SIFMA
Securities Industry and Financial Markets Association

November 17, 2008

Via Electronic Mail (rule-comments@sec.gov)

Ms. Florence E. Harmon
Acting Secretary
U.S. Securities and Exchange Commission
100 F Street, N.E.
Washington, D.C. 20549-1090

Re: Proposed Order Approving Proposal by NYSE Arca, Inc. to Establish Fees for Certain Market Data and Request for Comment (SEC Release No. 34-57917) ("Proposed Order")

Dear Ms. Harmon:

The Securities Industry and Financial Markets Association[1] ("SIFMA") appreciates the opportunity to respond further to the Commission's invitation for comment in the above-captioned release. In the release, the Commission published for comment a proposed order (the "Proposed Order") that would approve a proposal by NYSE Arca, Inc. ("NYSE Arca") to establish fees for certain market data that NYSE Arca had previously made available without charge (the "Proposed Rule").

On September 10, 2008, Nasdaq OMX ("Nasdaq") submitted a rebuttal ("Nasdaq Rebuttal") to the detailed economic empirical study and accompanying letter that SIFMA furnished to the Commission on July 10, 2008 ("SIFMA Economic Study" and "SIFMA July 10 Letter").[2] Nasdaq purports to identify nine "flaws" in the SIFMA Economic Study. Each

---

[1] The Securities Industry and Financial Markets Association brings together the shared interests of more than 650 securities firms, banks and asset managers. SIFMA's mission is to promote policies and practices to expand and perfect markets, foster the development of new products and services, and create efficiencies for member firms, while preserving and enhancing the public's trust and confidence in the markets and the industry. SIFMA works to represent its members' interests locally and globally. It has offices in New York, Washington, D.C., and London, and its associated firm, the Asia Securities Industry and Financial Markets Association, is based in Hong Kong. (More information about SIFMA is available at: www.sifma.org.)

[2] An Economic Study of Securities Market Data Pricing by the Exchanges, Prepared by Securities Litigation & Consulting Group, Inc., July 10, 2008. Letter from Ira D. Hammerman, Senior Managing Director and General Counsel, Securities Industry and Financial Markets Association, July 10, 2008. The study and letter are available at: http://www.sifma.org/legislative/financial_services/pdf/SLCG-

of Nasdaq's criticisms is without merit, as detailed in this letter and in a supplemental economic study prepared by the Securities Litigation & Consulting Group, Inc. (see Attachment). The SIFMA Economic Study and the SIFMA July 10 Letter provide qualitative and quantitative analysis showing that Nasdaq and NYSE/NYSE Arca each has the ability to exert monopoly pricing power and that they are using such power to charge fees that are not determined by competitive forces. Neither the Nasdaq Rebuttal, nor a separate statement by two economists that Nasdaq had submitted on August 1, 2008, provides empirical data or arguments supported by evidence or law to counter the SIFMA Economic Study's findings.

Neither Nasdaq's analysis, nor the factual record and the Proposed Order, provide supporting empirical data and cost data concerning market concentration and barriers to entry. That data is essential if the Commission is to find that the market for liquidity data such as the Arca Book product is competitive and constrained by market forces. Nasdaq also made a fundamental error in treating the NYSE Euronext and NYSE Arca exchanges as independent entities instead of combining their trading volume and liquidity for competitive analysis purposes. In *Copperweld Corporation v. Independence Tube Corporation*, 467 U.S. 752 (1984), the Supreme Court held that a parent corporation and a wholly owned subsidiary must be viewed as a single economic unit because the parent and subsidiary always have a "unity of purpose or a common design."

Nasdaq further erred by relying on the interchangeability of use or the cross-elasticity of demand, neither of which in fact exists between the depth-of-book products of the dominant exchanges for their own listed securities and the depth-of-book products of other trading venues, resulting in an overly broad and incorrect definition of the relevant market. *Times-Picayune Publishing Co. et al. v. United States,* 345 U.S. 594 (1953).

We have discussed in previous submissions how other independent agencies empirically test to determine whether a market is competitive by including the affiliates of regulated entities within the scope of review. For example, the Federal Energy Regulatory Commission ("FERC"), in determining the reasonableness of market-based rates by firms within its jurisdiction, utilizes the Herfindahl-Hirschman Index ("Herfindahl Index" or "HHI") measure of market concentration, along with other indicia of the competitive state of the relevant market. FERC also requires that the capacity of a market-based rate applicant's affiliates be included in the market share calculated for the applicant.[3] The application of these and other traditional economic tests set forth during this lengthy market data proceeding to NYSE and NYSE Arca, and thus their treatment as a single enterprise, is similarly warranted.

Market-Data-Study.pdf and http://www.sifma.org/assets/0/232/234/274/a740e2f1-1619-4f0c-8c49-9a438e0fd3e1.pdf.

[3] See United States of America Federal Energy Regulatory Commission, 18 CFR Part 284 (Docket Nos. RM05-23-000, AD04-11000; Order No. 678), Rate Regulation of Certain Natural Gas Storage Facilities (Issued June 19, 2006) at paragraphs 55, 56, 68 and 69, available at: http://www.ferc.gov/whats-new/comm-meet/061506/C-2.pdf.

We also call to the Commission's attention an important public admission of NYSE Euronext, the parent company of NYSE and NYSE Arca. Early in the summer, Nasdaq claimed to have significantly increased its share of trading in NYSE-listed stocks. NYSE Euronext ridiculed that assertion, arguing that Nasdaq's treatment of NYSE and NYSE Arca as separate venues was incorrect.[4] NYSE Euronext stated that, in the United States, "*our dual-market structure of the New York Stock Exchange (NYSE) and NYSE ARCA makes us the dominant source of liquidity in NYSE-listed securities, especially in thinly traded issues…We remain the leader in trading NYSE listed securities in the U.S. by virtue of the combined trading on NYSE and NYSE Arca.*" (Emphasis added.) In admitting that fact, NYSE Euronext corroborated the findings of the SIFMA Economic Study and refuted key assumptions in the Proposed Order.

NYSE Euronext also observed that, in June, 2008, it traded more volume than Nasdaq in 99.4% of NYSE-listed stocks. NYSE Euronext's observation that its level of dominance is even higher for lightly traded stocks than for liquid stocks suggests that the SIFMA economic analysis, which focused on the high levels of concentration in liquid stocks, understates NYSE Euronext's market power.

As mentioned, the attached, supplemental economic study addresses certain of Nasdaq's criticisms, and the remainder of this letter will address Nasdaq's other significant, erroneous conclusions.

A. SIFMA Economic Study

Market power is the "the ability to profitably maintain prices above competitive levels for a significant period of time."[5] The first step in the evaluation of market power is the specification of a relevant market. A relevant market is a group of products and an area over which a hypothetical monopolist would have significant market power.

The SIFMA Economic Study sets forth the analytical framework for defining the relevant market in terms of individual securities listed on each of the dominant exchanges. However, even if defined in terms of all listed securities on each exchange, the quantitative market concentration data still point to significant market power of Nasdaq and of the "dual market structure" of NYSE and NYSE Arca.

Nasdaq claims that the SIFMA Economic Study's analysis of competition for order flow is flawed because it combined the market shares of exchanges with the market shares of Trade Reporting Facilities ("TRFs"). Nasdaq then says that the SIFMA Economic Study "artificially inflates the market share and HHI statistics for NASDAQ-listed stocks by

---

[4] NYSE Euronext statement available at: http://dealbreaker.com/images/thumbs/NYSE_Response_Letter1.pdf

[5] U.S. Department of Justice and Federal Trade Commission Horizontal Merger Guidelines ("Horizontal Merger Guidelines"), Section 0.1 (April 2, 1992; revised April 8, 1997).

incorrectly combining reported volume of the FINRA TRF with that of the NASDAQ exchange."

Nasdaq's criticism of the methodology used in the SIFMA Economic Study for determining market concentration is itself incorrect, though in the final analysis irrelevant. The Securities Litigation & Consulting Group included the Nasdaq TRF in calculating Nasdaq's market share in tables 1, 3, 4 and 5 *in reliance on Nasdaq's Annual Report on Form 10K*. SIFMA calculated Nasdaq's market share in exactly the same way as Nasdaq does. In any event, even when omitting TRF data from calculations of Nasdaq or NYSE exchange trade volume, the Herfindahl Index analysis of trading activity for Nasdaq-listed and NYSE-listed securities would still yield a number substantially above the Department of Justice's threshold of 1800 for determining that the relevant market is highly concentrated.[6]

Of course, the data in table 6 of the original SIFMA Economic Study did separate TRF volumes from Nasdaq and NYSE volume. The Herfindahl Index measure still came to 2,687.[7] Moreover, based on share of trading data in an academic study cited in the SIFMA Economic Study, the Herfindahl Index measure was 2,961 for NYSE-listed securities and 3,366 for Nasdaq-listed securities.[8] Those numbers denote an abnormally high degree of market concentration at levels materially above the threshold for concentrated markets set forth by the U.S. Department of Justice and reflect the dominant market power of the major players, NYSE/NYSE Arca and Nasdaq.

B. High Barriers to Entry

Not only is it apparent that Nasdaq fails to effectively rebut these quantitative findings, even by its own incorrect standards, Nasdaq also downplays the significance of high levels of market concentration as a contra indicator of a competitive market. Without clearly defining the relevant market other than to conflate trading, displayed liquidity and dark pools for all trading venues into one inchoate mass, Nasdaq claims that it faces "robust and successful competition" due to ease of entry. Nasdaq cites the Department of Justice's approval several years ago of the mergers between Nasdaq and INET and between NYSE and Archipelago Holdings, as well as the emergence of BATS Trading, DirectEdge and other trading venues, in support of that claim.

Nasdaq's own reported market share in Nasdaq-listed securities from 2002 to 2007 belies any optimism the Department of Justice may have had regarding future ease of entry when it approved these mergers. The data reflected in Figure 1 of the SIFMA Economic Study, which was sourced from Nasdaq's annual reports on Form 10K, show the significant rise in Nasdaq's market share after Nasdaq's acquisition of INET. BATS' capture of 7.9% of

---

6 An Economic Study of Securities Market Data Pricing by the Exchanges: Supplemental Analysis, Prepared by Securities Litigation & Consulting Group, Inc., November 17, 2008.

7 SIFMA Economic Study, p. 15.

8 SIFMA Economic Study, p. 15.

trading in Nasdaq-listed stocks hardly slowed Nasdaq's continuing dominance in its own listed securities. The same can be said with respect to BATS' capture of 5.1% of trading in NYSE-listed securities.[9] Of course the pattern of purchasing potential competitors is well established in this space. There is no assurance that, were the Commission to approve the Proposed Order, Nasdaq or NYSE/NYSE Arca would not continue this pattern by acquiring BATS. Indeed, it is worth pausing to note that most of the regional stock exchanges which the DOJ believed could, with investments from major investment firms, become competitors to NYSE or Nasdaq have instead been purchased by NYSE (the American Stock Exchange) or Nasdaq (the Philadelphia Stock Exchange and the Boston Stock Exchange).

Market entry is hardy "routine," as Nasdaq claimed in the Nasdaq Rebuttal. If entry were as easy as Nasdaq suggests, the prices charged by Nasdaq and NYSE for their depth-of-book products displaying their liquidity for their own listed securities very likely would have come down significantly in response to the much lower-priced offerings of other market entrants, not to mention BATS' free product. In fact, the opposite has occurred. Nasdaq has effectively increased its monthly professional subscriber fees per display device for its TotalView product from $70 to $76 through a tying arrangement in which it compels TotalView users to also pay for OpenView, regardless of whether the user wants the OpenView product. Nasdaq has maintained this price increase for its premier depth-of-book product for more than a year, which would not be sustainable in a truly competitive market.

Nasdaq does not present any empirical evidence to rebut the existence of high barriers to entry in the markets for Nasdaq-listed and NYSE-listed securities, which are the direct result of the presence of strong network externalities of markets for liquidity. Nasdaq's self-serving assertions cannot overcome the data showing enormous liquidity remaining on the Nasdaq and NYSE books, which continues to be attracted to these exchanges for their respective listed securities.[10]

Indeed, the Nasdaq Rebuttal actually makes the case for a finding of high barriers to entry. It asserts that the "business of operating a market is typified by low marginal cost for additional volume and markets operating with significant excess capacity."[11] This very circumstance is what the Department of Justice characterized in its Horizontal Merger Guidelines as one of the factors that "reduce the sales opportunities available to entrants."[12] The Department described this entry barrier as follows: "any anticipated sales expansion by incumbents in reaction to entry, either generalized or targeted at customers

---

9 Proposed Order, pp. 47-48.
10 SIFMA Economic Study, Table 7, Panel D at p. 46.
11 Nasdaq Rebuttal at p. 4.
12 Horizontal Merger Guidelines, Section 3.3(c).

approached by the entrant, that utilizes prior irreversible investments in excess production capacity."[13]

C. No Substitute for Sole Source Data

The Nasdaq Rebuttal asserts that the SIFMA Economic Study "misunderstands in several ways the concept of substitution." To the contrary, it is Nasdaq that fails to understand the limits of substitutability as a check against market power.

The Horizontal Merger Guidelines explain that in "some markets the products are differentiated, so that products sold by different participants in the market are not perfect substitutes for one another. Moreover, different products in the market may vary in the degree of their substitutability for one another. In this setting, competition may be non-uniform (i.e., localized), so that individual sellers compete more directly with those rivals selling closer substitutes."[14]

The Supreme Court made a similar observation in a tying case:

> For every product, substitutes exist. But a relevant market cannot meaningfully encompass that infinite range. The circle must be drawn narrowly to exclude any other product to which, within reasonable variations in price, only a limited number of buyers will turn; in technical terms, products whose 'cross-elasticities of demand' are small.[15]

This discussion of the limits of product substitutability or interchangeability as a check against market power applies directly to the various depth-of-book products available in the marketplace. The greater the difference in liquidity for a given security among the various exchanges and other venues where that security is traded and where the quotes posted on that venue are displayed, the less substitutability exists among the trading venues' respective depth-of-book products. Thus, to sophisticated investors, the smaller amount of liquidity that BATS' book would reflect for a dominant exchange's listed securities is no substitute at all for Nasdaq's and NYSE's extensive amount of depth-of-book data about their listed securities in which they have the vast preponderance of liquidity.

There has been an increase in the number of customers for Nasdaq's TotalView product since BATS arrived on the scene with its free market data product. The Proposed Order would err as a matter of law in not defining the relevant market narrowly enough to exclude products for which, even within a very large variation in price, the cross-elasticities of demand are very small.

---

[13] Horizontal Merger Guidelines, Section 3.3(c).

[14] Horizontal Merger Guidelines, Section 2.21.

[15] *Times-Picayune Publishing Co. et al. v. United States, supra*, at n. 31.

Nasdaq cannot plausibly argue that "un-displayed" liquidity in dark pools can possibly be a substitute for displayed depth-of-book liquidity when the only way to know whether a dark pool has liquidity is to route an order to the pool. This in turn requires capital commitment — if you hit a quote, you buy or sell stock. Purchasing a market data product requires no such commitment.

Finally, we note that, regardless of concentration, market participants should not be compelled to pay prices for depth-of-book data that are inflated by the fact that an exchange is the sole source of that data. For example, if an exchange has a lock on 30% of the depth-of-book data for a security, there is no adequate substitute for that 30%. A market participant should not be compelled to pay an artificially inflated price to such an exchange or otherwise trade without visibility into a portion of the book that could be key at any given moment.

D. Differences in U.S. and European Law

European law makes non-exchange consortiums in Europe potentially viable as a matter of law and economics. U.S. law makes comparable developments in the United States extremely improbable. Nasdaq states in its Nasdaq Rebuttal that "Project BOAT, a consortium of financial institutions that operates a cooperative trade collection facility, would expand from Europe to the U.S. if U.S. market data was sufficiently costly to make a U.S. venture profitable."[16] Nasdaq argues in its Nasdaq Rebuttal that market data fees are too low in the United States. To solve this "problem," Nasdaq argues that the Commission should liberate the exchanges to charge whatever they want for sole source data. Nasdaq would then raise fees dramatically. According to Nasdaq, these increased fees would provide the incentive for a consortium of broker-dealers to then create a competing product.

Nasdaq argues that this is effectively what has happened in Europe with the creation of the BOAT broker-dealer consortium. Nine leading investment banks announced the formation of BOAT in September 2006, with its effective launch set for November 1, 2007. According to Nasdaq, the BOAT market data platform was launched in response to skyrocketing exchange market data fees. This is not accurate. To the contrary, an accurate account of the developments that prompted the creation of BOAT in Europe demonstrates instead the material obstacles to broker-dealer consortiums that exist in the United States.

Specifically, the European Union Parliament enacted the Market in Financial Instruments Directive ("MiFID") in March 2004 with a November 1, 2007 implementation date.[17] The goal of MiFID is to create a single market in which to conduct investment business across all Member States of the European Union, applying to all equity trades, whether on- or off-

---

16 Nasdaq Rebuttal, p. 6.

17 *See* "Markets in financial instruments (MiFID) and investment services," available at: http://europa.eu/scadplus/leg/en/lvb/l24036e.htm.

exchange. Prior to MiFID, several Member States had "concentration rules," which effectively required that trades in an exchange-listed stock take place on the exchange. These rules "concentrated" trading activity, and the resultant market data, at the exchange. Even in Member States without concentration rules, such as the United Kingdom, major exchanges often required exchange members to report OTC equity trades in exchange-listed securities to the exchange, effectively making the exchange the sole source for market data in exchange-listed securities. MiFID not only abolished the concentration rules for trading of equity securities, but also superseded rules requiring that market data generated from those trades be reported to an exchange.[18] Meanwhile, in the major non-concentration rule jurisdiction, the London Stock Exchange adopted rules in connection with MiFID implementation that significantly limited the previous reporting requirement.[19]

In short, MiFID sought to promote competitive broker-dealer consortiums by making them economically and legally feasible. The authors of MiFID understood that competition would not occur if the insurgent competitors were under government mandate to provide critical inputs to the incumbent exchanges. Ending the concentration rules and encouraging the ending of the requirement that OTC data be reported to exchanges were necessary to create the possibility of competition.

The governments understood this and, as reflected in the trade press, so did the market participants. In its February 2007 Commission Staff Working Document, European Commission staff applauded BOAT, observing:

> Market participants are innovating, taking advantage of the possibilities offered by developments in EU financial regulations. For instance, the announcement in November that a group of 7 international investment banks would establish a joint equity platform, and other pan-European projects such as Equiduct and Project Boat *are a direct response to the opening up of competition as facilitated under the Markets in Financial Instruments Directive (MiFID), which will enter into force in November 2007*. (Emphasis added; footnote omitted.)[20]

The Independent (UK) of August 15, 2006 described the regulatory change of MiFID that prompted Project BOAT by stating, "at present, all trades must be reported to a recognized exchange whether or not its system was used for the transaction…under the directive, brokers will be able to report trades to any registered entity, opening

---

18 Karel Lannoo, *Financial Market Data and MIFID*, ECMI Policy Brief, No. 6/March 2007, available at: http://www.eurocapitalmarkets.org/?q=node/285.

19 Rules of the London Stock Exchange, Rule 2000, *Order Book Trading Rules*, Rule 3000.

20 Commission of the European Communities, Commission Staff Working Document, *Single Market in Financial Services Progress Report 2006* Brussels, February 21, 2007, SEC (2007) 263, available at: http://ec.europa.eu/internal_market/finances/progress-report/index_en.htm.

up this area to the trading data they then provide."[21] "The Lawyer" describes the formation of BOAT by noting that "the removal of local protectionist measures, such as the abolition of the concentration rule favoring local stock exchanges, gives investment banks the perfect opportunity to extend their businesses."[22]

The fact that BOAT was launched on November 1, 2007 — the same date that MiFID was implemented — is not a coincidence. BOAT is a consequence of MiFID's ending the requirement that market participants must provide market data to the exchanges.[23] Of note is the fact that the London Stock Exchange — Europe's largest pool of liquidity in equity securities — has not reduced its prices for its depth-of-book market data product in response to Project BOAT or any other entrant. Its 2007-2008 charge for UK level 2 data was £105 per month per device for members and £157.5 for non-members. These prices remained the same for 2008-2009, despite the launch of Project BOAT in the interim and the entry of Chi-X Europe which has given away its real-time market data for free. Any competitive pressure on the London Stock Exchange prices has shown up only in prices for trading and trade reporting.

In conclusion, the launch of BOAT on the date of MiFID's implementation occurred because of the decision by the European Union — understood by market participants and all regulators — to expressly encourage competition by ending the requirement that market participants provide exchanges with market data. At that point, broker-dealer consortiums became feasible. In the United States, no action has been seriously contemplated to liberate market participants of this requirement to provide inputs to the exchanges. That is among the reasons why the very same entities that have launched consortiums in Europe effectively cannot do so in the United States. Liberating sole source providers of data to increase their fees is not going to result in competition where potential competitors are still required to provide inputs for free to the exchanges; it is simply going to result in higher fees.

E. Lack of Transparency

Nasdaq argues that market data pricing is a small component of the total cost of market data consumption, but does not disclose any information regarding how it calculates its own incremental cost of production and distribution of market data relative to its total cost of operating an exchange. Nasdaq argues that SIFMA errs in "focusing exclusively on exchange data which is a relatively small component of the total cost of market data

---

21 Independent (UK), August 15, 2006, *Investment Banks Team Up Over Plan to Bypass LSE*.

22 Lawyer, Centaur Communications Ltd., November 27, 2006, *Miffed with Mifid*, available at: http://www.thelawyer.com/cgi-bin/item.cgi?ap=1&id=123228.

23 According to an LSE spokesperson, a volume discount has been available to active traders since 2004. This would certainly seem to argue that a broker-dealer consortium would have been more likely to have been created prior to 2004 if high fees — as opposed to the changes wrought by MiFID — were the causal factors. "Broker-Exchange Battle Goes Global," Security Industry News, September 18, 2006.

consumption." The reason why SIFMA focuses on exchange data is self-evident. Other market data costs, including bandwidth, data feed handlers, ongoing technical support, and administrative expenses, are available from multiple providers *in a competitive marketplace*. If a broker-dealer thinks it is being overcharged or facing unfair terms and conditions regarding technical support or administrative expenses, it can go to a competing provider.

In contrast, Nasdaq is the sole source of the Nasdaq market data book. Nasdaq offers no empirical evidence for its assertion that eliminating the INET data feed has "reduced the cost of market data for many consumers." By Nasdaq's reasoning, the purchase of all other liquidity centers by NYSE and Nasdaq would yield savings from reduced administrative costs. The problem, of course, is the second half of that equation: the resulting increased market power by sole source providers of data. The administrative convenience of a duopoly generally does not mean reduced costs or increased efficiency.

While Nasdaq has continued to demand granular cost accounting under the Securities Acts Amendments of 1975 when it pays a fee, it has not disclosed any information regarding how it calculates its own incremental cost of production and distribution of market data relative to its total cost of operating an exchange. It also has not explained why the same statutory terms mean very different things depending on whether Nasdaq is paying or charging a fee.

F. The Importance of Depth of Book Data

The Proposed Order's discussion of best execution duties does not adequately address the fact that, for execution quality and competitive reasons, investment professionals and investors are not always free to ignore depth-of-book data. Nasdaq argues — contrary to its prior assertions — that the Commission could not make the "point clearer" that best execution duties do not extend to depth-of-book data. We disagree with Nasdaq's assertions and note the counter arguments we made in this regard in the SIFMA July 10 Letter.[24]

G. Excessive Prices for All Still Constitute Excessive Prices

We note that the Markets division of Thomson Reuters ("MTR"), which is a disseminator of market data, has commented favorably on the Commission's approach and analysis in the Proposed Order.[25] However, MTR offers no legal analysis or economic support for its views, and expresses the surprising postulate that "so long as all market data vendors, internet service providers, and other market participants have access to the [market data] product on equal terms, Thomson Reuters Markets believes that the Commission can safely

---

[24] SIFMA July 10 Letter at 19-20.

[25] Letter from Christopher Perry, Thomson Reuters (July 8, 2008).

conclude that competition forces shape the terms and pricing of the product."[26] We note that a monopolist has the ability to set terms and prices for its products, and may choose to charge all users the same excessive price. Therefore, the situation that MTR describes can equally reflect a complete absence of competition.

H. Solutions

We caution the Commission against viewing the market data issue as having only two possible solutions: (1) approval of market data fees based upon a presumption that a proposed fee complies with statutory requirements by virtue of an unsupported assertion that market forces are in play, or (2) a fee may only be assessed through a strict cost-based rate making process. We do not believe that these are the only choices available that would meet the requirements of the Securities Exchange Act of 1934 ("Exchange Act") for reviewing market data rule filings. Indeed, numerous proposals have been offered by commenters during this lengthy market data proceeding that discuss alternatives that comport with the Exchange Act.

The Exchange Act is clear that the promotion of competition is not the sole or determinative consideration when the Commission reviews a fee proposal by an exchange.[27] As stated in SIFMA's July 10 Letter, "the Commission cannot rely on competition to assure the fairness or reasonableness of exchange data rates without having cost data to validate the assumption that competition is having that effect."[28] As we have suggested, a set of questions could be established to be addressed by an exchange when proposing a market data fee that would demonstrate the relationship of the fee to costs incurred by the exchange in collecting, consolidating, and disseminating the data, as well as explore other pertinent issues within the Commission's statutory mandate.[29] In order to develop expertise and expedite the review process, the Commission may wish to consider designating a specialized team of Staff members, which might include Staff from the Division of Trading and Markets and the Office of Economic Analysis, to assess the SRO's responses to the Commission's questions. The Staff would publish the proposed rule change pursuant to delegated authority.[30] However, the decision on whether to approve the rule change would be made by the Commission itself. In a situation where

---

26 Id. at 3.

27 *See* Exchange Act Section 3(f). As the Commission has also noted: "[T]he level of charges, or the terms at which facilities and services are offered by a registered securities information processor, can constitute a prohibition or limitation on access to those facilities and services" inconsistent with the requirements of Exchange Act Section 11A(b)(5). *Matter of the Application of Nasdaq Stock Market, LLC for Review of Action Taken by the Consolidated Tape Association*, SEC Release No. 34-55909 (June 14, 2007), at 11 ("Nasdaq/CTA Order").

28 SIFMA July 10 Letter at 21-22.

29 Cf. Nasdaq/CTA Order at 11-13. If the rule filing did not address the required questions adequately, it would not be accepted as properly filed. *See* SEC Release 34-58092 (July 3, 2008), 73 Fed. Reg. 40144, 40150 ("Streamlining Release").

30 Except in unusual circumstances, a rule filing must be published within 15 business days of the date of filing with the Commission. *See* Streamlining Release at 40150.

commenters raised substantial issues with respect to the adequacy of the SRO's cost or competition analysis, the Commission could refer the matter to an Administrative Law Judge to conduct a hearing and issue an initial decision.[31]

I. Conclusion

As discussed above, there are no market forces in play that the Commission could rely upon to assure the fairness or reasonableness of exchange market data fees. The Proposed Order does not correctly analyze the legal issues involved in the proposed NYSE Arca rulemaking. If the Commission were to issue the Proposed Order, we maintain that its action would be reversible by a United States Court of Appeals as a matter of law.

* * *

We would welcome an opportunity to discuss our views with the Commission and the Staff. I can be reached in this regard at 202-962-7300.

Respectfully submitted,

Ira D. Hammerman
Senior Managing Director and General Counsel

Attachment: An Economic Study of Securities Market Data Pricing by the Exchanges: Supplemental Analysis, Prepared by Securities Litigation & Consulting Group, Inc., November 17, 2008.

cc: The Hon. Christopher Cox, Chairman
The Hon. Kathleen L. Casey, Commissioner
The Hon. Elisse B. Walter, Commissioner
The Hon. Luis A. Aguilar, Commissioner
The Hon. Troy A. Paredes, Commissioner
Dr. Erik R. Sirri, Director, Division of Trading and Markets
Robert L.D. Colby, Esq., Deputy Director, Division of Trading and Markets
Daniel A. Gallagher, Esq., Deputy Director, Division of Trading and Markets
David Shillman, Esq., Associate Director, Division of Trading and Markets
Elizabeth K. King, Esq., Associate Director, Division of Trading and Markets
Brian G. Cartwright, Esq., General Counsel

---

[31] *See* Matter of the Application of Nasdaq Stock Market, LLC for Review of Action Taken by the Consolidated Tape Association, SEC Release 34-57741 (April 30, 2008). *See also* Admin. Proc. File No. 3-12384, Initial Decision Release No. 358 (Oct. 1, 2008); SEC Release No. 34-58912 (Nov. 7, 2008) ("Finality Order").

An Economic Study of Securities Market Data Pricing by the Exchanges: Supplemental Analysis

November 17, 2008

Prepared by Securities Litigation & Consulting Group, Inc. (SLCG)*

Submitted to the Securities Industry and Financial Markets Association (SIFMA)

** Securities Litigation & Consulting Group, Inc. (SLCG) is a financial economics consulting firm based in Fairfax, Virginia. SLCG Principals are PhD-level economists with academic, government, and industry experience. SLCG Principals are experts in the economics of securities markets and provide consulting services to a diverse group of clients including law firms, public corporations, domestic and international securities regulators, trade associations, and individuals. Contact information: SLCG, 3998 Fair Ridge Drive, Suite 250, Fairfax, VA 22033. 703-246-9380. http://www.slcg.com.*

1 Introduction/Background

On July 10, 2008, the Securities Litigation and Consulting Group ("SLCG") submitted an empirical study on behalf of the Securities Industry and Financial Market's Association ("SIFMA").

Drawing upon the academic literature, standard economic theory, and empirical evidence, the SLCG study arrived at the conclusion that the relevant quantitative and qualitative evidence demonstrates that the SEC cannot reasonably rely on competitive forces to ensure that the sole-source market data sold by the New York Stock Exchange ("NYSE") and the National Association of Securities Dealers for Automatic Quotations ("Nasdaq") is made available on "fair and reasonable" terms (see Section V of the SLCG study). Our conclusion rested on the following findings:

1. Competition for order flow among exchanges does not preclude highly concentrated markets dominated by two exchanges and, therefore, provides no assurance of competitive pricing for market data by those exchanges (see Section II of the SLCG study);
2. Several factors have led to a relatively inelastic demand for depth-of-book data, such as the impact of decimalization in reducing the value of NBBO data for both institutional and retail investors (see Section III of the study); and
3. The supply-side and demand-side conditions for market data combine to form a market in which two dominant exchanges exploit the opportunity to assert monopoly pricing power (see Section IV of the study).

On September 10, 2008, Nasdaq OMX submitted a rebuttal ("Nasdaq rebuttal") to our study claiming that the study's methodology is flawed and the study's analysis deserves little or no weight in the Securities and Exchange Commission's ("SEC") consideration of whether to issue its approval order regarding the NYSE Arca Inc. ("NYSE Arca") rule proposal.[1]

[1] Statement of Jeffery S. Davis (September 10, 2008) [hereinafter Nasdaq's rebuttal], p.1.

This supplemental paper responds to the Nasdaq rebuttal's criticism of our study's analysis of competition and network externalities.[2] The following sections will show that Nasdaq's criticisms are inaccurate, not based on valid empirical analysis, and are contradicted by the data and academic literature.[3] Specifically, we demonstrate in Section 2 that even if we assume for the sake of argument only, that the key empirical-related assertions of Nasdaq's rebuttal are correct, which they are not, applying Nasdaq's flawed analysis called for in its rebuttal still results in high market concentration levels and leads us to the same conclusions as set forth in our July 10, 2008 study. We further demonstrate in Section 3 as well as in Section 2.3 that Nasdaq's assertion that the dominant exchanges do not present network externalities is incorrect and contrary to the academic literature.

2 Concentration Analysis

2.1 Nasdaq Rebuttal

The Nasdaq rebuttal claims that our analysis of competition exaggerates Nasdaq's share of executions and obscures a key element of competition from electronic communications networks ("ECNs") and broker-dealers in two ways, as set forth in 2.1.1 and 2.1.2 below. As we will show in 2.1.3 below, even if we assume for the sake of argument only, that Nasdaq's rebuttal is correct, which it is not, applying the flawed analysis called for by the rebuttal still leads to materially similar results and the same conclusions as set forth in our July 10, 2008 study.

2.1.1. The Nasdaq Rebuttal's Claim Regarding TRFs

First, Nasdaq claims our study is in error because it does not distinguish between Nasdaq's and the NYSE's market data generated through their trade reporting facilities ("TRF"), and the market data generated by trading on each of these exchanges.[4] Specifically, the Nasdaq rebuttal claims that combining the reported volume of the FINRA TRF with that of the Nasdaq

[2] Nasdaq rebuttal, p. 1-4.

[3] The remaining criticisms are addressed in the SIFMA letter that accompanies this report.

[4] Nasdaq's rebuttal also criticizes our study for not distinguishing between the NYSE and NYSE Arca exchange data.

artificially led our study to inflate the market share and concentration measures for Nasdaq-listed stocks.[5]

This assertion in Nasdaq's rebuttal contradicts Nasdaq's own definition of the market share of Nasdaq's securities, which can be found in their financial statements and on their website. In our July 10, 2008 study, we estimated market concentration based on Nasdaq's definition of market share on their website and in their 10-Ks. Nasdaq defines "reported market share" (referred to as total market share in the December 2007 10-K) as share volume data:

> "… reported to the consolidated tape using Nasdaq-operated systems, which includes total share volume of Nasdaq-listed, NYSE-listed, or U.S. equity securities, including ETFs, executed on the Nasdaq book plus internalized volume and other trade reporting to The FINRA/Nasdaq Trade Reporting Facility™, a facility of FINRA that is operated by Nasdaq, as a percentage of consolidated market volume. Shares routed to other market centers for execution are not included…" [6]

Even assuming for the sake of argument that Nasdaq's definition of its market share in its own public reports was incorrect or invalid, Section 2.1.3 provides a supplemental analysis that demonstrates that applying the Nasdaq rebuttal's revised definition of market shares does not materially alter our findings or change the conclusion reached in our study.

2.1.2. The Nasdaq Rebuttal's Claims Regarding Treatment of NYSE Arca and NYSE Shares

Second, Nasdaq claims that we should have treated NYSE and NYSE Arca as separate and independent economic entities for data analysis purposes. This is not correct. Standard economic theory maintains that NYSE and NYSE Arca should be viewed as a single unit. This is because the goal of an incentive-aligned manager is to maximize the value of the entire corporation, including its parent and all of its subsidiaries.[7] Thus, regardless of whether the subsidiary has separate control of its own day-to-day operations, or such operational control resides with any other subsidiaries or with the parent entity, the ultimate economic interests of the entire corporate enterprise (including all of its affiliates) are identical.

---

[5] Nasdaq Rebuttal, p. 1-2.

[6] http://www.nasdaqtrader.com/content/MarketStatistics/MarketShare/terms.pdf

[7] See for example, Chapter 1 in Richard A. Brealy, Stewart C. Myers and Allan J. Marcus (1999), Fundamentals of Corporate Finance, 2nd Edition, McGraw Hill Irwin, and Stephen A. Ross, Randolph W. Westerfield and Jeffery F. Jaffe (2005), Corporate Finance, 2nd Edition, McGraw Hill Irwin.

SIFMA's letter accompanying this paper provides additional support for why the NYSE and NYSE Arca should not be treated as separate entities for competitive analysis purposes, including case law and the fact that the SEC's Division of Corporate Finance requires NYSE Euronext to provide material information to the investing public about the true nature of its competition by combining the results of operations of NYSE and NYSE Arca. Although standard economic theory and the arguments made in SIFMA's accompanying letter require that the NYSE and NYSE Arca should be analyzed as a single unit, we will show in the following Section 2.1.3 that revising our analysis to treat NYSE and NYSE Arca as separate and independent entities leads to materially similar high concentration ratios and the same conclusions we reach in our study.

2.1.3 Supplemental Analysis

We will demonstrate in this section that, had Nasdaq performed an empirical analysis that (i) separated the Nasdaq and NYSE exchange trading data from the data they create in their capacities as TRFs and (ii) treated NYSE and NYSE Arca as separate entities for data analysis purposes, Nasdaq still would have found a highly concentrated market with Herfindahl-Hirschman Indices' ("HHIs") ranging from 1,900 to 7,300.[8]

Using the same firms and stock specific data from Tables 1, 3, 4 and 5[9] from our original study, we calculated the market shares using the same three measures of trading activity – dollar volume, share volume, and number of trades – but treated the data from the primary exchanges and from their respective TRFs as if they were from entirely separate entities. We similarly separated the NYSE and NYSE Arca data.

Panel A of Supplemental Table 1 still shows that the dominant share of trading in Nasdaq-listed stocks occurs on Nasdaq. As illustrated in panel B, with the exception of IWM,

[8] The Department of Justice considers an industry with a HHI less than 1,000 to be "unconcentrated," an industry with a HHI between 1,000 and 1,800 to be "moderately concentrated," and an industry with a HHI greater than 1,800 to be "highly concentrated." HHI is calculated as sum of the squares of the volume market shares by exchange.

[9] Using the consolidated trade data from the NYSE Trade and Quote Database ("TAQ"), Tables 1, 3, 4 and 5 in our July 10, 2008 report estimated the market shares of the trading activity for the ten most active Nasdaq-listed securities and the ten most active NYSE-listed securities during the week of March 10-14, 2008. TAQ trade data lists the venue (e.g., exchange, trade reporting facility) where the trade was reported. TAQ trade data does not identify whether an ECN such as BATS and Direct Edge is involved in the trade execution.

EEM, and BSC where the majority of trading takes place on NYSE Arca, the dominant share of trading in NYSE-listed stocks occurs on the NYSE.

Our market share calculations that treat NYSE and NYSE Arca as separate entities are shown in Supplemental Table 1. The market share estimates in Supplemental Table 2 show that, for all firms, the dominant share of trading in NYSE-listed stocks occurred on the NYSE. Overall, Supplemental Tables 1 and 2 show that, for all three measures of trading activity, the listing exchange is the dominant entity.

The results in Supplemental Tables 1 and 2, however, are not as informative as those found in Supplemental Tables 3, 4 and 5.[10] As discussed in the July 10, 2008 study, antitrust economists generally use the HHI to estimate market concentration.[11] The HHI has the advantage of incorporating more information about the size distribution of the exchanges than the market share values highlighted in Supplemental Tables 1 and 2.[12]

Supplemental Table 3 presents the HHI results for all reported trades. Panel A shows that the trading activity of Nasdaq-listed stocks remains highly concentrated on Nasdaq. The HHIs for all three measures of trading activity range from about 2,600 to 3,800. Panel B shows that the trading activity of NYSE-listed stocks is highly concentrated on the NYSE. The trading activity of NYSE-listed stocks is slightly less concentrated than Nasdaq-listed stocks, ranging from about 1,900 to 3,900; however, these values are still materially above the Department of Justice's ("DOJ's") threshold for determining that a market is highly concentrated. Both panels show that the volume (dollar and share) measures of trading activity are associated with higher concentration than the number of trades.

Supplemental Table 4 presents the HHI results for block-size (10,000 shares or more) reported trades. Panel A shows that the block trading activity of Nasdaq-listed stocks is

[10] The HHI's in Supplemental Tables 3, 4 and 5 separate the Nasdaq and NYSE exchange data from the data of their respective TRFs and the NYSE and NYSE Arca as separate entities.

[11] See, for example, "Horizontal Merger Guidelines" issued by the U.S. Department of Justice and the Federal Trade Commission, available at http://www.usdoj.gov/atr/public/guidelines/horiz_book/hmg1.html for a detailed discussion on HHIs.

[12] "Horizontal Merger Guidelines" issued by the U.S. Department of Justice and the Federal Trade Commission, available at http://www.usdoj.gov/atr/public/guidelines/horiz_book/hmg1.html .

extremely concentrated. The HHIs for all three measures of trading activity range from about 2,700 to 7,400. Panel B shows that the block trading activity of NYSE-listed stocks is slightly less concentrated than Nasdaq-listed stocks, ranging from about 2,400 to 6,400; however, such activity is still materially above the 1,800 DOJ thresholds for a highly concentrated market.

Supplemental Table 5 presents the HHIs for non-block-size (< 10,000 shares) reported trades. Panel A shows that the non-block trading activity of Nasdaq-listed stocks is highly concentrated. The HHIs for all three measures of trading activity range from about 2,500 to 3,800. Although panel B shows that the trading activity of NYSE-listed stocks is slightly less concentrated than Nasdaq-listed stocks, ranging from about 1,900 to 3,900, they are still materially above the DOJ threshold for a highly concentrated market.

To summarize, even if we apply Nasdaq's erroneous classifications, the revised concentration measures from Supplemental Tables 1, 2, 3, 4 and 5 are still above the DOJ thresholds and are consistent with the concentration analysis from Tables 1, 3, 4 and 5 in our July 10, 2008 study. Nasdaq's key empirical arguments in its rebuttal, therefore, do not alter the conclusions we reached in the study.[13]

2.2 Nasdaq misinterprets the data regarding aggregate share volume for all stocks

Nasdaq's rebuttal incorrectly claims that the HHI values derived from the data in Table 6 of our July 10, 2008 study, which is based on share volume for all stocks during December 2007, demonstrates that the HHI estimates from Tables 3, 4 and 5 in our July 10, 2008 study were wrong.[14]

Supplemental Table 6 is similar to Table 6 from our July 10, 2008 report which shows the share volume market shares by exchange for all stocks for December, 2007. For the sake of argument, we calculate market shares and HHI's using (1) the Nasdaq rebuttal's revised market share definition; (2) Nasdaq rebuttal's revised market share definition and treatment of the

[13] The HHI's found in Supplemental Tables 7, 8, and 9 use the same stocks, data, and Nasdaq market share definition used to create Supplemental Tables 3, 4 and 6 but correctly treats the NYSE and NYSE Arca as single entity. The HHI's in these tables range from approximately 2,750 to 6,500 which are materially above the DOJ's threshold for a "highly concentrated" market.

[14] Nasdaq Rebuttal, p. 2.

NYSE and NYSE Arca as separate entities; and (3) the market share definition from Nasdaq's website and correctly treating the NYSE and NYSE Arca as a single entity. The HHI's for the market based on these three definitions of the market in Supplemental Table 6 range from 1,991 to 4,725, which are above the DOJ's threshold for a "highly concentrated" market. The HHI's from Supplemental Table 3 and Table 3 from our July 10, 2008 study range from approximately 2,700 to 5,100 which are well within the range of the HHI's estimated from Table 6.[15]

Thus, contrary to the Nasdaq rebuttal, a comparison between the HHI's from Table 6, Supplemental Table 3 and Table 3 of our July10, 2008 study shows that regardless of our definition of market share, and regardless of whether we analyze stocks at the individual or aggregate level, we arrive at the same conclusion – the market for trading data is a highly concentrated market dominated by the NYSE and Nasdaq.

2.3 Our results are consistent with the academic literature

The results of our analysis of reported trading activity across exchanges shown in Supplemental Tables 3, 4 and 5 in this paper and in Tables 3, 4 and 5 of the original study are consistent with the results reported in a recent academic working paper. Davies (2008) reports the share of trading in NYSE-listed and Nasdaq-listed securities across five different trading venues (NYSE, NYSE Arca, Nasdaq, BATS, and Other/Internalized) for the first week of October 2007.[16] While the share of trading measures are not exactly the same, the July 10 study (reported trading activity by exchange) and the Davies study (share of trading by trading venue) provide three important complementary results. First, both studies find that trading is highly concentrated and that the listing exchange is the dominant entity. Second, both studies suggest that trading is slightly more concentrated for Nasdaq-listed securities than for NYSE-listed securities.[17] Finally, both studies find that the concentration of trading is consistently well above the Department of Justice ("DOJ") threshold.

[15] We compare the HHI's to those from Supplemental Table 3 and Table 3 from our July 10, 2008 study because the volume share data in Table 6 does not distinguish between block and non-block trades.

[16] Davies, R. (2008), "MiFID and a Changing Competitive Landscape," *Working Paper*, Babson College.

[17] Calculation using the results reported in Table 1 of Davies (2008) yields a HHI of 2,961 for NYSE-listed securities and a HHI of 3,366 for Nasdaq-listed securities.

3. Network Externalities

Criticism 2 of the Nasdaq rebuttal states that network externalities are not supported by the data.[18] This statement is in direct contradiction to the results found in academic literature. Larry Harris, for example, devotes a chapter on the impact that order-flow externality has on financial market consolidation in his widely-regarded book, *Trading and Exchanges: Market Microstructure for Practitioners.*[19] Other examples from highly regarded academics are discussed below:

- Evans and Schmalensee (2008) demonstrate the role network effects have on the consolidation of US and European stock exchanges;[20]
- Economides and Schwartz (2001) and Foucault and Menkveld (2008) demonstrate that consolidation of trading lead to positive network externalities;[21]
- Macey and O'Hara (1999), Madhavan (2000), Stoll (2006), and Hendershott and Jones (2005) maintain that liquidity externalities are the most important issues in market regulation and design;[22] and
- Barclay and Hendershott (2004) provide evidence that liquidity externalities arise from traders consolidating their activity in time.[23]

[18] Nasdaq Rebuttal, p. 4.

[19] L. Harris, Trading and Exchanges: Market Microstructure for Practitioners, Oxford University Press, Chapter 26, pp. 524 – 542.

[20] Evans, David S. and Richard Schmalensee (2008), "Markets with Two Sided Platforms," Issues in Competition Law and Policy, and David S. Evans and Richard Schmalensee (2001), "Some Economic Aspects of Antitrust Analysis in Dynamically Competitive Industries," *NBER working paper 8269*.

[21] Economides, N., & R. A. Schwartz (2001), "Electronic Call Market Trading," R. A. Schwartz (Ed.) The Electronic Call Auction: Market Mechanism and Trading (Building a Better Stock Market) Kluwer Academic Publishers; Foucault, T. & A. Menkveld (2008), "Competition for Order Flow and Smart Order Routing Systems," *The Journal of Finance*, 63, pp. 122-158.

[22] Macey, J. and M. O'Hara (1999), "Regulating Exchanges and Alternative Trading Systems: A Law and Economics Perspective," *Journal of Legal Studies*, 28, pp. 17- 54; A. Madhavan (2000), "Market Microstructure: A Survey," *Journal of Financial Markets*, 3, pp. 205- 258; H. Stoll (2006), "Electronic Trading in Stock Markets," *Journal of Economic Perspectives*, 20, pp. 153-174; T. Hendershott and C. M. Jones (2005), "Island Goes Dark: Transparency, Fragmentation, and Regulation", *The Review of Financial Studies*, 18, pp. 743 – 793.

Our own empirical results based on depth-of book data from the NYSE (OpenBook), ARCA (ArcaBook), and NASDAQ (ITCH) shown in Table 7 of our July 10, 2008 study are fully consistent with this academic literature. Thus, as predicted by economic theory, our data demonstrates the predominant amount of liquidity that continues to be attracted to the dominant exchanges for their own listed securities.

4. Concluding Remarks

The criticisms in the Nasdaq rebuttal are not substantiated by the empirical data and the scientific literature. We suspect that, had Nasdaq performed their own rigorous economic analysis, they would not be able to rebut the conclusions in our July 10, 2008 study and, again, in this paper. Specifically, Nasdaq and the NYSE/NYSE Arca both have the ability to exert monopoly pricing power with respect to the prices they charge and sustain for depth-of-book market data regarding their own listed stocks; therefore, the SEC cannot reasonably rely on competitive forces to ensure that the sole-source market data sold by NYSE and NASDAQ is made available on "fair and reasonable" terms.

[23] Barclay, M. and T. Hendershott (2004), "Liquidity Externalities and Averse Selection: Evidence from Trading After Hours," *The Journal of Finance*, 59, pp. 681-710.

Table 1: Supplemental

Market Share of Trading Activity

March 10-14, 2008

Panel A: Top 10 NASDAQ-Listed Stocks by Dollar Volume Traded

Symbol	Number of Different Trading Venues	Market Share of Listing Exchange (%)		
		Dollar Volume	Share Volume	Number of Trades
QQQQ	11	47.4	47.4	55.7
AAPL	11	40.7	40.7	43.7
GOOG	11	46.0	46.0	47.6
MSFT	11	52.2	52.3	49.2
RIMM	10	42.8	42.7	47.1
BIDU	10	43.9	44.0	49.8
CSCO	11	51.1	51.1	48.1
INTC	11	52.6	52.6	48.8
FSLR	10	43.3	43.2	49.7
YHOO	11	42.1	42.1	53.9

Panel B: Top 10 NYSE-Listed Stocks by Dollar Volume Traded

Symbol	Number of Different Trading Venues	Market Share of Listing Exchange (%)		
		Dollar Volume	Share Volume	Number of Trades
IWM	10	0.0	0.0	0.0
EEM	10	0.0	0.0	0.0
BSC	12	21.4	21.2	14.8
GS	11	24.9	24.9	19.7
C	12	27.1	27.2	12.4
XOM	12	38.6	38.5	24.6
GE	12	39.9	39.9	17.8
JPM	11	33.6	33.6	19.1
BAC	12	32.5	32.5	18.5
LEH	12	27.3	27.2	16.2

Source: TAQ database, Consolidated Trade file.

TRFs are treated as separate entities.

NYSE and NYSE Arca are treated as separate entities.

Table 2: Supplemental

Market Share of Trading Activity

March 10-14, 2008

Top 10 NYSE-Listed Stocks by Dollar Volume Traded

Symbol	Number of Different Trading Venues	Market Share of Listing Exchange (%)		
		Dollar Volume	Share Volume	Number of Trades
IWM	9	46.7	46.6	39.1
EEM	9	47.2	46.7	48.6
BSC	11	41.8	41.8	36.4
GS	10	51.1	51.1	45.1
C	11	51.8	51.8	37.7
XOM	11	44.6	44.6	45.1
GE	11	44.8	44.7	36.8
JPM	10	47.6	47.6	40.3
BAC	11	45.9	45.9	41.7
LEH	11	50.9	50.9	44.8

Source: TAQ database, Consolidated Trade file.
NYSE includes NYSE Arca.

Table 3: Supplemental

Herfindahl Index of Trading Activity – All Trades

March 10-14, 2008

Panel A: Top 10 NASDAQ-Listed Stocks by Dollar Volume Traded

Symbol	Number of Different Trading Venues	Herfindahl		
		Dollar Volume	Share Volume	Number of Trades
QQQQ	11	3,304	3,303	3,821
AAPL	11	2,570	2,570	2,828
GOOG	11	2,845	2,846	3,024
MSFT	11	3,289	3,294	3,144
RIMM	10	2,681	2,680	3,047
BIDU	10	2,855	2,858	3,096
CSCO	11	3,208	3,211	3,097
INTC	11	3,326	3,326	3,170
FSLR	10	2,631	2,627	3,047
YHOO	11	2,807	2,806	3,555

Panel B: Top 10 NYSE-Listed Stocks by Dollar Volume Traded

Symbol	Number of Different Trading Venues	Herfindahl		
		Dollar Volume	Share Volume	Number of Trades
IWM	10	3,396	3,393	3,875
EEM	10	3,278	3,278	3,217
BSC	12	2,002	2,004	2,355
GS	11	1,861	1,861	1,915
C	12	1,955	1,957	2,260
XOM	12	2,504	2,501	2,577
GE	12	2,487	2,486	2,334
JPM	11	2,436	2,438	2,699
BAC	12	2,313	2,313	2,641
LEH	12	2,119	2,120	2,487

Source: TAQ database, Consolidated Trade file.

TRFs are treated as separate entities.

NYSE and NYSE Arca are treated as separate entities.

Table 4: Supplemental

Herfindahl Index of Trading Activity – Block Trades (10,000 shares or more)

March 10-14, 2008

Panel A: Top 10 NASDAQ-Listed Stocks by Dollar Volume Traded

Symbol	Number of Different Trading Venues	Herfindahl		
		Dollar Volume	Share Volume	Number of Trades
QQQQ	10	3,693	3,694	2,744
AAPL	6	5,600	5,591	3,673
GOOG	4	6,191	6,183	4,390
MSFT	10	4,641	4,643	3,612
RIMM	5	4,701	4,695	4,243
BIDU	3	4,819	4,873	7,350
CSCO	9	4,340	4,341	3,596
INTC	9	4,443	4,440	3,653
FSLR	4	4,527	4,495	4,019
YHOO	10	5,835	5,824	2,991

Panel B: Top 10 NYSE-Listed Stocks by Dollar Volume Traded

Symbol	Number of Different Trading Venues	Herfindahl		
		Dollar Volume	Share Volume	Number of Trades
IWM	10	4,290	4,291	3,830
EEM	10	4,371	4,369	3,847
BSC	11	3,123	3,016	2,362
GS	7	4,453	4,465	4,837
C	12	3,659	3,656	3,449
XOM	6	4,835	4,843	3,907
GE	12	6,350	6,344	4,980
JPM	10	4,290	4,289	3,164
BAC	9	4,314	4,312	3,796
LEH	11	3,502	3,450	2,651

Source: TAQ database, Consolidated Trade file.

TRFs are treated as separate entities.

NYSE and NYSE Arca are treated as separate entities.

Table 5: Supplemental

Herfindahl Index of Trading Activity – Non-Block Trades (<10,000 shares)

March 10-14, 2008

Panel A: Top 10 NASDAQ-Listed Stocks by Dollar Volume Traded

Symbol	Number of Different Trading Venues	Herfindahl		
		Dollar Volume	Share Volume	Number of Trades
QQQQ	11	3,727	3,726	3,831
AAPL	11	2,491	2,492	2,828
GOOG	11	2,755	2,756	3,024
MSFT	11	3,238	3,242	3,145
RIMM	10	2,654	2,653	3,047
BIDU	10	2,834	2,837	3,096
CSCO	11	3,257	3,260	3,099
INTC	11	3,330	3,330	3,173
FSLR	10	2,628	2,625	3,047
YHOO	10	3,294	3,294	3,560

Panel B: Top 10 NYSE-Listed Stocks by Dollar Volume Traded

Symbol	Number of Different Trading Venues	Herfindahl		
		Dollar Volume	Share Volume	Number of Trades
IWM	11	3,867	3,866	3,877
EEM	11	3,628	3,625	3,217
BSC	12	2,024	2,024	2,356
GS	11	1,866	1,867	1,915
C	12	1,953	1,956	2,264
XOM	11	2,671	2,670	2,578
GE	12	2,247	2,245	2,336
JPM	11	2,565	2,565	2,701
BAC	12	2,375	2,375	2,643
LEH	12	2,219	2,221	2,488

Source: TAQ database, Consolidated Trade file.

TRFs are treated as separate entities.

NYSE and NYSE Arca are treated as separate entities.

Table 6: Supplemental

Reported Share Volume for All Stocks During December 2007[1]

Independent Verification[2]		Independent Verification[3]		Independent Verification[4]	
Trading Venue	**Market Share**	**Trading Venue**	**Market Share**	**Trading Venue**	**Market Share**
New York Stock Exchange	22.6%	NYSE and NYSE Arca	38.0%	NYSE	40.1%
NYSE Arca	15.4%				
NASDAQ	29.1%	NASDAQ	29.1%	NASDAQ	55.8%
NASDAQ ADF	17.3%	NASDAQ ADF	17.3%		
NASDAQ TRF	9.4%	NASDAQ TRF	9.4%		
NYSE TRF	2.1%	NYSE TRF	2.1%		
National Stock Exchange TRF	1.4%	National Stock Exchange TRF	1.4%	National Stock Exchange TRF	1.4%
American Stock Exchange	0.8%	American Stock Exchange	0.8%	American Stock Exchange	0.8%
International Stock Exchange	0.7%	International Stock Exchange	0.7%	International Stock Exchange	0.7%
National Stock Exchange	0.6%	National Stock Exchange	0.6%	National Stock Exchange	0.6%
Chicago Stock Exchange	0.5%	Chicago Stock Exchange	0.5%	Chicago Stock Exchange	0.5%
Chicago Board Options Exchange	0.2%	Chicago Board Options Exchange	0.2%	CBOE Exchange	0.2%
Philadelphia Stock Exchange	0.1%	Philadelphia Stock Exchange	0.1%	Philadelphia Stock Exchange	0.1%
HHI:	**1,991**	**HHI:**	**2,687**	**HHI:**	**4,725**

Sources:

[1] Exchange Volume Summary Query (Dec 01, 2007 - Dec 31, 2007; All Stocks) at http://www.arcavision.com/; this is a more detailed view of Table 1 from SEC Draft Order, Page 49.

[2] HHI is based on the Nasdaq Rebuttal's Definition and erroneous assumption of treating the NYSE and NYSE Arca as separate entities.

[3] HHI is based on the Nasdaq Rebuttal's Definition and the correct assumption of treating the NYSE and NYSE Arca as separate entities.

[4] HHI's based on Nasdaq's definition of market share from their website.

Table 7: Supplemental

Herfindahl Index of Trading Activity – All Trades

March 10-14, 2008

Top 10 NYSE-Listed Stocks by Dollar Volume Traded

Symbol	Number of Different Trading Venues	Herfindahl		
		Dollar Volume	Share Volume	Number of Trades
IWM	11	3,396	3,393	3,875
EEM	11	3,275	3,274	3,216
BSC	11	3,105	3,086	3,355
GS	10	2,843	2,845	2,916
C	11	2,749	2,752	2,855
XOM	11	3,457	3,455	3,570
GE	11	3,432	3,431	3,043
JPM	10	3,379	3,379	3,511
BAC	11	3,235	3,233	3,406
LEH	11	3,136	3,136	3,310

Source: TAQ database, Consolidated Trade file.

TRFs are treated as separate entities.

NYSE includes NYSE Arca.

Table 8: Supplemental

Herfindahl Index of Trading Activity – Block Trades (10,000 shares or more)

March 10-14, 2008

Top 10 NYSE-Listed Stocks by Dollar Volume Traded

Symbol	Number of Different Trading Venues	Herfindahl		
		Dollar Volume	Share Volume	Number of Trades
IWM	10	4,290	4,291	3,830
EEM	10	4,371	4,369	3,847
BSC	10	3,832	3,863	3,750
GS	6	4,732	4,746	5,121
C	11	3,956	3,954	3,922
XOM	5	4,872	4,880	4,300
GE	11	6,492	6,487	5,377
JPM	9	4,456	4,454	3,715
BAC	8	4,431	4,428	4,046
LEH	10	3,980	3,940	3,703

Source: TAQ database, Consolidated Trade file.

TRFs are treated as separate entities.

NYSE includes NYSE Arca.

Table 9: Supplemental

Herfindahl Index of Trading Activity – Non-Block Trades (<10,000 shares)

March 10-14, 2008

Top 10 NYSE-Listed Stocks by Dollar Volume Traded

Symbol	Number of Different Trading Venues	Herfindahl		
		Dollar Volume	Share Volume	Number of Trades
IWM	11	3,867	3,866	3,877
EEM	11	3,628	3,625	3,217
BSC	11	3,133	3,100	3,355
GS	10	2,877	2,879	2,917
C	11	2,742	2,745	2,856
XOM	10	3,826	3,825	3,571
GE	11	3,160	3,159	3,043
JPM	10	3,590	3,587	3,512
BAC	11	3,367	3,365	3,408
LEH	11	3,287	3,286	3,311

Source: TAQ database, Consolidated Trade file.

TRFs are treated as separate entities.

NYSE includes NYSE Arca.