least two types of competitive forces constrain the prices that NYSE Arca and other 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.

39. Our analysis – and the Commission's – applies to non-core market data products offered by platforms other than NYSE Arca, including NASDAQ. Trading platforms would have no economic incentive to develop and sell market information unless it was valuable to customers. If an exchange developed an innovative non-core market data product that was valuable to potential customers, the successful introduction of such a new product would be expected to benefit the public.

40. Finally, we find that NASDAQ faces competitive constraints for its "depth-of-book" and "last sale" non-core data products.

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Appendix A

March 2008

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EDUCATION

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1967-1968	McGill University, Montreal, Canada Departments of Economics and Political Science
1963-1966	Warsaw University, Warsaw, Poland Department of Political Economy. B.A. (equiv.), 1966.

HONORS

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

PROFESSIONAL EXPERIENCE

June 1982 - present	Professor of Economics Department of Economics, New York University, New York, New York
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Summer 1996- 2000	Lecturer International Program on Privatization and Reform Institute for International Development, Harvard University, Cambridge, Massachusetts
Aug. 1991 - Oct. 1992	Deputy Assistant Attorney General for Economics Antitrust Division United States Department of Justice, Washington, D.C.
Sept. 1989 - July 1990	Visiting Professor of Economics School of Management, Yale University, New Haven, Connecticut
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Mar. 1984 - June 1988	Visiting Professor of Economics Universita Commerciale "Luigi Bocconi", Milan, Italy
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Feb. 1982 - June 1982	Acting Director of Graduate Studies Department of Economics, New York University
June 1978 - June 1982	Associate Professor of Economics Department of Economics, New York University
Sept. 1979 - May 1990	Lecturer in Economics and Antitrust New York University Law School
Sept. 1977 - June 1978	Member, Technical Staff Bell Laboratories, Holmdel, New Jersey
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Sept. 1973 - Aug. 1977	Assistant Professor of Economics New York University
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Summer 1976	Visiting Researcher Bell Laboratories, Holmdel, New Jersey

OTHER PROFESSIONAL ACTIVITIES

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
various	Testimony at Hearings of the Federal Trade Commission
1994 - 1996	Senior Affiliate Law and Economics Consulting Group, Emoryville, California
1994 - 2000	Senior Affiliate Consultants in Industry Economics, LLC, Princeton, New Jersey
1993 - 1994	Director Consultants in Industry Economics, Inc., Princeton, New Jersey
1992 - 1993	Vice-Chair (*pro tempore*) Economics Committee, American Bar Association, Chicago, Illinois
1990 - 1991 1992 - 1995	Senior Consultant 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

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

MEMBERSHIPS IN PROFESSIONAL SOCIETIES

American Economic Association
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PUBLICATIONS

A. Journal Articles

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C. Book Chapters

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

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

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

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

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

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

Appendix B

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EDUCATION

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

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

B.A., SOUTHWESTERN AT MEMPHIS, 1981

EMPLOYMENT

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

UNIVERSITY OF CHICAGO, (1984, 1986): Lecturer

GOVERNORS STATE UNIVERSITY, (1986): Community Professor

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

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).

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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.

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Direct Testimony of Gustavo E. Bamberger in Re: Consideration of the Provision of In-Region InterLATA Services By BellSouth Telecommunications, Inc. Pursuant to Section 271 of the Telecommunications Act of 1996: Before the Mississippi Public Service Commission, Docket No. 97-AD-0321, June 15, 2001.

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

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

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

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

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

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

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

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Statement, Report and Deposition of Gustavo Bamberger in Re: <u>American Optical Corporation, Warner-Lambert Company, LLC, and W-L LLC v. Admiral Insurance Company, et al</u>.: In the Superior Court of New Jersey Law Division: Union County, Docket No. UNN-L-2505-01, December 13, 2007 (Statement); December 26, 2007 (Report); and February 12, 2008 (Deposition).

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