SIFMA
Securities Industry and Financial Markets Association

July 10, 2008

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

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

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)

Ladies and Gentlemen:

The Securities Industry and Financial Markets Association[1] ("SIFMA") appreciates the opportunity to respond 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"). We appreciate that this matter has been subject to review by the Commission for some time now.[2] We respectfully advise the Commission, however, that the approach the

[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] We do not reiterate here all of our comments in previous letters to the Commission with respect to this matter. We, however, incorporate those letters by reference, and address here those aspects that are the focus of the Proposed Order. *See* Letter to Nancy M. Morris, Secretary, Commission, from Ira D. Hammerman, Senior Managing Director and General Counsel, SIFMA (Jan. 17, 2007); Letter to Nancy M. Morris from Ira D. Hammerman (Aug. 1, 2007); Letter to Nancy M. Morris from Marc E. Lackritz, President and CEO, SIFMA (Aug. 16, 2007); Letter to Dr. Erik R. Sirri, Director, Division of Market Regulation, Commission, from Melissa MacGregor, Vice President & Assistant General Counsel, SIFMA (Nov. 7, 2007); Letter to Nancy M. Morris from Ira D. Hammerman (Feb. 7, 2008); and Letter to Nancy M. Morris from Christopher Gilkerson and Gregory Babyak, Market Data Subcommittee Co-Chairs (Feb. 14, 2008).

Proposed Order would take is fatally flawed: its competition analysis is faulty, internally inconsistent, and wholly inadequate; and it would fail to comply with the spirit and letter of the provisions of the Securities Exchange Act of 1934 (the "Exchange Act") and the rules of the Commission promulgated thereunder which are applicable to transparency in markets, exchange fees, and Commission review of the Proposed Rule. If the Proposed Order were issued as a final order, that action would be arbitrary and capricious and would be reversible by a United States Court of Appeals as a matter of law.

A. Introduction

The matters at issue in the Proposed Order stem from fees NYSE Arca proposed to establish for its Arca Book product.[3] The instant proceeding began with SEC Staff approval of the Proposed Rule notwithstanding considerable public opposition expressed in comment letters filed with the Commission before the approval. Soon thereafter, NetCoalition, an association of Internet companies, petitioned the Commission to review and set aside the Staff approval. In what we believe to be a first, the Commission granted the petition and sought public comment. Some 32 comments were filed, most expressing opposition to the Proposed Rule and the Staff's approval. During the course of the proceeding, SIFMA filed several comments and joined the action as a party in interest.[4] On June 4, 2008, the Commission published the Proposed Order[5] and invited further comment.

The Proposed Order would introduce a "market-based" approach in which the Commission would conclude that NYSE Arca's depth-of-book data (and similar products), that is, bids below (inferior to) the highest bid and offers above (inferior to) the lowest offer, are subject to sufficient market forces in setting the fees so that the Commission does not need to do anything, such as to consider fundamental issues like NYSE Arca's costs of collecting and disseminating the data, before determining that its proposed fees are fair and reasonable, as the Exchange Act and the Commission's rules require.

A principal flaw in that approach is that the Proposed Order would find that competition among the principal or dominant exchanges, that is to say, the New York Stock Exchange (the "NYSE") with which NYSE Arca is affiliated as part of a single, common enterprise and Nasdaq, for order flow is a sufficient demonstration that there also is competition in the sale of

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[3] On May 23, 2006, NYSE Arca filed the Proposed Rule with the Commission, pursuant to Exchange Act Section 19(b)(1) and Rule 19b-4 thereunder, 17 C.F.R. §240.19b-4. SEC Release No. 34-53952 (June 7, 2006). The Division of Market Regulation, now known as Trading and Markets, approved the Proposed Rule pursuant to delegated authority on October 12, 2006 (the "Staff Approval"). SEC Release No. 34-54597 (Oct. 12, 2006). On November 6, 2006, NetCoalition filed its petition with the Commission pursuant to Rule 430 of the Commission's Rules of Practice, 17 C.F.R. § 201.430, requesting it to set aside the Staff Approval. On December 27, 2006, the Commission granted the Petition, sought additional comment and continued the effectiveness of the automatic stay of the Staff Approval provided for under Rule 431(e). SEC Release No. 34-55011 (Dec. 27, 2006).

[4] *See*, footnote 2, *supra*.

[5] SEC Release No. 34-57917 (June 4, 2008).

the resulting market data each exchange uniquely possesses. That is extrapolating apples from oranges. Whether in fact there is significant competition between the NYSE/NYSE Arca enterprise and Nasdaq for order flow is questionable, as we discuss below, but more importantly here, it is irrelevant. The assumption that competition for order flow equates to significant competition in the subsequent provision of market data is unjustified, yet it is the sole basis for the Proposed Order's conclusion that competition for depth-of-book data exists and can be relied upon, without more, to assure that pricing of the market data is "fair" and "reasonable."

As the "Economic Study of Securities Market Data Pricing by the Exchanges" (the "Economic Study") SIFMA commissioned demonstrates,[6] a copy of which is attached hereto, the Commission has improperly ignored the economic reality that the NYSE and NYSE Arca exchanges must be considered together as one enterprise for competitive purposes.[7] This combined enterprise and Nasdaq are the two dominant exchanges whose market power must be assessed with factual evidence before the Commission has a basis for declaring a relevant market to be competitive.

As the Economic Study explains, moreover, the facts do not support the supposition in the Proposed Order that there is competition for order flow between the dominant exchanges, let alone competition that assures the fairness and reasonableness of their market data fees. NYSE Arca's data and Nasdaq's data are not substitutes for one another: having data from only one dominant market does not provide sufficient information to guide investors or their advisers as to what opportunities may be available in the other dominant market. In fact, market data is security-specific and market-specific. Market professionals as well as investors seeking data to understand current securities pricing are required as a practical matter to buy from both dominant exchanges given the concentration of liquidity for different securities on each exchange.[8] Where a dominant exchange's share of liquidity (and therefore its ability to make depth-of-book quotes available) is concentrated, an investor must obtain that dominant exchange's quote data in order to view pricing beyond the thin level of liquidity reflected in the national best bid and offer (the "NBBO") for all but the most heavily traded and liquid of stocks.[9] Using the leading economic measure of competitiveness, the Economic Study measures the economic concentration in markets for individual securities as they are traded on the dominant exchanges and finds them to be orders of magnitude greater than the level identified as a concentrated market by the U.S. Department of Justice.

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6 Securities Litigation & Consulting Group, Inc., *An Economic Study of Securities Market Data Pricing by the Exchanges* (July 10, 2008).

7 *Copperweld Corp. v. Independence Tube Corp*., 467 U.S. 752 (1984) (holding 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") In this case, NYSE and NYSE Arca operate two exchanges with a unity of purpose and common design set by the parent that controls both of them.

8 *See* Economic Study at 12.

9 The thinness of the market at the NBBO is in part a result of decimalization of the pricing increment, in which there now are 100 price points to the dollar instead of the previous eight or sixteen.

Significantly, the Commission has not obtained and evaluated data concerning NYSE Arca's costs of collecting and disseminating the depth-of-book data that is the subject of this proceeding. That cost data is highly relevant to an analysis of whether competition affecting the pricing of market data is present. Without cost data, the Commission cannot properly assess whether, and if so to what extent, the proposed market data fees are or are not subject to effective competition. If, for example, it turned out that the NYSE Arca's projected revenues from sales of the data represented 80% or 90% profit, and only 10% or 20% cost, that would suggest that the pricing more likely than not represents monopoly pricing rather than competitive pricing.[10]

Without having cost data to serve as a reality check, the Commission does not have any effective basis for evaluating whether in fact the market data fees proposed by the exchanges are fair or reasonable. Instead of obtaining any cost data when evaluating whether fees proposed by the exchanges are fair and reasonable, the Commission's practice has been to compare the proposed fees to fees for other products the Commission previously approved, also without cost data. Apparently recognizing the circularity of its practice until now, the Commission has taken the new approach of declaring that the fees are competitively set by the market, thereby obviating the need for any review by the Commission of whether the fees are fair and reasonable. If in fact, as the Economic Study proves, there is not effective inter-market competition for market data among the dominant exchanges, comparing the monopoly rents of one monopolist to the monopoly rents of the other would certainly be an insufficient measure of fairness or reasonableness.

It might well be that the whole NYSE Arca pricing scheme that is the subject of this proceeding would collapse of its own weight if the true underlying costs were known. We note that, before it was acquired by the NYSE, Arca distributed its depth-of-book data for free, as a form of advertising. We suspect the costs of collecting and distributing the data are indeed trivial and that it is in part for that reason that NYSE Arca has staunchly resisted disclosing the costs. Former Commission Chairman Harvey Pitt in fact noted that the percentage of NYSE revenues derived from market data had remained at a constant 17% during a period of 70 years — which could never occur if there was competition — and he questioned whether the cost had anything to do with the setting of these rates, a question that resonates all the louder now:

> MR. PITT: I guess one model of [market data] pricing tends to be what's your cost for the production of either the product or the service, and then what's a reasonable return. Presumptively, if the costs were being set that way, it would be highly unusual if it came out to be 17 percent of total self-regulatory costs over 70 years, which suggest that the costs are being set some other way, which then leads to the question that I think some of the people who pay the fees are asking, which

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[10] The exchanges have not been required to identify these costs before, but isolating costs is not inherently difficult once there is an agreed-upon definition of which costs are to be isolated. See the discussion below of the Nasdaq/Consolidated Tape Association dispute, where the Commission has insisted on a rigorous cost allocation. Even in the case of so-called "core" data, the Commission has never set forth, much less implemented, an analysis of how core data fees are to be related to cost.

> is how are the costs set, it's not just a question of what they're funding, but how are they set and why is it appropriate to pay that amount of money . . . .[11]

The question of exchange market data costs has not received the kind of analysis former Chairman Pitt envisioned. This is just as much a problem with depth-of-book costs as it was then with costs for last sale and top-of-market quotations.

Where, in all of this, one might ask, do the investors' interests lie? The Commission is, above all, supposed to protect investors. Investors will, directly or indirectly, bear the economic burden of the economic subsidy the Proposed Order would provide to NYSE Arca, and by implication other exchanges. As the attached Economic Study shows, the NBBO fails to cover a substantial percentage of even retail orders.[12] Monopoly rents charged to securities professionals are both a burden on the securities business, making it less competitive internationally, and flow through to the retail investors securities professionals serve. Alternatively, if the data is priced too high above competitive prices, some investors may have to forego the data, which would disadvantage them in today's markets where the displayed liquidity at the NBBO is less than many retail investors' orders. As we discuss below, the Exchange Act requires more of the Commission than the *laissez-faire* approach reflected in the Proposed Order.

For these reasons and others more fully discussed below, we respectfully advise the Commission that the Proposed Order's own findings do not support its new market-based test for "non-core" data, because each dominant exchange is not subject to significant competitive forces in setting the terms of their fees for depth-of-book data (in this case NYSE Arca as part of NYSE Euronext). In the absence of such significant forces, the Proposed Rule does not comply with the Proposed Order's own alternative test since NYSE Arca has not provided a substantial basis for concluding that the terms of the proposal are equitable, fair, reasonable, and not unreasonably discriminatory.[13] Moreover, the proposed substitution of a presumption of competition for application of mandatory statutory standards is unsupported by sound economic analysis and unsupportable as a matter of law. As a result, the application of the proposed market-based standard in the context of the Proposed Rule is arbitrary and capricious. We, therefore, request

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[11] Statement of SEC Chairman Harvey L. Pitt in transcript of *SEC Meeting of the Market Structure Hearing*s, New York University, Tisch Hall (Nov. 12, 2002), available at: http://www.sec.gov/spotlight/marketstructure/mkts111202-hrg.txt.

[12] The Proposed Order, in contrast, states that "the average execution prices for small market orders (the order type typically used by retail investors) is very close to, if not better than, the NBBO." Proposed Order at 76. This is wrong on two counts. First, informed retail investors — of which there are many — frequently use limit orders. Second, the Commission's statement confuses trade execution prices with the size of orders entered by retail customers. To match the small size typically reflected in the NBBO, orders above several hundred shares in all but the most liquid and frequently traded stocks are typically chopped up into smaller trade execution sizes.

[13] In the absence of significant competitive forces, the Proposed Order would have the Commission require the exchanges to provide "a substantial basis, other than competitive forces, in its proposed rule change demonstration that the terms of the proposal are equitable, fair, reasonable and not unreasonably discriminatory." Proposed Order at 43. The Proposed Order, however, does not set forth any such demonstration.

that the Commission reconsider and reject the standards enunciated and findings proposed to be enunciated in the Proposed Order.

In the balance of this letter, we summarize the findings of SIFMA's consulting economists in the Economic Study, we discuss the Exchange Act standards that apply to the Commission's review of NYSE Arca rules, particularly the requirements that NYSE Arca's charges for market data be "fair and reasonable" and non-discriminatory, and we follow that with an analysis of competitive factors and the commercial and legal implications of having, or not having, access to depth-of-book data.

B. Economic Analysis: NYSE (including NYSE Arca) and Nasdaq Each Enjoy Respective Dominant Markets and, Therefore, Competitive Forces Cannot Be Relied upon to Set Fair and Reasonable Prices

The Economic Study shows that the reliance on competitive forces in the Proposed Order would be inappropriate for the pricing of securities market data. The qualitative and quantitative analyses in the Economic Study show that the two dominant exchanges — Nasdaq and NYSE/NYSE Arca (which the Economic Study points out should be treated and counted as a single entity, not as two) — have the ability to exert monopoly pricing power and are using this power. The Economic Study concludes that each of these two exchange entities is charging broker-dealers and the investing public fees that are well above the cost of consolidating and distributing data and, therefore, are not subject to competitive forces.[14]

In reaching those conclusions, the Economic Study analyzes supply-side conditions and demand-side conditions. It lists and describes the factors, such as the impact of decimalization in reducing the value of NBBO data for both institutional and retail investors, which led to a relatively inelastic demand for depth-of-book data. The Economic Study then explains how the supply-side and demand-side conditions for market data combine to form a market in which the two dominant exchanges exploit the opportunity to assert monopoly pricing power. The Economic Study notes that the competition for order flow among exchanges does not provide any assurance of competitive pricing for data of which an exchange has exclusive possession. The Economic Study looks to "network externalities," that is, situations in which the value of a system increases as the number of users of the system increases. Network externalities reinforce the tendency of a dominant market player to retain its dominance because its market position induces customers to deal with it rather than with a newcomer. The Economic Study notes that the NYSE and Nasdaq account for the vast majority of all equity trading in the United States. For individual securities, each exchange enjoys a dominant market share in most of the securities that are listed on that exchange. The NYSE (together with its affiliate NYSE Arca) enjoys a dominant market share in NYSE-listed securities and Nasdaq enjoys a dominant market share in Nasdaq-listed securities. These network externalities are such powerful forces that, in the

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[14] *See, Tejas Power Corp., et. Al., v. Fed'l Energy Regulatory Comm'n*, 908 F.2d 998, 1004 (D.C. Cir. 1990) ("In a competitive market, where neither buyer nor seller has significant market power, it is rational to assume that the terms of their voluntary exchange are reasonable, and specifically to infer that price is close to marginal cost, such that the seller makes only a normal return on its investment.")

presence of competition for order flow among market centers, the listing exchanges thrive as natural monopolies.

Given the network externalities, and given that each dominant exchange has exclusive possession of its own depth-of-book data, the dominant exchanges maximize their exclusive data revenues. It is impossible, the Economic Study concludes, for Nasdaq to produce NYSE depth-of-book data on a scale approaching the NYSE's own depth-of-book data product for NYSE-listed stocks and, likewise, it is impossible for the NYSE to produce Nasdaq depth-of-book data on a scale approaching Nasdaq's own depth-of-book data product for Nasdaq-listed stocks. NBBO data is not an adequate substitute for depth-of-book data since, after the introduction of decimal pricing (in which prices are quoted in pennies rather than the former eighths or sixteenths), the size displayed at the various one-cent price points away from the inside quotes became a more useful tool to assess market depth (a conclusion we note that the Proposed Order also reached).

The Economic Study notes that profit-maximization as an objective of the market data pricing policy of the dominant member-owned exchanges used to be kept in check at least somewhat by the interests of each exchange's member-owners. That all changed recently when the exchanges went public with a new ownership structure and corresponding duties to maximize shareholder wealth for persons other than their members.

In its evaluation of the approach taken in the Proposed Order, the Economic Study notes four major flaws in its methodology:

> First, the Proposed Order does not examine market share statistics for NYSE-listed stocks and Nasdaq-listed stocks separately; as a result, the market-share figures concerning Nasdaq are misleading because they do not reveal anything about the nature of competition for the trading of specific securities.
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> Second, the Proposed Order incorrectly treats the NYSE and NYSE Arca as separate economic units even though they are affiliated businesses.[15]
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> Third, the statistics on the state of competition in the U.S. equity markets aggregate all non-exchange trading venues into one category. By combining the market shares, the aggregate number does not reveal how many trading venues account for the subtotal, nor does it reveal the dispersion of market shares across these trading venues; both of these pieces of information are crucial to understanding the nature of competition and concentration within an industry.
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> Fourth, the Proposed Order's logic is flawed in concluding that the fact that 95% of the professional users of core data do not purchase depth-of-book data of a major exchange strongly suggests that no exchange has monopoly pricing power for its depth

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[15] *See Copperweld Corp. v. Independence Tube Corp.*, 467 U.S. 752 (1984).

of-book order data. The Economic Study shows that the dominant exchanges are in fact able to exert monopoly pricing power for their exclusive depth-of-book data.[16]

The Economic Study finds, among other things, that if the flaws in the Proposed Order's approach were corrected, it would be clear that the Commission cannot rely on competitive forces to ensure that securities market data distributed by the exchanges was made available on fair and reasonable terms.[17] The Economic Study itself reaches that conclusion after examining the qualitative and quantitative evidence.[18]

C. Exchange Act Standards

Exchange Act Section 19(b)(2) permits the Commission to approve a proposed rule change of an exchange only if it finds the rule change to be consistent with the Exchange Act provisions applicable to the exchange.[19] If it cannot make that affirmative finding, it *must* initiate proceedings looking toward disapproval of the rule change. In a doubtful case, therefore, the statute defaults to disapproval. The Exchange Act provisions relevant to NYSE Arca's market data rules include:

a. Section 6(b)(4), which requires NYSE Arca's rules to provide for "equitable allocation of reasonable fees, dues, and other charges among its members and issuers and other persons using its facilities;" and

b. Section 11A(c)(1), under which NYSE Arca, as an "exclusive processor" of its market data, must (i) ensure the prompt, accurate, reliable, and fair collection, processing, distribution, and publication of quotation and transaction information, and the fairness and promptness of the form and content of such information, (ii) must distribute on a "fair and reasonable basis" the quotation and transaction data that it collects, processes or distributes and do so on terms that are "not unreasonably discriminatory."[20]

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16 Economic Study at 11-14.

17 *Id.* at 15.

18 There is at least one regulatory model that that the Commission could have followed in determining whether an exchange has or does not have significant market power. The Federal Energy *Regulatory* Commission ("FERC uses the Herfindahl Index as part of its assessment of market power and also requires that the capacity of a market-based rate applicant's affiliates be included in the market share calculated for the applicant affiliates). For example, *see*, United States of America Fed'l Energy Regulatory Comm'n, 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.

19 *See Timpinaro v. SEC*, 2 F.3d 453, 456 (D.C. Cir. 1993).

20 NYSE Arca's rules must also meet two additional requirements:

In exercising its authority under Section 19(b), the Commission is subject to an additional requirement in Exchange Act Section 3(f), which provides that, whenever the Commission is engaged in the review of a rule of a self-regulatory organization (an "SRO") such as NYSE Arca, and must consider or determine whether an action is necessary or appropriate in the public interest, the Commission "shall also consider, in addition to the protection of investors, whether the action will promote efficiency, competition, and capital formation."

The Proposed Order correctly states that "[t]he standards in Section 6 of the Exchange Act and Rule 603 of Regulation NMS do not differentiate between types of data and therefore apply to exchange proposals to distribute both core data and non-core data."[21] The "market based approach," announced for the first time in the Proposed Order, nevertheless ignores this principle and makes a fundamental distinction between "core" data (the national best bid and offer and the market-wide last sale data) and "non-core" data (all other market data, including depth-of-book data) in its proposed administration of applicable Exchange Act provisions. This approach must fail for three reasons.

1. Statutory requirements. The Commission previously has chosen to allow SROs to decide *what* additional market data they wish to display beyond what it calls the "core" data they have to provide under Regulation NMS. Whether or not that choice is itself permitted under the Exchange Act — an issue we do not discuss here —that choice has not and cannot alter the statutory standards that apply to *how* that data may be distributed, including the fees an exchange may charge for the data. Once an exchange elects to make additional data available, its rules governing that data are subject to the same exacting standards as apply to every exchange rule, as the Commission has recognized:

> Currently, the Commission typically reviews market data fees in the context of proposed fee changes filed by the three networks that disseminate market data in NMS stocks. These fee filings are published for notice and comment before Commission action. After those filings are published, the Commission determines whether the fees are fair and reasonable, not unreasonably discriminatory, and otherwise consistent with the requirements of the Exchange Act. Although most market data fee filings currently involve Network fees, *the same standard applies and the same questions arise with regard to the market data fees of an individual SRO.*[22]

(i) Section 6(b)(5), which requires that SRO rules be designed to "remove impediments to and perfect the mechanism of a free and open market and a national market system, and, in general, to protect investors and the public interest, and are not designed to permit unfair discrimination between customers, issuers, brokers, or dealers;" and

(ii) Section 6(b)(8), which prohibits SROs' rules from imposing "any burden on competition not necessary or appropriate" in furtherance of the purposes of the Exchange Act.

[21] SEC Release No. 34-57917 (June 4, 2008).

[22] *Concept Release Concerning Self-Regulation*, SEC Release No. 34-50700 (Nov. 18, 2004), in text accompanying nn. 231-2 (emphasis added).

The "market-based approach" that the Proposed Order would newly announce does not comport with these statutory standards. It gives primacy to a separate and secondary consideration, *i.e.*, the unsubstantiated and factually inaccurate assertions of what constitutes competition, in determining whether to approve an exchange rule proposal and suggests that competition, *vel non*, trumps the explicit statutory standards the Commission is commanded to assess and implement. The Proposed Order would cite the expression of congressional intent that reflects the important but subsidiary role of competition considerations, as follows:

> *a* major responsibility of the SEC in the administration of the securities laws is to 'create a fair field of competition.'… The objective [of clarifying this responsibility and strengthening the SEC's authority in the 1975 amendments to the Exchange Act] would be to enhance competition and to allow economic forces, *interacting within a fair regulatory field*, to arrive at appropriate variations in practices and services."[23]

Even if competitive considerations were on a par with the other provisions applying to exchange rule filings, the market-based approach is faulty because it exalts the competition element to the exclusion of the others. More fundamentally, there simply is no basis for the presumption in the Proposed Order that these statutory requirements are satisfied if the Commission is able to conclude that "significant competitive forces" exist in the context of an exchange fee proposal. The statement in the Proposed Order that this approach "follows the clear intent of Congress in adopting Section 11A that, whenever possible, competitive forces should *dictate* the services and practices that constitute the U.S. national market system for trading equity securities"[24] is a mischaracterization of the weight the Congress indicated should be given to competition factors. The Exchange Act states the Commission "shall consider" competition, as well as investor protection, efficiency, and capital formation. It does not state that competition is superior to those other interests, nor that this general consideration eliminates specific requirements set forth in the statute, *particularly when those requirements are directed toward remediating a lack of competition*.[25] These are separate objectives. The Commission's approach of relying solely on the natural presence of competitive forces in approving market data

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[23] 73 FR at 32762, *quoting* Securities Acts Amendments of 1975, Report of the Senate Comm. on Banking, Housing, and Urban Affairs to Accompany S.249 (the "Senate Report on S.249"), S. Rep. No. 94-75, 94th Cong., 1st Sess. 8 (1975) (emphasis added).

[24] SEC Release No. 34-57917 (June 4, 2008) (emphasis added).

[25] The preamble to Section 11A shows that competition considerations do not control other objectives of the national market system:

> It is in the public interest and appropriate for the protection of investors and the maintenance of fair and orderly markets to assure . . .
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> (ii) fair competition among brokers and dealers, among exchange markets, and between exchange markets and markets other than exchange markets; [and]
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> (iii) the availability to brokers, dealers, and investors of information with respect to quotations for and transactions in securities.

fees is particularly misguided because the relevant law and rules are clearly intended to address the uneven playing field and absence of competitive forces when an exchange sells its exclusive market data. Indeed, even with respect to the competition objective, Section 11A is not satisfied if the Commission merely believes that competition, or "significant competitive forces," are present. The Commission's job entails performing a real economic analysis and testing whether its assumptions are correct by reviewing essential facts such as cost data, and not simply relying on an unsubstantiated belief without obtaining cost data to verify its theories. As discussed above, moreover, the economic evidence shows that the proposed reliance on competition would not satisfy the Exchange Act requirements that market data fees be "fair" and "reasonable."

With its new approach, the Proposed Order also would inappropriately interject a competition factor into independent, discrete statutory requirements. For example, the requirement that an exchange allow access to market data in a nondiscriminatory manner is not qualified by any consideration of whether the exchange can exercise market power with respect to the data at issue or is subject to competitive forces. The statutory objective of making quotation and transaction information available to brokers, dealers, and investors is a critical Commission responsibility in facilitating the development of a national market system; it cannot be delegated to the exchanges or satisfied simply by an unsubstantiated belief that competitive forces exist in relation to market data. As discussed above, moreover, the economic evidence shows that the proposed reliance on competition will not be effective in satisfying the requirements of the statute that market data fees be "fair and reasonable." The Commission is not empowered to ignore the standards that the Exchange Act mandates for the review of exchange rule filings, including market data fee filings.

The Commission, as a matter of law, also is not free to ignore other contexts in which it has interpreted the same "fair and reasonable" standard as requiring a detailed analysis of costs. In the ongoing dispute between Nasdaq and the Consolidated Tape Association (the "CTA"), the Commission interpreted "fair and reasonable" to require a detailed analysis of costs and thus it assigned the matter to an administrative law judge, who took hundreds of pages of testimony on the issue of allowable costs.[26]

It is important, therefore, to note that the Commission has criticized the industry in the instant proceeding for demanding a "strict cost accounting" when what the industry — as well as the Congress — has sought is not a strict cost accounting but rather fees "reasonably related to cost."[27] Indeed, the only entity demanding and receiving a strict cost accounting is Nasdaq in its

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[26] *See, e.g.*, *In re Nasdaq Stock Market, LLC for Review of Action Taken by the Consolidated Tape Association (the "Nasdaq/CTA Dispute Release")*, SEC Release No. 55909 (June 14, 2007) in text at nn. 17-20, available at http://www.sec.gov/litigation/admin/2007/34-55909.pdf, and SIFMA's comment letter of August 1, 2007, available at *In re Nasdaq Stock Market, LLC for Review of Action Taken by the Consolidated Tape Association*, SEC Release No. 55909 (June 14, 2007) in text at nn. 17-20 [emphasis in original deleted; footnotes omitted] available at http://www.sec.gov/litigation/admin/2007/34-55909.pdf.

[27] *See*, *Concept Release: Regulation of Market Information Fees and Revenues*, SEC Release No. 34-42208 (Dec. 9, 1999) (the "1999 Concept Release"), at IV.C.:

> Congress did not include a strict, cost-of-service standard in Section 11A of the Exchange Act, opting instead to allow the Commission some flexibility in assessing the fairness and

dispute with the CTA — with the Commission's blessing. The current status of this multi-year battle is as follows. The CTA claims Nasdaq owes it $833,862. Nasdaq, operating under its strict cost accounting, claims it only owes the CTA $233,132. While conceding it owes at least $233,132, Nasdaq has argued that it will pay nothing because it believes the failure to adhere to strict cost accounting means *the CTA has failed to carry its statutory burden of establishing a fair and reasonable fee.*

Why does "fair and reasonable" mean one thing when Nasdaq is paying a fee and something altogether different when Nasdaq (or NYSE) wishes to charge a fee? The Commission has determined that a cost-based analysis is necessary in the Nasdaq/CTA instance because of the absence of competitive forces.[28] Putting aside the fact that "non-core" data is also not subject to competitive forces — as our Economic Study shows,[29] and putting aside the fact that the Proposed Order's "competition rationale" is being first articulated many years after the Nasdaq/CTA proceeding commenced, we would note that the logic of the position in the Proposed Order would demand that extensive cost information be provided to support fees for core data, which the Proposed Order would concede is not subject to competitive forces. Over the last decade, investors and broker-dealers have paid billions of dollars to the exchanges with far less empirical analysis than that being applied to the question of fairness of the proposed one-time $833,000 fee that the CTA seeks to impose on Nasdaq. How can these cost factors be unquantifiable, unknowable, and not required when Nasdaq (or NYSE Arca) proposes a fee, but be quantifiable, knowable, and required when Nasdaq (or NYSE Arca) is paying a fee?

Here, in the case of the market data fees, where the "fair and reasonable" standard is once again relevant, it appears that NYSE Arca also did not present any work papers to support its calculations, an omission the Commission specifically mentioned disapprovingly in the *CTA* case.[30] In fact, NYSE Arca did not present any calculations at all or even any cost data on which such calculations might be made.

The terms "fair" and "reasonable" cannot mean in one fee context that costs are highly relevant, but mean the opposite in another, comparable, fee context. As the Court of Appeals in *Goldstein v. Securities and Exchange Commission* held:

> reasonableness of fees. Nevertheless, the fees charged by a monopolistic provider of a service (such as the exclusive processors of market information) need to be tied to some type of cost-based standard in order to preclude excessive profits if fees are too high or underfunding or subsidization if fees are too low. Nevertheless, the fees charged by a monopolistic provider of a service (such as the exclusive processors of market information) need to be tied to some type of cost-based standard in order to preclude excessive profits if fees are too high or underfunding or subsidization if fees are too low. The Commission therefore believes that the total amount of market information revenues should remain reasonably related to the cost of market information.

[28] Proposed Order at n.219.

[29] *See*, Economic Study at 25-29.

[30] Nasdaq/CTA Dispute Release at 6.

> We ordinarily presume that the same words used in different parts of a statute have the same meaning. *See Sullivan v. Stroop*, 496 U.S. 478, 484 (1990). The Commission cannot explain why 'client' should mean one thing when determining to whom fiduciary duties are owed, 15 U.S.C. § 80b-6(1)-(3), and something else entirely when determining whether an investment adviser must register under the Act, *id.* § 80b-3(b)(3). *Cf. Mobil Oil Corp. v. EPA*, 871 F.2d 149, 153 (D.C. Cir. 1989).
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> . . .
>
> That the Commission wanted a hook on which to hang more comprehensive regulation of hedge funds may be understandable. But the Commission may not accomplish its objective by a manipulation of meaning.[31]

In short, the Proposed Order would have the Commission fall into the same trap as in *Goldstein*: the Commission cannot have the same terms mean one thing when Nasdaq is paying a fee and something altogether different when the fee is being charged by Nasdaq (or in the case at hand, NYSE Arca, as part of the combined NYSE Euronext enterprise).[32] We very much doubt the *Goldstein* court would be sympathetic to such an approach.

2. "Core" vs. Non-Core" Data. As the Proposed Order recognizes, the Exchange Act does not distinguish between "core" and "non-core" data.[33] These terms entered the Commission's lexicon more than 25 years after the passage of the 1975 amendments to the Exchange Act, around the time of the Seligman Report[34] and the proposal to adopt Regulation NMS.[35] The Exchange Act itself deals with quotation and transaction data and mandates broadly that quote and trade data be made public.

The Proposed Order repeatedly distinguishes market data that must be consolidated from data that does not have to be consolidated. The term "consolidated," however, does not appear in the Exchange Act in connection with market data. As the Commission has recognized:

> When Congress mandated the creation of a national market system, it stated that 'communication systems, particularly those designed to provide automated dissemination of last sale and quotation information with respect to securities, will form the heart of the national market system.'… Congress did not

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31 451 F.3d 873, 882 (D.C. Cir. 2006).

32 *See*, Economic Study at 12.

33 Proposed Order at 35.

34 *Report of the Advisory Committee on Market Information: A Blueprint for Responsible Change* (Sep. 14, 2001) (the "Seligman Report").

35 SEC Release No. 34-49325 (Feb. 26, 2004).

specifically mandate the creation of a consolidated market data processor system.[36]

The Commission has specified in its rules the data that must be consolidated pursuant to national market system plans approved by the Commission, and the contexts in which consolidated data must be displayed. *See* Rule 603(b) and (c) of Regulation NMS. "Core data" is simply a convenient term the Commission uses to describe data that it set forth in its own rule some 30 years ago that *must* be consolidated.[37] Consistent with the Commission's new use of that term, all data that is not subject to the consolidation requirement is "non-core." Whatever significance these terms have in contexts such as the Commission's trade-through rule (Rule 611 of Regulation NMS), they do not have any statutory significance in the context of determining the terms and fees for the sale of market data. That statutory significance, moreover, with its emphasis on transparency and fairness to all investors, is not limited to data the Commission by rule says must be consolidated.

As articulated in the Proposed Order, the core/non-core approach to market data does not reflect, and indeed conflicts with, the will of Congress. The Proposed Order would acknowledge that the introduction of decimalization has dramatically reduced the value of "core" data.[38] Remarkably, the Proposed Order would then note that "the Commission ultimately decided that the consolidation model should be retained for core data …."[39] The Proposed Order would thus claim that the data Congress intended to make available to the public is not the expressly cited "information on quotations and securities" but rather the fraction of that data now known as consolidated "core" data — and that the Commission apparently has the authority to dispense with that as well, rendering the subject matter of the Exchange Act a nullity. In effect, the Proposed Order would hollow out the notion of "core" data to the point where it would declare the congressional market data mandate virtually extinct. That would vitiate important congressional goals embedded in Exchange Act Sections 6 and 11A and would exceed the Commission's statutory authority.

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[36] *Concept Release Concerning Self-Regulation*, *supra*, n.229 (citation omitted).

[37] SEC Release No. 34-57917 (June 4, 2008) ("Core data is the best-priced quotations and comprehensive last sale reports of all markets that the Commission requires a central processor to consolidate and distribute to the public pursuant to joint-SRO plans.").

[38] Proposed Order at 34. *See* SEC Release No. 34-49325 (Feb. 26, 2004) (describing the evolution of required data display in the "national market system"). Prior to the adoption of Regulation NMS in 2005, consolidated data included a montage of the best quotes from all reporting market centers trading a security. Rule 600(b)(13) of Regulation NMS "substantially revised the consolidated display requirement … to simply require a consolidated display that is limited to the prices, sizes, and market center identifications of the NBBO, along with the most recent last sale information." *Id.* What had been core data became non-core data. Other Commission actions have affected the scope and quality of core data. As noted above, the shift to decimal pricing significantly reduced the amount of information about market depth at the NBBO. *See, e.g.*, SEC Release No. 34-51808, *supra*. *See also* SEC Release No. 34-42914 (June 8, 2000) (framework for SROs to convert to decimal prices).

[39] Proposed Order at 39.

Instead of the core/non-core distinction that the Proposed Order would make, the Exchange Act looks at the means of distribution of data from a market center. The Congress well understood that an exclusive processor of the market data emanating from any single market center — that is to say, an exchange such as NYSE Arca — would enjoy a monopoly. It warned the Commission not to rely on "natural competitive forces" in such instances and that the antitrust laws might have to provide an answer if the Commission was unable to exercise good judgment in this area:

> Although the SEC's basic role would be to remove burdens on competition which would unjustifiably hinder the market's natural economic evolution and to assure that there is a fair field of competition consistent with investor protection, in situations in which natural competitive forces cannot, for whatever reason, be relied upon, the SEC must assume a special oversight and regulatory role. *An exclusive processor for a national market system would create such a situation and so would self-regulatory projects which are not economically self-sufficient, which enjoy an effective monopoly, or which are merchandised to members on a basis other than cost and quality of services.* The bill would give the SEC broad authority over and significant responsibility for the development and operation of such facilities, subject of course to any ultimate judicial reconciliation of the policies of the Exchange Act with those of the antitrust laws.[40]

The Congress has determined previously that competition cannot be relied on to regulate commercial conduct of exchanges as exclusive processors, regardless of whether or not there was also a consolidator of data from several exchanges. That determination of course applies to NYSE Arca, which the Commission has already found to be an exclusive processor.[41] Exchange Act Section 11A(c)(1)(C) speaks of exclusive processors, not consolidators or consolidated data, which the Congress did not mandate and in fact was not convinced was necessary.[42] The Proposed Order would unleash a "perfect storm" for setting the terms for distributing market

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[40] Senate Report on S.249 at 12 (emphasis added).

[41] Proposed Order at n.145.

[42] The Congress was leery of having an exclusive consolidator and warned about the anticompetitive dangers of such an arrangement:

> The Committee believes that if economics and sound regulation dictate the establishment of an exclusive central processor for the composite tape or any other element of the national market system, provision must be made to insure that this central processor is not under the control or domination of any particular market center. Any exclusive processor is, in effect, a public utility, and thus it must function in a manner which is absolutely neutral with respect to all market centers, all market makers, and all private firms. Although the existence of a monopolistic processing facility does not necessarily raise antitrust problems, serious antitrust questions would be posed if access to this facility and its services were not available on reasonable and nondiscriminatory terms to all in the trade or if its charges were not reasonable.

Senate Report on S.249 at 11.

data. Control of the terms of distribution would be in the hands of an exchange that has true market power: a for-profit enterprise that is an exclusive processor and the dominant market for quoting and trading the securities of a significant number of National Market System securities.[43]

The Commission itself also has recognized that "market data can have anticompetitive effects if it is sold on discriminatory terms or in an unfair manner,"[44] and that "[i]n the past, SROs have attempted to distribute market data in ways that could potentially harm competitors."[45] The Commission has previously provided an example of an NYSE rule filing to offer a new "depth of book" (*i.e.*, non-core) data product that had anticompetitive features (downstream restrictions that were in its vendor agreements at the time of the approval). The Commission ultimately approved the filing on condition that the anticompetitive features be removed.[46] But this example contradicts the approach the Proposed Order would now take. In this example, market forces by themselves did not prevent this statutorily deficient product. Nothing has changed to eliminate this anticompetitive potential of exchange market data filings and to justify the "new approach" in the Proposed Order. There also has been no change in the statute that the Commission must apply to all exchange rule filings. The application of the proposed market-based standard to the Proposed Rule would effectively obliterate important statutory standards established by the Congress and would be an arbitrary and capricious exercise of the Commission's authority.

3. Rulemaking Process. The proposed adoption of the new "market-based approach" to review exchange rule filings in fact would constitute Commission rulemaking that must be published for public notice and comment.[47] In effect, the Proposed Order would attempt to amend Rule 19b-4 without following required agency rulemaking procedures under the Administrative Procedure Act.[48]

The Commission has recognized the important public purpose its careful review of self-regulatory organization rule changes serves:

> As Congress has stated on a number of occasions, SROs are "quasi-public agencies, not private clubs, and . . . their goal is the prevention of inequitable and unfair practices and the advancement of the public interest. An important way for

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43 *See* Economic Study at 25-34.

44 SEC Release No. 34-50700 (Nov. 18, 2004), citing to Exchange Act Section 11A(c)(1)(C), id., n.230.

45 *Id.* at n.228.

46 *Id.*

47 SEC Rule of Practice 192(b), 17 CFR § 201.192(b).

48 5 U.S.C. § 553 (2008). The publication for comment of the Commission's proposed approval order for one SRO proposed rule change does not satisfy the requirement to expose for public comment a *Commission* rule that will apply to an entire class of rule filings.

the Commission to help ensure that the SROs are serving those goals is through the review of SRO rule filings."[49]

Rule 19b-4 requires all exchange proposed rule changes to be filed with the Commission on Form 19b-4.[50] The form "is intended to elicit information necessary for the public to provide meaningful comment on the proposed rule change and for the Commission to determine whether the proposed rule change is consistent with the requirements of the [Exchange] Act and the rules and regulations thereunder applicable to the [exchange]."[51]

Form 19b-4 requires statements concerning, among other things, the purpose of and statutory basis for the proposed rule change, and the impact on competition. Mere assertions that the proposed rule complies with statutory requirements are insufficient; the filing must explain why the proposed rule change is consistent with the statute and rules that apply to the exchange, including the prohibition on unfair discrimination between customers, issuers, brokers, or dealers.[52] In addition, the discussion of the burdens that the proposed rule change may have on competition must, among other things: (1) specify the particular categories or persons and kinds of businesses on which any burden will be imposed and the ways in which the proposed rule will affect them; (2) explain why any burden on competition is necessary or appropriate in furtherance of the purposes of the Exchange Act; and (3) be sufficiently detailed and specific to support a Commission finding that the proposed rule change does not impose any unnecessary or inappropriate burden on competition.[53]

The Proposed Order's "market-based approach" would substitute for the Commission review required by Rule 19b-4, and the finding required by Section 19(b)(2) that a proposed rule is or is not consistent with the provisions of the Exchange Act, a presumption of compliance with the Exchange Act and the rule if "significant competitive forces" are present. This effectively would render superfluous the statements required by Rule 19b-4. While the new proposed approach seemingly offers an easy way to streamline exchange rule review, it does not meet the Exchange Act standards.

The Commission has recognized that the competitive landscape of the securities markets is changing rapidly, and that exchanges "can be placed at a competitive disadvantage because they must wait for the completion of the public comment period and the review process before

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49 SEC Release No. 34-43860 (Jan. 19, 2001) (footnote omitted).

50 The exception is proposed rule changes submitted pursuant to Exchange Act Section 19(b)(7), which must be filed on Form 19b-7.

51 Form 19b-4, General Instruction B.

52 Form 19b-4, Item 3.

53 *Id.*, Item 4.

implementing [rule] changes" for trading systems in order to compete with non-exchanges.[54] To help expedite the exchange rule approval process, in 2001 the Commission proposed to replace Rule 19b-4 with Rule 19b-6.[55] That is an example of the procedure that is necessary and appropriate to make changes to the rule-filing process, rather than simply declaring a new review standard in the context of one exchange rule filing. We note, in that regard that the Commission has now decided not to pursue its own rulemaking and has instead adopted its own interpretive positions regarding Rule 19b-4 for certain types of proposed rule changes, which we gather are in lieu of a formal rulemaking.[56]

The level of market data fees has been a contentious issue for some time. As the Commission stated in 2005:[57]

> Many commentators recommended that the level of market data fees should be reviewed and that, in particular, greater transparency concerning the costs of market data and the fee setting process is needed. The Commission agrees.… [W]e believe that the level of market data fees is most appropriately addressed in a context that looks at SRO funding as a whole. The Commission's review of SRO structure, governance, and transparency provides a useful context in which these competing policy concerns can be evaluated and balanced appropriately.[58]

This commitment that a comprehensive review of market data fees would take place in Regulation SRO, and not Regulation NMS, is worth stressing. The Commission was assuring the public that it would undertake a serious de novo review of market data fees — a review it has never in fact undertaken. The Proposed Order, however, would claim that, in fact, the Commission had actually made these decisions even while it was counseling patience: "In 2005, however, the Commission stated its intention to apply a market-based approach that relies primarily on competitive forces to determine the *terms* on which non-core data is made available to investors."[59] This statement, however, conflates a statement in the release adopting Regulation NMS — to the effect that competitive forces would determine the terms on which other data would be made available to a Network processor[60] — into the very different "market

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54 SEC Release No. 34-43860 (Jan. 19, 2001) (proposing Rule 19b-6). The Commission discusses the present competition between exchanges (which must file rule changes with the Commission) and other markets (which do not have to file their rules) in the Proposed Order.

55 *Id.* The Commission has not taken further action on the proposal.

56 *Commission Guidance and Amendment to the Rules Relating to Organization and Program Management Concerning Proposed Rule Changes Filed by Self-Regulatory Organizations*, SEC Release No. 34-58092 (July 3, 2008).

57 Proposed Order at 5.

58 SEC Release No. 34-51808 (June 9, 2005) (adoption of Regulation NMS).

59 Proposed Order in text accompanying n.17.

60 *Id.* in text accompanying 649.

forces will determine terms on which non-core data is available *to investors*." In actuality, what the Regulation NMS release provides is that "the adopted consolidated display requirement will allow market forces, rather than regulatory requirements, to determine *what, if any, additional quotations outside the NBBO are displayed to investors*."[61] Again, the Commission did not — and could not — suggest that allowing market forces to determine whether data is provided meant that the determination to provide data removed that data from the protections of the Exchange Act.

The market-based test in the Proposed Order cannot be applied to an exclusive securities information processor that has the ability to exert monopoly pricing power over its own data, such as NYSE/NYSE Arca. Even if the presence of significant competition in the provision of depth-of-book data would be sufficient to demonstrate fairness and reasonableness (a proposition that would be difficult to sustain in the absence of cost data to validate the conclusion that significant competition was present), the Proposed Order would not put the Commission in any legally sustainable position. Given the flaws in the approach taken by the Proposed Order, as described in the Economic Study, the Commission's proposed reliance on the presence of significant competition is both inappropriate and contrary to the applicable statutory provisions and the Commission's rules and its prior interpretations, as reflected in the 1999 Concept Release.

In summary, notwithstanding the Proposed Order's statements to the contrary, the Proposed Order's proposed establishment of a new market-based approach to review exchange proposed rule changes lacks both a factual basis and a statutory basis and would be invalid. Also, the dichotomies that the Proposed Order would draw between core and non-core, and consolidated and non-consolidated, data do not affect or diminish the statutory standards that apply to exchange rule proposals dealing with any type of market data. If the presumption incorporated in its market-based approach is to be substituted for the Commission's customary application of Exchange Act standards, the Commission must at a minimum propose amendments to Rule 19b-4. Nonetheless, for the reasons discussed above, we respectfully advise the Commission that it would lack the statutory authority to amend or abridge the standards it must apply to exchange market data fee rules.

D. Best Execution

The Commission previously has described a broker-dealer's obligation to obtain best execution of customer orders as a duty to "seek the most favorable terms reasonably available under the circumstances for a customer's transaction."[62] The Proposed Order's declaration that "broker-dealers are not required to obtain depth-of-book order data to meet their duty of best execution"[63] is helpful guidance as to the minimum regulatory requirement, but does not speak

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61 SEC Release Nos. 34-49325 (Feb. 26, 2004); 34-51808 (June 9, 2005) (emphasis added).

62 SEC Release No. 34-57917 (June 4, 2008).

63 *Id.* The Commission notes that NYSE Arca and Nasdaq "also stated their view that depth-of-book order products are not required for best execution purposes." *Id.* at n.225.

to the commercial reality of finding and accessing liquidity for customers in today's fragmented market, which requires much more information. The more data investors and their brokers have concerning available liquidity, the better equipped they will be to find and access liquidity and achieve best execution. A broker without depth-of-book information may be able to meet his regulatory responsibility as defined by the Commission but would still be operating in the dark in trying to provide optimal and efficient executions to clients.

Depending on the circumstances and market conditions prevailing at the time, broker-dealers may choose to access top-of-book orders in pursuit of best execution or may choose to follow a path that also includes depth-of-book. In fact, depth-of-book executions are very much part of the best execution landscape and already integral to the best execution decision-making process. At the same time, however, Regulation NMS continues to develop and participants continue to explore when and where to access depth-of-book for best execution.

With regard to the Exchange Act, we note that the Proposed Order would not say that, in satisfying their best execution obligations, broker-dealers are never required to purchase depth-of-book data. If that were the Commission's view, there would not be any need to discuss a broker-dealer's ability to consider "the cost and difficulty of trading in a particular market, including the costs and difficulty of assessing the liquidity available in that market."[64] Because depth-of-book data is at least sometimes critical to the evaluation, the Commission itself discusses cost and difficulty of assessing liquidity. The Commission previously has declared: "[R]outine execution of customer orders at the NBBO when better prices are reasonably available can be a violation of the duty of best execution."[65] Regulation NMS addressed the availability of better prices to some extent, because top-of-book prices of all market centers must be used to determine the NBBO. Nevertheless, once the small size at the NBBO is exhausted, which will invariably happen for institutional orders and, as our Economic Study shows, even for a substantial percentage of retail orders, a broker-dealer must be able to find the best available prices to fill the orders.[66] Obviously, one way to find those prices is to obtain depth-of-book data. The Commission has never said that a broker-dealer will not be faulted for failing to obtain depth-of-book data in assessing its best execution obligations, nor has it canvassed or addressed potentially relevant federal and state statutes and regulations other than the Exchange Act.

E. Alternatives to Depth-of-Book Data

The Proposed Order also discusses various alternatives that market participants can use to assess market depth.[67] Of course, this discussion shows that assessing market depth is important

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64 *Id.* at 32768.

65 *Marc N. Geman*, SEC Release No. 34-43963 (Feb. 14, 2001). *See also Newton v. Merrill, Lynch, Pierce, Fenner & Smith, Inc.*, 135 F.3d 266, 269-270 (3d Cir.), *cert. denied* 525 U.S. 811 (1998); *Scottrade, Inc.*, SEC Release No. 34-58012 (June 24, 2008).

66 *See* Economic Study at 20-21 ("about 36% of retail orders (market and marketable limit) encounter insufficient NBBO size when they are submitted. . . .[M]arketable limit orders encounter insufficient NBBO size more often (46%) than market orders (34%)").

67 SEC Release No. 34-57917 (June 4, 2008).

to many market players, such as broker-dealers attempting to execute institutional-sized orders. One of the alternatives cited in the Proposed Order is "pinging" non-displayed pools of liquidity, *e.g.*, "dark pools." As Trading and Markets Division Director Erik R. Sirri has commented, however, "[t]he only way to know whether a dark pool has liquidity is to route an order to the pool. Routing this type of pinging order is a less efficient means to assess liquidity than viewing a consolidated montage of displayed quotes from all quoting venues."[68] Pinging, of course, requires capital commitment — if you hit a quote, you buy or sell stock. In addition, relying on pinging rather than information dissemination exalts opacity over transparency, which effectively contravenes the policy objectives embodied in Exchange Act Section 11A.

Another alternative cited in the Proposed Order is the independent distribution of order data by securities firms and data vendors. The possibility of such independent distribution is speculative, implausible, and unsubstantiated. The large exchanges each list thousands of companies, and orders are handled by hundreds of broker-dealers. For broker-dealers to aggregate depth-of-book data in a manner that is comparable to the depth-of-book data possessed by exchanges in the ordinary course of the exchanges' business would involve overwhelming logistical challenges and transaction costs. Indeed, the broker-dealers may not be able to collaborate in the manner suggested in the Proposed Order without exposing themselves to significant antitrust scrutiny and serious legal risk. Thus, the hypothetical possibility of such an unannounced entry is not timely, likely, and sufficient so as to pose a current competitive constraint on market data pricing.[69]

The issues at stake here are vital to the national market system and to investors generally. The market information at issue is critical to the ability of a broker-dealer to serve its clients appropriately. The advent of a decimalized market has meant that the volume displayed at each market's best bid or best offer is a relatively small amount, which conveys dramatically less information than had previously been the case. That makes depth-of-book data all the more important to investment intermediaries and to investors themselves, because a significant proportion of retail orders encounter insufficient NBBO size.

E. Conclusion

As we have discussed above, the Commission cannot rely on competition to assure the fairness or reasonableness of exchange market data rates without having cost data to validate the

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[68] Erik R. Sirri, *Keynote Speech at the SIFMA 2008 Dark Pools Symposium* (Feb. 1, 2008), at 7.

[69] In the European Union, several key dealers have formed BOAT, a consortium that collects and disseminates equity market data. That does not provide any reliable indication of what could occur in the United States, however, because of important differences in the legal and regulatory environment. First, the Market in Financial Instruments Directive ("MiFID") does not require dealers to turn their data over to exchanges for free, unlike the requirements in the United States. As a result, the BOAT participants are not put in a position where they have to compete with exchanges that have been given the same data for free. Secondly, it may well be that the same antitrust issues are not present in Europe with the same force in connection with BOAT as could well apply to a similar combination in the United States. *See, e.g.*, *National Collegiate Athletic Ass'n v. Bd. of Regents*, 468 U.S. 85, 120 (1984); *Ariz. v. Maricopa County Medical Soc.*, 457 U.S. 332 (1982); *United States v. Visa U.S.A., Inc.*, 344 F.3d 229 (2d Cir. 2003).

assumption that competition is having that effect. In addition, we have discussed the Exchange Act requirements for NYSE Arca rulemaking and have shown that the Proposed Order does not comply with the Exchange Act. Finally, we have shown that the Proposed Order's discussion of best execution duties does not adequately address the problem that for execution quality and competitive reasons, investment professionals and investors are not free to ignore depth-of-book data. For these reasons, we respectfully advise the Commission that the Proposed Order does not correctly analyze the legal issues involved in the Proposed Rule and that if the Commission were to issue the Proposed Order, its action would be reversible by a United States Court of Appeals as a matter of law.

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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

Appendix: Securities Litigation & Consulting Group, Inc., An Economic Study of Securities Market Data Pricing by the Exchanges (July10, 2008)

cc: The Hon. Christopher Cox, Chairman
The Hon. Paul S. Atkins, Commissioner
The Hon. Kathleen L. Casey, Commissioner
The Hon. Elisse B. Walter, Commissioner
Dr. Erik R. Sirri, Director, Division of Trading and Markets
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APPENDIX

An Economic Study of
Securities Market Data Pricing by the Exchanges

July 10, 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.*

An Economic Study of Securities Market Data Pricing by the Exchanges

Executive Summary

This study conducts an economic analysis of the supply and demand of securities market data sold by exchanges in the United States and finds that two exchanges each have dominant positions in distinct portions of the market with the opportunity to exert monopoly pricing power. Quantitative analysis of available economic data, including measured market shares and concentrations well in excess of standards set by the United States Department of Justice ("DOJ"), shows that the New York Stock Exchange (NYSE) enjoys a dominant market in individual NYSE-listed securities and the NASDAQ Stock Market (NASDAQ) enjoys a dominant market in NASDAQ-listed securities, and provides strong empirical support for the assertion that the two dominant exchanges are exploiting the opportunity to exert monopoly pricing power in a manner predicted by economic theory. The presence of strong network externalities, public statements and financial disclosures by the exchanges, and other factors provide additional support. The two dominant exchanges are exercising monopoly pricing power by charging broker dealers and the investing public fees for depth-of-book data that are significantly higher than the relevant costs associated with distributing the data. Therefore, the United States Securities and Exchange Commission ("SEC" or "Commission"), which is required by Congressional statute to assure that securities market data distributed by exchanges is made available on "fair and reasonable terms," cannot reasonably rely on competitive forces to result in competitive prices for exchange market data sold by the two dominant exchanges.

I. Introduction

The primary objective of this study is to provide an economic analysis of the pricing of securities market data by exchanges in the United States. Broker dealers provide exchanges with market information (e.g., bids, offers, and limit orders) produced in conjunction with their clients, the investing public. Broker dealers are required by law to grant the exchanges a broad license to use this valuable liquidity data and are not permitted to recover any fee in return. Driven by competitive pressures to provide the best possible customer service, broker dealers must have the option to be able to buy this data back at reasonable prices when they so choose. This pressure, when coupled with a lack of comparable substitutes and the other factors set forth below, results in a relatively inelastic demand for the exclusive liquidity data products sold by the dominant exchanges.

The study conducts empirical analyses of available public data within a qualitative and quantitative economic assessment of the supply and demand conditions for securities market data. During the period in which this study was developed, the U.S. Securities and Exchange Commission ("SEC" or "Commission") published a "Notice of Proposed Order Approving Proposal by NYSE Arca, Inc. to Establish Fees for Certain Market Data and Request for Comment" ("Draft Order").[1] Relevant conclusions in the SEC Draft Order are analyzed and critiqued throughout the study.

The study proceeds as follows. Section II provides an analysis of the supply-side conditions. It explains why the 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. Section III provides an analysis of

[1] SEC Release 34-57917, June 4, 2008, available at http://www.sec.gov/rules/other/2008/34-57917.pdf.

the demand-side conditions. It lists and describes the factors that 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. Section IV explains how 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. Section V concludes that the relevant quantitative and qualitative evidence demonstrates that the SEC cannot reasonably rely on competitive forces to ensure that the exclusive market data sold by the two dominant exchanges is made available on "fair and reasonable" terms.

II. Supply-Side Conditions

The competition for order flow among exchanges provides no assurance of competitive pricing for data of which an exchange has exclusive possession. This simple statement is the most important, and perhaps the most misunderstood, fact when it comes to understanding the underlying economics of securities market data pricing by exchanges. Thus, we begin explaining why fierce competition among exchanges is not likely to result in competitively priced exclusive data when significant "network externalities" are present in the market for order flow.[2]

A. Network externalities

Competition does not preclude an outcome in which a dominant firm emerges, particularly in the presence of network externalities. A network externality arises when the value of a system increases as the number of individuals who use the system increases.

[2] Our use of the term "exclusive" data fits within the SEC's notion of "non-core" data. See, for example, SEC Draft Order, Page 3.

Network externalities arise in a number of markets, such as the computer software market. For example, the success of Microsoft's Windows operating system is widely attributed to network externalities. Hardware manufacturers and software providers make their products compatible with Windows to ensure that they have access to the large existing market of Windows users. In turn, Microsoft continues to be successful by publicizing that its operating system is supported by the ever-growing number of Windows-compatible computers and programs. Similarly, Microsoft's success in its office suite product, Microsoft Office, is also largely attributable to network externalities. Many individuals choose to use Microsoft Office not necessarily because it offers the best features, but because it offers the benefit of being able to easily share documents with the large existing market of Microsoft Office users.

In the securities markets, the competition for order flow among market centers, including exchanges, involves a network externality. An order flow externality arises because exchanges are essentially networks that link potential buyers and sellers. The more orders for a particular security that traders submit to a particular exchange, the more liquidity increases. The more liquidity increases, the more valuable the exchange is to everyone who uses it. At the individual security level, the order flow externality makes it highly likely that a dominant liquidity-providing market center will emerge.

Two exchanges, NYSE and NASDAQ, account for the vast majority of all equity trading in the United States. For individual securities, each exchange enjoys a dominant market share in most of the securities that are listed on that exchange. NYSE enjoys a dominant market share in NYSE-listed securities and NASDAQ enjoys a dominant market share in NASDAQ-listed securities.

Figure 1 shows NASDAQ's annual market share of reported trading activity for NASDAQ-listed stocks from 2002 through 2007, as reported in NASDAQ's 10-K filings. From 2002 to 2004, NASDAQ lost market share to alternative trading systems (ATSs), such as the Island, Instinet, and BRUT electronic communication networks (ECNs). In 2003, Instinet ECN and Island ECN merged their books to take advantage of the order flow (network) externality and became INET. Facing increasing competitive pressure, NASDAQ responded by buying up its competitors. In 2004, NASDAQ acquired BRUT. In 2005, NASDAQ acquired INET. Figure 1 shows that, as a result of these takeovers, NASDAQ successfully defended its dominant market share position for NASDAQ-listed securities.

Numerous news articles in professional business publications confirm the success of NASDAQ's strategy for defending its dominant position. The SEC's Draft Order specifically states, "A notable example of the close connection between a trading venue's distribution of order data and its ability to attract order flow was provided by the Island ECN 2002." Curiously, however, the Draft Order does not mention NASDAQ's subsequent takeover of INET.

Thus, history suggests that as long as the exchanges continue to respond to new competitors in a similar manner, their continued dominance is virtually assured. Published academic research supports this view. For example, Goldstein et al. (2008) state, "The subsequent consolidation by NASDAQ to reclaim market share provides some indication that such fragmentation was, in the long run, untenable."[3] Because exchanges are able to easily maintain (or defend, if necessary) dominant market shares in their own listed securities over the long-run, supply-side substitution is limited now and for the foreseeable future.

[3] Michael Goldstein, Andriy Shkilko, Bonnie Van Ness, Robert Van Ness, 2008, "Competition in the Market for NASDAQ Securities," *Journal of Financial Markets* 11, 113-143.

B. No supply-side substitution

Economics textbooks typically provide three general examples of possible supply-side substitution for various markets. First, competitors currently producing the product may have the ability to increase output from existing facilities. In the context of securities markets, however, no exchange or non-exchange market participant[4] can produce depth-of-book data comparable to that of an exchange with a dominant position in a particular security.

Second, new competitors can enter the market. However, in the context of securities markets, the network externalities provide a high barrier to entry that makes it extremely difficult for new competitors to gain increases in market shares that are significant enough to have a material impact on the dominance of the listing exchanges. Plus, the dominant exchanges have adopted a strategy of acquiring successful challengers to eliminate any long-term threat.

Third, producers of products not considered comparable substitutes in consumption may be able to easily convert to production of relevant products. For example, commercial construction firms can easily convert to residential construction, and vice versa. In the context of the securities markets, however, each exchange has exclusive possession of its own depth-of-book data and, as predicted by economic theory and further addressed below in Section IV, the dominant exchanges maximize their exclusive data revenues.[5]

It is impossible for NASDAQ to convert to produce NYSE depth-of-book data on a scale approaching NYSE's own depth-of-book data product for NYSE-listed stocks. Likewise, it is impossible for the NYSE to produce NASDAQ depth-of-book data on a scale approaching NASDAQ's own depth-of-book data product for NASDAQ-listed stocks. Consumers of depth-

[4] Non-exchange market participants include those that choose to display their own books (e.g., ECNs) as well as those that do not (e.g., "dark pools").

[5] Consider, for example, this excerpt from the NYSE's 2007 10-K filing: "These products are proprietary to us, and we do not share the revenues that they generate with other markets. Revenues for our proprietary data products have grown significantly over the last few years…" See also Sections III and IV, below.

of-book data, therefore, must purchase exclusive data from each dominant exchange to obtain accurate information about the true nature of liquidity regarding the individual stocks listed on those exchanges.

Furthermore, NBBO ("top-of-book") data is not an adequate substitute for depth-of-book data. After the 2001 change to decimal pricing, NBBO quote sizes declined dramatically.[6] In fact, the SEC's Draft Order points out that NBBO quote sizes declined so dramatically that "the size displayed at the various one-cent price points away from the inside quotes became a more useful tool to assess market depth."[7] An accurate assessment of market depth beyond the inside quote is important to both institutional investors and retail investors. In Section III below, we show that more than one-third of retail orders encounter insufficient NBBO size when they are submitted. Thus, there is no comparable substitute for an exchange's exclusive depth-of-book data.

C. Reported Trading Activity is Highly Concentrated

It is important to remember that trading venues, including exchanges (i.e., the "firms"), compete for listings and order flow on a security-by-security basis. The order flow externality arises for each security separately. From the broker dealers' perspectives, customer service concerns and best execution considerations are security-specific. Consequently, in the context of securities market data pricing, the relevant units of economic analysis are individual securities. [8]

[6] See, for example, Hendrik Bessembinder, 2003, "Trade Execution Costs and Market Quality after Decimalization," *Journal of Financial and Quantitative Analysis* 38, 747-777.
[7] SEC Draft Order, Page 38.
[8] The academic market microstructure literature uses individual securities as the relevant unit for many different analyses, including Herfindahl Index analyses of trading activity. See, for example, Paul Shultz, 2003, "Who makes markets," *Journal of Financial Markets* 6, 49-72, and Kee Chung, Chairat Chuwonganant and D. Timothy McCormick, 2004, "Order Preferencing and Market Quality on NASDAQ Before and After Decimalization,," *Journal of Financial Economics* 71, 581-612.

We calculate the market shares of the trading activity of several different securities on the two dominant exchanges from a recent time period. Table 1 presents the market share results for the ten most active NASDAQ-listed securities and the ten most active NYSE-listed securities during the week of March 10-14, 2008. We use three common measures of trading activity – dollar volume, share volume, and number of trades. Trade data is obtained from the Transaction and Quotation (TAQ) database.[9] We include trades reported to NYSE Arca in the calculation of the NYSE's market shares – both of which are under the common control of NYSE Euronext – for reasons explained below.

Panel A of Table 1 shows that the dominant share of trading in NASDAQ-listed stocks occurs on NASDAQ. Similarly, Panel B shows that the dominant share of trading in NYSE-listed stocks occurs on the NYSE. Overall, for all three measures of trading activity, the listing exchange is the dominant firm.

In addition to the market share of the dominant firm, economists are also interested in the number of firms competing in the market and the distribution of market shares across those firms. Antitrust economists summarize the distribution of market shares in aggregate indices, called market concentration indices, for use in quantitative antitrust analysis. Accordingly, we investigate the concentration of reported trading activity for a sample of securities.

To investigate the concentration of reported trading activity, we use one of the most widely used market concentration indices by antitrust economists – the Herfindahl Index.[10] It simultaneously takes into account the number of firms in a particular market and the distribution of market shares across those firms. The Herfindahl Index is low for markets that consist of a

[9] 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 are involved in the trade execution.
[10] The Herfindahl Index is also known as the Herfindahl-Hirschman-Index (HHI).

large number of firms with relatively equal market shares. It is higher for markets that consist of a smaller number of firms and greater disparities in the market shares among those firms.

The Herfindahl Index is calculated by summing the squared market shares of each firm competing in the market. For example, suppose we have three markets consisting of ten (10) firms with the market shares listed in Table 2 Panel A.

While all three market examples have the same number of firms (ten), the distribution of market shares varies greatly. In the competitive market example (the first two columns of Table 2 Panel A), the market shares are equal. In the duopoly market example (the middle two columns), two dominant firms account for 90% of the total market share. In the monopoly market example (the last two columns), 95% of the total market share is concentrated within one firm.

The DOJ has established specific guidelines for evaluating the Herfindahl Index. [11] The DOJ uses the Herfindahl Index to divide markets into three broad categories. [12] Table 2 Panel B shows the DOJ's breakdown of Herfindahl Index values across the three categories. The DOJ considers an industry with a Herfindahl Index of less than 1,000 to be "unconcentrated," an industry with a Herfindahl Index between 1,000 and 1,800 to be "moderately concentrated," and an industry with a Herfindahl Index greater than 1,800 to be "highly concentrated."

We calculate Herfindahl Indices for the trading activity of several different securities on the two dominant exchanges from a recent time period. Tables 3, 4, and 5 present the Herfindahl results for the ten most active NASDAQ-listed securities and the ten most active NYSE-listed securities during the week of March 10-14, 2008. Each table presents results based on three different measures of trading activity – dollar volume, share volume, and number of trades.

[11] See, for example, http://www.usdoj.gov/atr/public/testimony/hhi.htm.
[12] 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.

Table 3 presents the Herfindahl results for all reported trades. Panel A shows that the trading activity of NASDAQ-listed stocks is highly concentrated on NASDAQ. The Herfindahl Indices for all three measures of trading activity range from about 3,500 to 5,100. 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 2,700 to 4,100, still consistently well above the 1,800 DOJ threshold for a highly concentrated market. Both panels show that the volume (dollar and share) measures of trading activity are associated with higher concentration than the number of trades.

Table 4 presents the Herfindahl results for block-size (10,000 shares or more) reported trades. Panel A shows that the block trading activity of NASDAQ-listed stocks is extremely concentrated. The Herfindahl Indices for all three measures of trading activity range from about 4,300 to 9,300. In fact, if we exclude QQQQ (NASDAQ-100 ETF) and focus on the volume (dollar and share) measures, the Herfindahl Indices range from about 8,300 to 9,300. Panel B shows that the block trading activity of NYSE-listed stocks is slightly less concentrated than NASDAQ-listed stocks, ranging from about 3,000 to 6,300, but still consistently well above the 1,800 DOJ threshold for a highly concentrated market. For both exchanges, block trading activity (Table 4) is more concentrated than overall trading activity (Table 3).

Table 5 presents the Herfindahl results 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 Herfindahl Indices for all three measures of trading activity range from about 3,500 to 5,000. Panel B shows that the trading activity of NYSE-listed stocks is slightly less concentrated than NASDAQ-listed stocks, ranging from about 2,800 to 4,000, but still consistently well above the 1,800 DOJ threshold for a highly concentrated market. For both

exchanges, non-block trading activity (Table 5) and overall trading activity (Table 3) are roughly the same.

To summarize, the trading activity in all of the ten most active NASDAQ-listed securities and the ten most active NYSE-listed securities during the week of March 10-14, 2008 is highly concentrated. The volume (dollar and share) measures of trading activity show higher levels of concentration than the number of trades, but all measures are consistently well above the 1,800 DOJ threshold for a highly concentrated market for all securities on both exchanges. Finally, block trading is more concentrated than non-block trading for both NASDAQ-listed securities and NYSE-listed securities.

The results of our analysis of reported trading activity across exchanges are consistent with the results reported in a recent academic working paper.[13] 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. While the share of trading measures are not exactly the same, our 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 firm. Second, both studies suggest that trading is slightly more concentrated for NASDAQ-listed securities than for NYSE-listed securities. [14] Finally, both studies find that the concentration of trading is consistently well above the 1,800 DOJ threshold for a highly concentrated market for all securities on both exchanges.

Methodological Flaws in the SEC Draft Order

[13] Ryan Davies, 2008, "MiFID and a Changing Competitive Landscape," Babson College working paper.
[14] Calculation using the results reported in Table 1 of Davies (2008) yields a Herfindahl Index of 2,961 for NYSE-listed securities and a Herfindahl Index of 3,366 for NASDAQ-listed securities.

The results of our trading activity analysis, as well as the results of Davies (2008), appear to contradict the results reported in the SEC Draft Order. In its examination of the competition for order flow, the Draft Order includes summary statistics on the reported share volume in U.S.-listed equities during December 2007.[15] The SEC Draft Order presents these statistics as "a useful recent snapshot of the state of the competition in the U.S. equity markets…"[16] However, a casual inspection of these statistics reveals four major flaws that are consistent with an analysis that lacks a sufficient economic basis, either in theory or empirical evidence, to reasonably support the Commission's conclusions.

First, the share volume market shares are averages across all U.S.-listed equities. Unlike our analysis, the Draft Order does not examine market share statistics for NYSE-listed stocks and NASDAQ-listed stocks separately. Thus, the 29.1% market share for NASDAQ presented in the SEC Draft Order obfuscates the fact that NASDAQ holds market shares closer to 80% for some NASDAQ-listed securities and market shares closer to 10% for some NYSE-listed securities. Thus, the 29.1% market share figure presented in the SEC Draft Order is misleading because it reveals nothing about the nature of competition for the trading of specific securities.

As an example of internal inconsistency, the SEC Draft Order acknowledges that "Nasdaq has a substantial trading share *in Nasdaq-listed stocks*."[17] Also, the SEC Draft Order does not make this same mistake when it attempts to point out an example of the nature of competition over time. The Draft Order states, "For example, the NYSE's reported market share of trading *in NYSE-listed stocks* declined from 79.1% in January 2005 to 41.1% in December 2007."[18] This excerpt also provides an example of the second flaw.

[15] Draft Order, Table 1,Page 49.
[16] Draft Order, Page 48.
[17] SEC Draft Order, Page 58. Emphasis added.
[18] SEC Draft Order, Page 47. Emphasis added.

The second flaw is that the SEC Draft Order incorrectly treats NYSE and NYSE Arca as separate economic units. In 2006, the NYSE and ArcaEx merged to form the NYSE Group, Inc.[19] In 2007, the NYSE Group, Inc. subsequently merged with Euronext N.V. to form NYSE Euronext.[20] When analyzing the behavior of various economic agents, particularly those that are public corporations, it is critical to make distinctions along lines of ownership and control. In an important antitrust case, *Copperweld Corp. v. Independence Tube Corp. (1984)*, the U.S. Supreme Court held that a parent corporation and a wholly-owned subsidiary must be viewed as a single economic unit.[21] This holding is consistent with the basic financial economic theory that incentive-aligned managers seek to maximize the value of the entire corporation, including its parent and all of its subsidiaries.

According to the NYSE Group's May 4, 2006 prospectus, "[T]he trading platforms of the NYSE and NYSE Arca currently operate separately."[22] One may ask the following question: Does the degree of operational independence matter? The Court specifically addressed this issue in *Copperweld*. The U.S. Supreme Court specifically stated that "separateness" factors (e.g., whether the subsidiary has separate control of its day-to-day operations, separate officers, separate corporate headquarters, etc.) cannot overcome the basic fact that the ultimate interests of the subsidiary and the parent are identical.[23] Thus, NYSE and NYSE Arca must be viewed as a single economic unit.

Indeed, the SEC's Division of Corporate Finance correctly 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, while the Commission and the

[19] Source: http://www.nyse.com/about/history/timeline_2000_Today_index.html.
[20] Ibid.
[21] *Copperweld Corporation v. Independence Tube Corporation*, 467 U.S. 752 (1984).
[22] NYSE Group Prospectus (Form 424B3), May 4, 2006.
[23] *Copperweld Corporation v. Independence Tube Corporation*, 467 U.S. 752 (1984).

Division of Trading and Markets chose to separate the two wholly-owned subsidiaries, without any stated reason, in select parts of its analysis for the Draft Order.

Third, the statistics on "the state of competition in the U.S. equity markets" aggregate all non-exchange trading venues into one category. This allows the SEC to point out that "Perhaps the most notable item of information from Table 1 [in the Draft Order] is that non-exchange trading venues collectively have a larger share of trading than any single exchange." However, by combining the market shares, the aggregate number tells us nothing about how many trading venues account for the subtotal, nor does it tell us anything about the dispersion of market shares across these trading venues. Both of these pieces of information are crucial to understanding the nature of competition and concentration within an industry.

Fortunately, the SEC Draft Order provides the original source of its market share data.[24] We were able to locate the original source, replicate the results reported in the Draft Order Table 1, and uncover the identities and associated market shares for the individual non-exchange trading venues. This information is provided in Table 6. The left side of the table presents the share volume statistics, as reported in the Table 1 of the SEC Draft Order. The right side of the table separates the share volume statistics for the individual non-exchange trading venues and combines the share volume statistics for NYSE and NYSE Arca.

Table 6 shows that the SEC's total "all non-exchange" statistic of 30.2% is constructed by aggregating across four individual non-exchange trading venues – NASD ADF, NASDAQ TRF, NYSE TRF, and National Stock Exchange TRF. Individually, however, none of these trading venues accounts for more than 18% of the reported share volume. NYSE (including NYSE Arca) accounts for about 38% the reported share volume and NASDAQ accounts for more than 29%. Thus, by the SEC's own measure of the nature of competition in the U.S. equity

[24] http://www.arcavision.com.

markets, the two dominant trading venues are in fact exchanges. The two dominant exchanges, NYSE and NASDAQ, accounted for almost 70% of the reported share volume across all stocks in December 2007.

We note that the recent exchange consolidation trend is likely to result in continued dominance by NASDAQ and the NYSE. NASDAQ announced acquisitions of the Boston Stock Exchange (BSE) and Philadelphia Stock Exchange (PHLX) in October 2007 and November 2007, respectively. In January 2008, the NYSE announced the acquisition of the American Stock Exchange (AMEX). Market share statistics from a more recent time period that take into account completed, as well as soon-to-be-completed, acquisitions would provide a much more useful snapshot of the state of competition in the U.S. equity markets.

Finally, the SEC Draft Order contains flawed logic in drawing the conclusion that "[t]he fact that 95% of the professional users of core data choose not to purchase 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."[25] On the contrary, we show in Section IV that the exchanges are able to exert monopoly pricing power for their exclusive depth-of-book data.

The fact that 19,000 professional users purchased the data as of April 30, 2007[26] suggests that, for a large number of users, demand is relatively inelastic. We explore the demand inelasticity and how it is likely to continue to intensify in more detail in Section III, but at this point it is useful to note that the number of users of exclusive depth-of-book data has been growing significantly since April 2007, even in the presence of price increases and tying arrangements. At least up to current prices, exchanges are able to exert monopoly pricing power for their exclusive depth-of-book data over a large, and growing, group of customers.

[25] SEC Draft Order, Page 58.
[26] SEC Draft Order, Page 25.

If the flaws in the analysis in the SEC Draft Order were to be corrected, it would undoubtedly show that the SEC cannot rely on competitive forces to ensure that securities market data distributed by the exchanges was made available on "fair and reasonable terms." Even if the SEC Draft Order were to correct the two easiest flaws – treating NYSE and NYSE Arca as one economic agent, and including the market shares of each of the non-exchange trading venues separately for the purpose of measuring market concentration – and ignore the flaw from averaging across stocks, the SEC would find that trading activity is highly concentrated.[27] Additionally, if the SEC Draft Order were to use a measure of the concentration of trading on an individual-security basis (or even partition according to listing exchange) consistent with established DOJ guidelines (i.e., the Herfindahl Index), the SEC would find trading activity concentration levels that are consistent with our analysis.

D. An Exchange's Reported Trading Activity is Related to its Provision of Liquidity

We complete the picture of the nature of competition for order flow, and the resulting concentration in reported trading activity, by examining how an exchange's reported trading activity is related to its provision of liquidity. Reported trading activity is the *ex post* result of a completed trade. Liquidity provision is the *ex ante* ability to complete a trade of sufficient size at a reasonable price within a reasonable amount of time with minimal market impact. To examine the link between an exchange's reported trading activity and its provision of liquidity, we adopt a three-pronged approach. First, in this Section we conduct a historical analysis of two overall market share measures for NASDAQ. Second, in this Section we conduct a market microstructure analysis of depth-of-book data for individual securities. Finally, in the next

[27] After making these two corrections, the Herfindahl Index would be 2,687.

Section ("Demand Side Conditions"), we provide specific examples that show how NASDAQ's strategic initiatives reveal the competitive link.

Historical Analysis

First, we show that the monthly trading activity that an exchange reports to the Consolidated Tape has been historically related to its provision of liquidity. The trading activity that an exchange reports to the Consolidated Tape does not include all orders that are submitted to an exchange's book. Some of these orders are subsequently routed to other market centers for execution and reporting. Conversely, some trades that an exchange reports to the Consolidated Tape include orders that were routed from other market centers.

To examine the historical link between an exchange's liquidity provision and its reported trading activity, we examine two monthly market share measures provided by NASDAQTrader.com.[28] Figure 2 plots two different market share measures for each month from February 2005 through March 2008 (38 months).[29] Reported Market Share represents the percentage of consolidated share volume reported to the consolidated tape using NASDAQ-operated systems. Handled Market Share represents the percentage of consolidated share volume reported to the consolidated tape using NASDAQ-operated systems plus shares routed from the NASDAQ book to other market centers for execution.

The difference between Reported Market Share and Handled Market Share is attributable to orders that are routed from the NASDAQ book to other market centers. In other words, a portion of the trading activity reported by NASDAQ may not reflect the liquidity available on the NASDAQ book. Figure 2 shows that the difference is very small throughout the entire time period. Before drawing any preliminary conclusions about the relation between the two

[28] http://www.NASDAQtrader.com/Trader.aspx?id=MarketShare
[29] Market share definitions are taken from http://www.NASDAQtrader.com/content/MarketStatistics/MarketShare/terms.pdf.

measures, we examine the intertemporal nature of the relation between the two measures. If the trading activity that NASDAQ reports to the Consolidated Tape were unrelated to the liquidity available on the NASDAQ book, these two market share measures would be unrelated. Figure 2, however, shows that these two market share measures are very closely related. A statistical analysis of the association (or co-movement) between these two measures over time shows that they are almost perfectly correlated. The correlation coefficient for these two monthly measures is 0.98.[30]

In other words, the overall market share of trading activity that NASDAQ reports to the Consolidated Tape appears to accurately correspond to the overall liquidity on NASDAQ's book. But, this correlation analysis relies on very coarse measures – overall market-level data reported on a monthly basis. For a more granular analysis, we directly examine intraday depth-of-book data for a sample of individual securities.

Microstructure Analysis

Depth-of-book data allows economists to view the demand and supply curves of all active market participants. We obtained depth-of book data from three sources – NYSE (OpenBook), ARCA (ArcaBook), and NASDAQ (ITCH) – for a sample of three NYSE-listed securities (C, GE, and XOM) from the week of March 10-14, 2008. We also obtained depth-of book data from two sources – NASDAQ (ITCH) and ARCA (ArcaBook) – for a sample of three NASDAQ-listed securities (AAPL, GOOG, and MSFT) from the week of March 10-14, 2008. The analysis focuses on three separate snapshots of data during one day, March 10, 2008. We examine one snapshot in the morning (9:40:00 AM), one at mid-day (12:00:00 PM), and one in

[30] Correlation coefficients range between -1 (perfect negative correlation) and +1 (perfect positive correlation).

the afternoon (3:40:00 PM) to take into account the well-known fact that liquidity provision can change throughout the day. Thus, we analyze 45 snapshots of depth-of-book data.[31]

Table 7 presents the results of the depth-of-book microstructure analysis. Panel A shows the concentration of liquidity on the bid side, Panel B shows the concentration of liquidity on the ask (offer) side, and Panel C shows the concentration of liquidity on both sides. The percentages reported in Panels A, B, and C, reflect the concentration of liquidity for each stock among our three sources of depth-of-book data only and, therefore, do not necessarily reflect the overall concentration of liquidity among all books.

The results across the first three panels of Table 7 are very similar. Liquidity, like trading activity, is highly concentrated on the listing exchange. The liquidity for NYSE-listed securities is highly concentrated on the NYSE (OpenBook and ArcaBook) and the liquidity for NASDAQ-listed securities is highly concentrated on NASDAQ (ITCH). Comparing the results from Table 7 to Tables 3 through 5, we can see that the concentration in reported trading activity across exchanges is indeed related to the concentration of liquidity on a particular exchange.

Panel D of Table 7 provides estimates of liquidity concentration, taking into account BATS ECN and Direct Edge ECN, the two non-exchange trading venues specifically mentioned in the SEC Draft Order.[32] Panel D shows that, even after accounting for the two most successful non-exchange trading venues, liquidity is highly concentrated on the listing exchange. If we assume that the addition of BATS ECN and Direct Edge ECN accounts for virtually all of the relevant market for the distribution of depth-of-book market data for NASDAQ-listed stocks and NYSE-listed stocks, we can construct Herfindahl Indices of liquidity concentration. For

[31] 45 depth-of-book snapshots = 27 snapshots for NYSE-listed securities (3 securities * 3 books * 3 snapshots per book) + 18 snapshots for NASDAQ-listed securities (3 securities * 2 books * 3 snapshots per book).
[32] SEC Draft Order, Pages 47-48. Unlike BATS ECN and Direct Edge ECN which display and distribute their depth-of-book market data products, non-quoting dark pools that do not display their data cannot be considered part of the definition of the relevant market for distribution of depth-of-book market data.

NASDAQ-listed stocks, the Herfindahl Index measuring the liquidity concentration is 4,845. For NYSE-listed stocks, the Herfindahl Index is 5,235. Both of these measures are well above the 1,800 DOJ threshold for a highly concentrated market.

Thus, the depth-of-book analysis completes the picture. Even in the presence of fierce competition for order flow among market centers, network externalities (explained in Section II) are such powerful forces that listing exchanges are able to survive as natural monopolies. The results of the depth-of-book analysis, combined with the results of the trading activity analysis, confirm the link between the concentration of liquidity and the concentration of trading activity. The order flow externality is so strong that the concentration of trading in the most active securities (and many others) is well-above the DOJ's established threshold for a highly concentrated industry. Finally, to address the concern that our microstructure analysis only focuses on the largest, most liquid stocks, we examined random snapshots of depth-of-book data on a small sample of mid-cap and small-cap stocks. Across all capitalization categories, liquidity is highly concentrated on the listing exchanges.

III. Demand-Side Conditions

The demand for depth-of-book data is driven by several factors. Broker dealers must have the ability to obtain depth-of-book at reasonable prices when they so choose for a particular client in order to provide that client with the customer service they expect. Retail and institutional investors alike need access to market data in order to value their portfolios, inform their trading decisions by reviewing the price they may receive for a buy or sell order, and to monitor and compare the executed price they have received. Accordingly, many broker dealers and other market data vendors seek to meet these demands by making market data available to their customers directly on their websites as well as via inputs to their trading engines. While

retail investors generally do not pay directly for this access, their broker dealers pay fees to the exchanges to cover such access. These fees raise the costs of doing business, and are ultimately borne by investors. As long as at least one broker dealer uses depth-of-book data, for whatever reason, then all others will be subject to significant increased pressure to have the ability to access to such data as well when needed.

NBBO data, for example, may not be sufficient for institutional investors because decimalization has led to smaller depth at the NBBO.[33] In fact, the NYSE acknowledges that "[t]he advent of trading in penny increments and the accelerated use of 'black box' trading tools accelerated the success of NYSE OpenBook."[34] Retail investors as well may wish to have access to depth-of-book data. Therefore, we examine how often retail order sizes exceed the NBBO size and whether retail investors adjust their order submission strategies based on market conditions.

Table 8 compares the sizes of market orders and marketable limit orders from a leading online retail broker to NBBO sizes. Panel A shows that there were 27,167 market orders and 7,353 marketable limit orders submitted between 9:30 AM and 4:00 PM during one trading day in May 2008. The overall average (median) order size was 974 (500) shares. Marketable limit order sizes are, on average, larger than market order sizes. This result is consistent with Peterson and Sirri (2002) who find that marketable limit orders are used proportionally more often for larger orders.[35]

Panel B shows that about 36% of retail orders (market and marketable limit) encounter insufficient NBBO size when they are submitted. While many of the orders in this sample data

[33] NBBO data fits within the SEC's notion of "core" data. See, for example, SEC Draft Order, Page 3.
[34] NYSE Euronext 2007 10K, filed on March 25, 2008.
[35] Mark Peterson and Erik Sirri, 2002, "Order Submission Strategy and the Curious Case of Marketable Limit Orders," *Journal of Financial and Quantitative Analysis* 37, 221-241.

were, not surprisingly, submitted for shares in well-known large-cap companies, retail investors consistently encountered insufficient NBBO size in mid-cap and small-cap companies.

Panel B also shows that marketable limit orders encounter insufficient NBBO size more often (46%) than market orders (34%). This result is also consistent with Peterson and Sirri (2002) who find that marketable limit orders are used more often when the order size exceeds the quoted depth. In other words, some retail customers are actively monitoring market conditions to optimize their order submission strategies.

Even those retail customers who are not actively monitoring market conditions submit orders larger than the quoted size in the NBBO and, therefore, are not receiving a quoted price for their entire order. Typically, these retail customers receive multiple trade confirmations for their original order, reflecting the executing broker's need to divide up retail orders to execute against the smaller and changing NBBO. For retail investors who choose to monitor for best execution, depth-of-book data is necessary to see the price they are likely to receive for almost 40% of their orders. Consequently, access to depth-of-book data is a necessity for any retail broker-dealer who chooses to provide full quotes to a customer.

Market data for one security cannot adequately substitute for market data in another security. Customer service considerations are security-specific. While the SEC Draft Order emphatically states that, as far as the Commission is concerned, "broker dealers are not required to purchase depth-of-book data because of their best execution obligations,"[36] it also points out the importance of the customer service considerations. For example, the SEC Draft Order indicates that it would be helpful for broker-dealers to purchase liquidity data from the two dominant exchanges: "A market participant is likely to be more interested in other exchange and ECN products when the exchange selling its data has a small share of trading volume, because

[36] SEC Draft Order, Page 5.

the depth-of-book order data provided by other exchanges and ECNs will be proportionally more important in assessing market depth."[37]

Combining all of the factors yields a situation in which the demand for the exclusive depth-of-book data sold by the two dominant exchanges is "inelastic." The price elasticity of demand is an economic measure of how much the quantity demanded responds to a change in price. Economists say that demand is "inelastic" when the quantity demanded responds only slightly to changes in the price. Inelastic demand is common in markets with no comparable substitutes under the conditions described in Section II above.

If producers know the demand elasticities of their customers, producers can engage in monopoly pricing power that allows them to charge customers prices equal to their "willingness to pay." In the case of depth-of-book data, many broker-dealers face the same inelastic demand curve. Consequently, a large number of customers have the same "willingness" to pay for the data.

The inelastic demand for depth-of-book data, combined with the lack of comparable substitutes, suggests that exchanges have the ability to engage in monopoly pricing. In the next section, we investigate the exchanges' perceptions of this ability by examining their marketing strategies. In the subsequent section, we establish that exchanges, indeed, have the ***ability*** and the ***willingness*** to engage in monopolistic pricing behavior.

A. The NYSE and NASDAQ Emphasize Inelastic Demand for Exclusive Depth-of-Book Data in Their Marketing Materials

The NYSE's pricing strategy for its flagship exclusive depth-of-book data product, later augmented with top-of-book data, reveals just how much monopoly pricing power the NYSE believes it enjoys for each product. In an April 4, 2006 press release, the NYSE announced that

[37] SEC Draft Order, Page 55.

they had received approval from the SEC to introduce a new exclusive depth-of-book data product called OpenBook Real-Time.[38] Ron Jordan, Senior Vice President for Market Data, stated that the product was created in response to "customer demand for depth-of-book data" and proclaimed that the new exclusive depth-of-book product was "a new standard" and that it was "what investors want and need in today's marketplace."[39] In a follow-up press release on May 1, 2006, the NYSE announced the launch of OpenBook Real-Time.[40] The NYSE reiterated the fact that there was strong "customer demand for depth-of-book data."[41] This is supported by a more recent statement by the NYSE in its 10K SEC filing for the year ended December 31, 2007 which stated, "Revenues for our proprietary data products have grown significantly over the last few years, driven in large part by the success of NYSE OpenBook…"[42] These statements reveal that, not surprisingly, the NYSE recognizes the inelasticity of demand and the lack of substitutability for its exclusive depth-of-book data.

Similarly, NASDAQ has consistently touted the strong demand for its exclusive depth-of-book data. During a September 8, 2006 presentation, Adena Friedman, Executive Vice President for Data Products and Corporate Strategy, stated, "NASDAQ continues to grow the Data business at a significant rate with Proprietary Data products becoming an increasingly critical element to success."[43] She explicitly linked NASDAQ's "Data Products" with "the sizable market share in NASDAQ execution systems" and stated that for "NASDAQ listed stocks, NASDAQ's market share is more than twice the nearest competitor…" In particular, she pointed

[38] NYSE Press Release, April 4, 2006, "The New York Stock Exchange Receives SEC Approval for NYSE OpenBook Real-Time," http://www.nyse.com/press/1144146242211.html.
[39] Ibid. Emphasis added.
[40] NYSE Press Release, May 1, 2006, "The New York Stock Exchanges Launches OpenBook Real-Time," http://www.nyse.com/press/1146478242995.html.
[41] Ibid.
[42] NYSE Euronext 2007 10K, filed on March 25, 2008.
[43] "NASDAQ's 2006 Analyst/Investor Day: Leveraging a Solid Foundation for Growth." Presentation materials are available at http://ir.nasdaqomx.com.

out that their "[f]lagship depth product, TotalView, continues to be more widely adopted throughout the industry."[44]

NASDAQ also reported that "During 2007, our TotalView professional subscribers increased by over 34%"[45] and, more recently, NASDAQ officials have been highlighting the fact that "Market data proprietary revenues [in Q108] rose 25% from Q107."[46]

The next section will provide examples of how the NYSE and NASDAQ are willing and able to extract monopoly rents by charging extremely high markups on their own exclusive depth-of-book data products and by tying other products. In contrast, consider the example of the NYSE's pricing of its top-of-book data. On October 11, 2006, the NYSE announced the addition of top-of-book quotes for NYSE-listed stocks to its already "popular" OpenBook Real-Time data product.[47] How much more was the NYSE able to charge its OpenBook subscribers for its top-of-book data? The NYSE made the best bid and offer information available "at no additional cost."[48]

The fact that the NYSE subsequently bundled its top-of-book data with its depth-of-book data without increasing the price reveals a few important points. First, the NYSE enjoys much more monopoly pricing power for its depth-of-book data than for its top-of-book data. Second, either the marginal cost of producing and disseminating its top-of-book data is close to zero and/or the NYSE is subsidizing the production of top-of-book data with large markups that it is charging on its depth-of-book data. Without adequate cost information it is impossible to directly prove or disprove each explanation individually, but the simple fact that either or both

[44] Ibid.
[45] NASDAQ's 2007 10-K filing.
[46] Fox-Pitt Kelton and Cochran Caronia Waller at the Global Market Structure Conference, May 21, 2008 and Sandler O'Neill at the Global Exchange Conference, June 4, 2008. Materials for both presentations are available at http://ir.nasdaqomx.com.
[47] NYSE Press Release, October 11, 2006, "Real-Time Quotes Added to NYSE OpenBook Products," http://www.nyse.com/press/1160561782848.html.
[48] Ibid.

must be true, provides important insights into the underlying economics of securities market data.

NASDAQ also acknowledges that it enjoys monopoly pricing power for its own exclusive depth-of-book data. Exhibits 1 and 2 contain NASDAQ's TotalView product support fact sheets for professional traders and non-professional traders, respectively. While both fact sheets contain the same example, the marketing language differs slightly.

The fact sheets include a comparison of a Level 2 display of liquidity for a sample stock to a TotalView display of the same stock. The Level 2 display shows that the top-of-book data does not contain sufficient information for traders to make informed decisions. The TotalView display contains even more depth-of-book data than the Level 2 display. TotalView, which NASDAQ bundles with Level 2, displays the full order book depth. NASDAQ points out that the sample TotalView display shows "more than 20 times the liquidity of Level 2 and three times the liquidity within five cents of the inside market." More revealingly, NASDAQ refers to this exclusive product as "the standard NASDAQ data feed for serious traders."[49]

IV. Monopoly Pricing Power

Economists looking for real-world examples of firms with considerable monopoly pricing power find they are not typical. Because few goods are truly unique and the demand for most goods is somewhat elastic, at least in the long-run, it is usually quite difficult to find evidence of substantial monopoly power. However, the previous two sections have shown that there are no comparable substitutes for the exclusive depth-of-book data of a dominant exchange and that the demand for this data is relatively inelastic.

[49] Emphasis added.

Taken together, these conditions provide an excellent opportunity for exchanges to exploit their monopoly pricing power. The exchanges' marketing strategies are consistent with the belief that they can exert pricing power. In this section, we appeal to economic theory to establish the exchanges' ability to exert this power, and then we provide direct evidence of their monopoly pricing behavior.

A. Monopoly Pricing Power Behavior by the Dominant Exchanges — Economic Theory

Do the exchanges have the ability to exert monopoly power by setting the price of market data above the marginal cost of producing and distributing the data? To answer this question, we first turn to economic theory. A simple definition of monopoly power is the ability to set price above marginal cost. One well-known measure of monopoly power is the Lerner Index, *L*, which measures the difference between the price of a good or service and its marginal cost, expressed as a proportion of the price:[50]

$$L = \frac{P - MC}{P}$$

where *P* is price and *MC* is marginal cost. The Lerner Index ranges in value from 0 to 1. A high value of the Lerner Index indicates a high degree of monopoly power.

In practice, obtaining accurate and precise data on the marginal costs of producing a particular good or service (e.g., securities market data) is extremely difficult. However, there are reasonable alternatives for assessing levels and trends of marginal costs, such as average variable costs or long-run incremental costs, yet the SEC Draft Order failed to consider any cost data to support the Commission's finding of no significant market power. A couple of trends ignored by the Commission are noteworthy. First, NASDAQ reports that its ongoing technology expenses

[50] Abba Lerner, 1934, "The Concept of Monopoly and the Measurement of Monopoly Power," *Review of Economic Studies* 1, 157-175.

were reduced by 50% between 2001 and 2006.[51] Second, NASDAQ also reports that its cash flows from operations have been increasing while its capital spending has been decreasing. Therefore, it is clear that the exchanges' costs of producing and distributing data, no matter how one chooses to measure them (e.g., short-run vs. long-run costs, average vs. marginal costs, operating expenses vs. capital expenditures), are continuing to dramatically decline.

Under the assumption that a firm (e.g., an exchange) is a profit-maximizer, it can be shown that the Lerner Index yields the following useful relationship:

$$L = \frac{P - MC}{P} = \frac{1}{\eta}$$

where η is the absolute value of the elasticity of demand. Markets characterized by large demand elasticities result in a low value for the Lerner Index, which implies little monopoly power.[52] Relatively inelastic demand results in a high value for the Lerner Index, which implies large monopoly power.[53]

In the previous section, we established the fact that there is inelastic demand for depth-of-book data. Thus, exchanges can, in theory, exert monopoly power over the price of their exclusive market data by charging a high mark-up in price over marginal cost. We now move from theory to evidence. Are exchanges, in fact, exerting monopoly pricing power for their exclusive depth-of-book data?

B. Monopoly Pricing Power Behavior by the Dominant Exchanges — Evidence

We take a two-pronged approach to look for evidence that the dominant exchanges are exerting monopoly pricing power in two ways. First, we offer an historical perspective by

[51] "NASDAQ's 2006 Analyst/Investor Day: Leveraging a Solid Foundation for Growth."
[52] The larger the value of η, the smaller the value 1/η, and therefore the lower the value of *L*.
[53] The smaller the value of η, the larger the value 1/η, and therefore the higher the value of *L*.

providing and analyzing excerpts from two hearings that the SEC held in 2002. Second, we examine the extent to which exchanges are currently engaging in the practice of monopolistic pricing behavior.

Historical Evidence from the 2002 SEC Market Structure Hearings

In 2002, the SEC held two hearings to discuss key issues relating to the structure of the U.S. equity securities markets, including the collection and dissemination of market data through intermarket plans.[54] The hearings consisted of a series of moderated roundtable discussions by SEC Commissioners and staff, distinguished market professionals, and academic experts.

Annette Nazareth, Director of the SEC's Division of Market Regulation, introduced the opening session by asking a series of questions that included, "How should we reconcile the investor's need to obtain current information about market activity with each market center's desire to exploit the commercial value of the data it generates?"[55]

Richard Bernard, executive vice president and general counsel of the New York Stock Exchange (NYSE), produced an eye-popping statistic. When he looked at the historical contribution of the market data revenue to the NYSE's total annual revenue, he found that it was remarkably consistently between 17% and 18% since 1975. Robert Murphy, NYSE specialist from La Branche & Co., expressed his surprise when he found out how constant that percentage remained over a long period of time.

SEC Chairman Harvey Pitt asked, "What conclusion should we draw from that?" He then went on to express his doubts that the pricing was being set in any way related to the costs of producing and disseminating the data. A participant expressed his dismay that the market data

[54] The first hearing was held on October 29, 2002, at the SEC's headquarters in Washington, D.C. The second hearing was held on November 12, 2002, at the NYU Stern School of Business New York, NY.
[55] All quotes and references from the SEC market structure hearings are taken from the transcripts posted on the SEC's website: http://www.sec.gov/spotlight/marketstructure/mkts102902-hrg.txt and http://www.sec.gov/spotlight/marketstructure/mkts111202-hrg.txt.

fees have not reflected that technological developments have led to a significant decrease in the cost of processing market data over time.

Thus, it is clear that the exchanges had the power to maintain a price that was substantially above its marginal cost. In fact, Gary Gastineau of ETF Advisors (and former senior vice president at the American Stock Exchange) said, "The only SRO revenue that has any monopoly elements of it in it at all that I can see…is tape revenue." Richard Bernard of the NYSE conceded "The value of this data is…very high."

But, if the exchanges have monopoly pricing power, why didn't the exchanges exert this power to set the prices substantially above marginal cost and significantly increase their prices over time? The answer to that question lies in the governance of the exchanges. Until recently, the NYSE was a member-owned exchange. The owners of the exchange were the same constituents who were buying the data. As Richard Bernard of the NYSE put it, "The exchange is a cooperative. And so we can't get very out-of-whack with what our constituents want without hearing about it." Thus, despite collective action hurdles, the members of the exchange were able to provide at least some check on the market data pricing policies of the dominant exchanges.

Profit-maximization as an objective of the market data pricing policy of the dominant member-owned exchanges was checked at least somewhat by the interests of its member-owners. This changed recently as the exchanges have gone public with a new ownership structure and corresponding duties to maximize shareholder wealth for persons other than their former members.

Current Evidence of Monopolistic Pricing Behavior

Another way to determine whether exchanges are exerting monopoly pricing power is to look for direct evidence of monopolistic pricing behavior. Exercising monopoly pricing power is a rational strategy for a profit-maximizing monopolist. Monopoly pricing is not possible in a competitive market with many firms selling the same good or a comparable substitute. If one firm tried to charge a higher price to a customer, then the customer would simply buy from another firm. For a firm to be able to engage in monopolistic pricing behavior, it must have some market power. To that end, we compare prices on data in which an exchange enjoys this market power to prices on data in which it does not. Table 9 presents the monthly subscriber fees for four exchange depth-of-book market data products. Panel A presents the reported fees for NASDAQ's TotalView and OpenView data products and the NYSE's OpenBook data product. Panel B presents the proposed fees for the NYSE's ArcaBook data product.

First, consider the pricing comparison for two of NASDAQ's exclusive data products. TotalView offers NASDAQ depth-of-book data for NASDAQ-listed securities. OpenView offers NASDAQ depth-of-book data for NYSE- and AMEX-listed securities. Recall that NASDAQ is the dominant exchange for the liquidity and trading activity for NASDAQ-listed securities, while the NYSE is the dominant exchange for the liquidity and trading activity for NYSE-listed securities. Accordingly, NASDAQ enjoys market power in pricing its TotalView data product, but it does not enjoy market power in pricing its OpenView product.

Table 9 shows that the monthly professional subscriber fee NASDAQ charges for OpenView is only $6. NASDAQ charges a monthly fee of $70 for TotalView, but because NASDAQ recently started requiring TotalView subscribers to also purchase OpenView, this

tying arrangement leads to a total effective $76 monthly fee for TotalView users. In other words, TotalView fees are now more than ***1,100% higher*** than OpenView fees.

Even in the presence of the effective price increase from NASDAQ's tying arrangement, customer demand for the higher priced TotalView product has continued to increase. At least up to current prices, demand for NASDAQ's exclusive TotalView product is inelastic for a large, and growing, number of customers.

Similarly, the NYSE enjoys very substantial market power in pricing its OpenBook data product, for which it currently charges $60 monthly per professional user. Table 9 shows that the fees that the NYSE charges for OpenBook are more than ***900% higher*** than the fees that NASDAQ charges for OpenView. Thus, for products in which NASDAQ and the NYSE enjoy monopoly pricing power, they are able to charge price markups of about ***1,000%*** more than they charge on the products in which they do not enjoy monopoly pricing power. In addition, NASDAQ is further exploiting its monopoly power through a tying arrangement in which it forces TotalView users to also pay for OpenView, regardless of whether the user wants the OpenView product.

The subject of the SEC Draft Order is NYSE Arca's proposed monthly subscriber fees for purchase of its depth-of-book product ArcaBook. NYSE Arca proposes to establish monthly professional subscriber fees of $15 for CTA Plan and ETF securities and $15 for NASDAQ UTP Plan securities. At first glance, it may be tempting to presume that these fees are set in the presence of significant competitive forces. However, this presumption overlooks two salient points, both of which are related to the NYSE's ownership of NYSE Arca.

First, the Commission does not provide any evidence of how these fees for the two ArcaBook products compare with any relevant measure of the NYSE's costs of collecting and

distributing the data. Without this cost data, it is impossible to accurately assess the extent of the NYSE's market power in setting the prices for the ArcaBook products offered through its NYSE Arca subsidiary.

Under these circumstances, without cost figures to conduct a quantitative (e.g., Lerner Index) review, the Commission cannot reasonably conclude that the NYSE "was subject to significant competitive forces" when setting the terms of the ArcaBook proposal. One cannot reasonably conclude that the NYSE's marginal costs for ArcaBook in 2008 are greater than pre-acquisition Arca's marginal costs when it charged $0 for the data. In fact, the NYSE claims to have achieved cost synergies in its merger with Arca Exchange.[56] Nor can one reasonably conclude that cost differences between the NYSE and NASDAQ justify why the $15 fee the NYSE proposes to charge for each of its ArcaBook data products is ***150% higher*** than the $6 fee that NASDAQ charges for its OpenView data product.

Second, the Commission does not consider the prospect of the NYSE exercising monopoly pricing power through tying arrangements. As NASDAQ has demonstrated with its tying of the TotalView and OpenView products, the NYSE has the clear incentive to force users of a product in which the exchange has monopoly pricing power to also pay for a product in which the exchange does not have monopoly pricing power, regardless of whether the user wants the second product.

The NYSE will possess valuable customer usage patterns for both ArcaBook products. The NYSE can easily raise its market data revenues, without raising the stand-alone fees, by forcing all customers of the more successful ArcaBook data product to also buy the less successful ArcaBook data product. For example, NYSE Arca regularly reports trading volume

[56] The NYSE's 10-K-A for the year-ended December 31, 2006 states "Although the trading platforms of the NYSE and NYSE Arca currently operate separately, we are actively integrating some of their activities to achieve revenue and cost synergies."

market shares in excess of 50% for many ETFs.[57] For all of the supply-side and demand-side reasons discussed in Sections II and III, it is likely that the ArcaBook product for CTA Plan and ETF securities will soon, if not already, become the new "standard" for depth-of-book data for Arca-listed ETFs, and the NYSE will enjoy monopoly pricing power over this product. Similarly, the NYSE could effectively raise the OpenBook monthly professional user fees from $60 to $75 by tying one of the ArcaBook products, or to $90 by tying both ArcaBook products. In its Draft Order, the Commission has not even acknowledged any concerns about the NYSE's ability to exercise monopoly pricing power through product tying.

As a final comparison, consider FINRA's (formerly NASD's) pricing of its TRACE (corporate bond) data product. As noted in SIFMA's January 17, 2007 comment letter for *In the Matter of NetCoalition*, equity market top-of-book data revenues for 2003 were $424 million and network expenses were $38 million, yielding a more than ***1,000%*** markup.[58] As a contemporaneous comparison, consider that FINRA's (formerly NASD's) reported <u>total</u> TRACE (corporate bond) revenues for its first twelve months of operation were $12.4 million ($2 million in system fees, $8.9 million in transaction reporting fees, and $1.5 million in market data fees) and its total expenses were also approximately $12.4 million.[59]

In addition, the $2,000 enterprise fee for FINRA's historical TRACE (corporate bond) data product is less than 3% of the cost of the $90,000 enterprise fee for NYSE's historical data product and less than 4% of the cost of the $60,000 enterprise fee for NASDAQ's historical data product. [60] Although the bond and stock price data products differ somewhat, the nature of the technology required to collect and distribute historical securities data is not so dissimilar that it

[57] See http://www.nysearca.com/issuers/etfs.aspx.
[58] SEC Release No. 34-49325; File No. S7-10-04.
[59] SEC Release No. 34-49086; File No. SR–NASD–2003–157.
[60] Ibid.

should account for such a drastic price differential, especially when taking into account the fact that the NYSE and NASDAQ each have a much broader market data revenue base over which to spread their market data distribution costs.[61]

Taken together, all of these simple comparisons provide concrete examples of how the NYSE's pricing of its exclusive depth-of-book data product and NASDAQ's pricing of its exclusive depth-of-book data product are consistent with monopolistic pricing behavior.

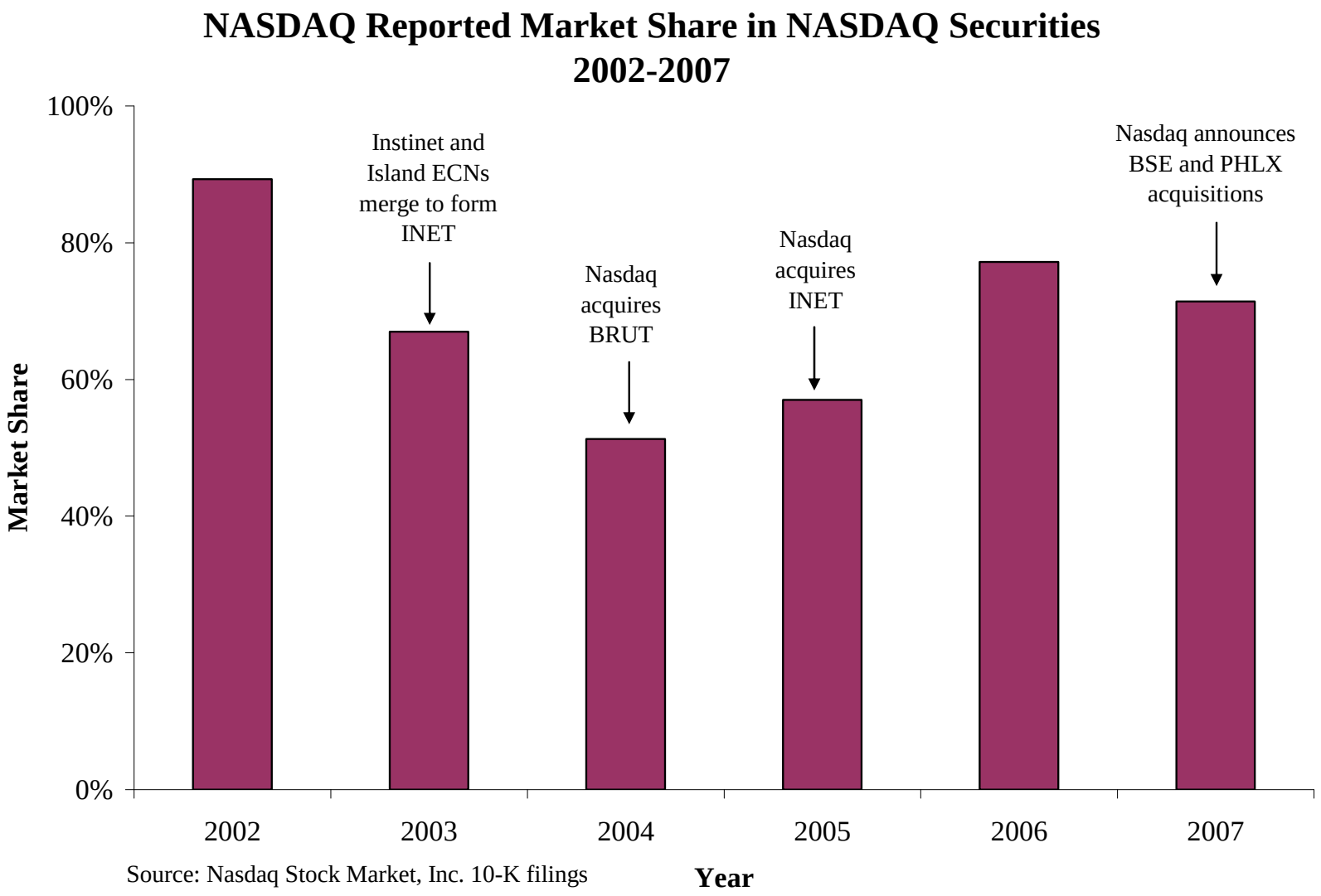
V. Conclusions

The SEC is required by Congressional statute to assure that securities market data provided by broker dealers and then distributed by exchanges is made available on "fair and reasonable terms." In the recent Draft Order, the SEC has made it clear that it believes that the most appropriate and effective means by which to fulfill this Congressional mandate is a "reliance on competitive forces," when appropriate.[62]

This study shows, however, that a reliance on competitive forces is inappropriate for the pricing of securities market data by the NYSE (with which NYSE Arca must be viewed as a single combined entity under the control of NYSE Euronext as discussed above) and NASDAQ, the two dominant U.S. securities market centers in terms of trading, liquidity, and displayed depth-of-book market data, particularly with respect to their own listed securities. Qualitative and quantitative analyses show that NASDAQ and the NYSE each have the ability to exert monopoly pricing power and that they are using this power. The exchanges are charging broker dealers and the investing public fees that are well above the cost of consolidating and distributing data, and therefore, not determined by competitive forces.

[61] Ibid.
[62] See, for example, SEC Draft Order, Page 4.

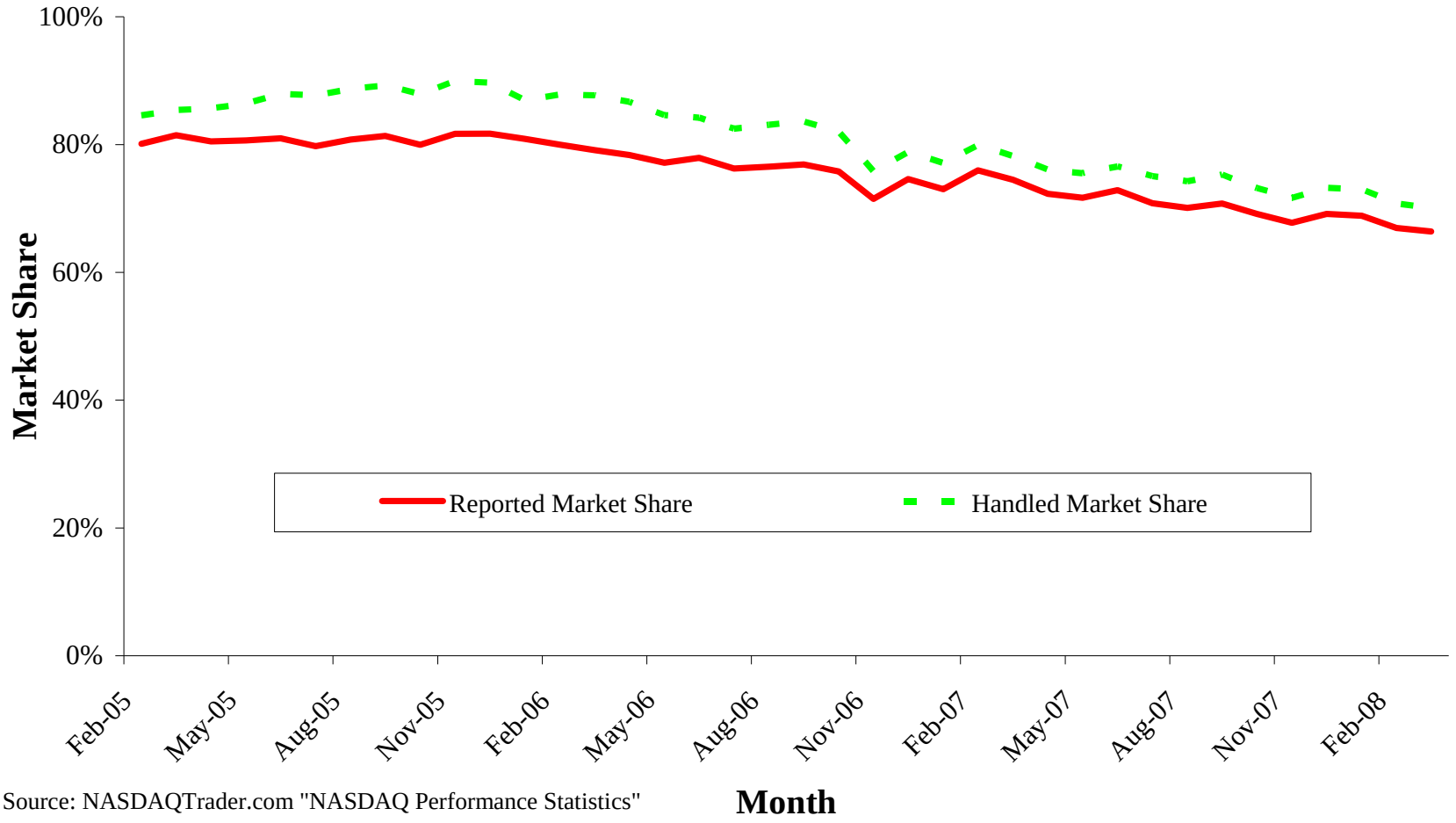
Figure 1



Source: Nasdaq Stock Market, Inc. 10-K filings

Figure 2

NASDAQ Market Shares in NASDAQ-Listed Securities
February 2005 to March 2008



Source: NASDAQTrader.com "NASDAQ Performance Statistics"

Table 1

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	10	59.1	59.1	60.3
AAPL	9	62.1	62.1	51.7
GOOG	9	61.5	61.6	55.9
MSFT	9	67.0	67.0	56.9
RIMM	8	61.7	61.7	54.2
BIDU	8	69.4	69.4	63.6
CSCO	9	66.5	66.5	54.6
INTC	9	66.5	66.5	55.0
FSLR	8	63.2	63.1	59.7
YHOO	9	68.6	68.6	58.6

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	9	51.1	51.1	46.9
EEM	9	62.0	62.0	65.2
BSC	9	52.0	51.3	56.5
GS	8	52.6	52.6	57.4
C	9	48.4	48.4	48.7
XOM	9	55.4	55.3	52.8
GE	9	57.1	57.1	47.3
JPM	8	53.2	53.2	49.7
BAC	9	51.7	51.7	47.3
LEH	9	52.0	51.9	51.6

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

Table 2

The Herfindahl Index

Panel A: Example of Herfindahl Calculations

Competitive		Duopoly		Monopoly	
Firms	Market Share (%)	Firms	Market Share (%)	Firms	Market Share (%)
Firm 1	10	Firm 1	50	Firm 1	95
Firm 2	10	Firm 2	40	Firm 2	5
Firm 3	10	Firm 3	5	Firm 3	<1
Firm 4	10	Firm 4	5	Firm 4	<1
Firms 5-10	10	Firms 5-10	<1	Firms 5-10	<1
Herfindahl	1,000	Herfindahl	4,150	Herfindahl	9,050

Panel B: U.S. Department of Justices (DOJ) Categories

Herfindahl Index	DOJ Category
< 1,000	Unconcentrated
1,000 to 1,800	Moderately Concentrated
>1,800	Highly Concentrated

Source: "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

Table 3

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	10	4,412	4,412	4,336
AAPL	9	4,346	4,347	3,556
GOOG	9	4,309	4,311	3,848
MSFT	9	4,849	4,850	3,918
RIMM	8	4,333	4,334	3,743
BIDU	8	5,118	5,123	4,496
CSCO	9	4,796	4,799	3,731
INTC	9	4,799	4,798	3,787
FSLR	8	4,415	4,405	4,089
YHOO	9	5,059	5,054	4,074

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	9	4,111	4,111	3,992
EEM	9	3,721	3,720	3,286
BSC	9	2,959	2,965	2,919
GS	8	3,009	3,009	2,777
C	9	3,147	3,149	3,042
XOM	9	3,619	3,618	3,269
GE	9	3,461	3,462	3,208
JPM	8	3,573	3,574	3,385
BAC	9	3,501	3,501	3,416
LEH	9	3,207	3,205	3,089

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

Table 4

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	8	6,130	6,129	4,317
AAPL	4	8,637	8,631	6,462
GOOG	3	9,328	9,320	8,481
MSFT	8	9,044	9,041	7,120
RIMM	4	9,171	9,159	8,121
BIDU	2	8,947	8,971	9,050
CSCO	7	8,656	8,658	7,002
INTC	7	8,713	8,707	7,132
FSLR	3	8,627	8,592	7,970
YHOO	8	8,396	8,384	5,318

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	8	4,719	4,721	4,509
EEM	8	4,574	4,571	4,267
BSC	8	3,744	3,566	2,998
GS	6	4,517	4,527	5,033
C	9	4,159	4,156	4,069
XOM	5	4,861	4,868	4,160
GE	9	6,383	6,377	5,151
JPM	7	4,671	4,668	4,072
BAC	7	4,563	4,560	4,632
LEH	8	3,924	3,880	3,386

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

Table 5

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	9	4,203	4,203	4,336
AAPL	4	4,205	4,206	3,555
GOOG	3	4,154	4,157	3,847
MSFT	8	4,318	4,320	3,915
RIMM	4	4,242	4,244	3,742
BIDU	2	5,074	5,079	4,495
CSCO	7	4,253	4,257	3,728
INTC	7	4,294	4,293	3,784
FSLR	3	4,345	4,336	4,088
YHOO	8	4,137	4,136	4,073

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	9	3,983	3,983	3,992
EEM	8	3,740	3,737	3,286
BSC	8	2,941	2,951	2,919
GS	6	2,976	2,976	2,776
C	9	3,055	3,057	3,042
XOM	5	3,499	3,499	3,269
GE	9	3,235	3,235	3,208
JPM	7	3,476	3,478	3,385
BAC	7	3,394	3,395	3,416
LEH	8	3,169	3,170	3,089

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

Table 6

Reported Share Volume for All Stocks During December 2007

As Reported in SEC Draft Order[1]		Independent Verification[2]	
Trading Venue	**Market Share**	**Trading Venue**	**Market Share**
All Non-Exchange	30.2	NYSE and NYSE Arca	38.0
NASDAQ	29.1	NASDAQ	29.1
NYSE	22.6	NASD ADF	17.3
NYSE Arca	15.4	NASDAQ TRF	9.4
American Stock Exchange	0.8	NYSE TRF	2.1
International Stock Exchange	0.7	National Stock Exchange TRF	1.4
National Stock Exchange	0.6	American Stock Exchange	0.8
Chicago Stock Exchange	0.5	International Stock Exchange	0.7
CBOE Exchange	0.2	National Stock Exchange	0.6
Philadelphia Stock Exchange	0.1	Chicago Stock Exchange	0.5
		CBOE Exchange	0.2
		Philadelphia Stock Exchange	0.1

Sources:
[1] SEC Draft Order, Table 1, Page 49.
[2] Exchange Volume Summary Query (Dec 01, 2007 - Dec 31, 2007; All Stocks) at http://www.arcavision.com/.

Table 7

Concentration of Liquidity

This table shows the concentration of liquidity for three NASDAQ-listed stocks and three NYSE-listed stocks on March 10, 2008. Liquidity concentration on the bid side is measured as the total cumulative depth down to each stock's low price of the day. Liquidity concentration on the ask side is measured as the total cumulative depth up to each stock's high price of the day. The reported percentages reflect averages across three different snapshots taken throughout the trading day – 9:40:00AM, 12:00:00PM, and 3:40:00PM. The percentages reflect the concentration of liquidity among our three sources of depth-of-book data only and, therefore, do not necessarily reflect the overall concentration of liquidity among all books. Row percentages may not sum to exactly 100.0% due to rounding.

Panel A: Cumulative Depth on the Bid Side

NASDAQ-Listed Securities		
	NASDAQ	**NYSE**
AAPL	79.0%	21.0%
GOOG	75.7%	24.3%
MSFT	72.3%	27.7%
Average	75.6%	24.4%

NYSE-Listed Securities		
	NASDAQ	**NYSE**
C	33.3%	66.70%
GE	28.6%	71.40%
XOM	18.8%	81.10%
Average	26.9%	73.10%

NYSE includes NYSE Arca.

Table 7

Concentration of Liquidity
(continued)

This table shows the concentration of liquidity for three NASDAQ-listed stocks and three NYSE-listed stocks on March 10, 2008. Liquidity concentration on the bid side is measured as the total cumulative depth down to each stock's low price of the day. Liquidity concentration on the ask side is measured as the total cumulative depth up to each stock's high price of the day. The reported percentages reflect averages across three different snapshots taken throughout the trading day – 9:40:00AM, 12:00:00PM, and 3:40:00PM. The percentages reflect the concentration of liquidity among our three sources of depth-of-book data only and, therefore, do not necessarily reflect the overall concentration of liquidity among all books. Row percentages may not sum to exactly 100.0% due to rounding.

Panel B: Cumulative Depth on the Ask Side

NASDAQ-Listed Securities		
	NASDAQ	**NYSE**
AAPL	82.0%	18.0%
GOOG	80.0%	20.0%
MSFT	75.2%	24.8%
Average	79.1%	20.9%

NYSE-Listed Securities		
	NASDAQ	**NYSE**
C	24.0%	76.0%
GE	18.0%	82.0%
XOM	20.5%	79.5%
Average	20.8%	79.2%

NYSE includes NYSE Arca.

Table 7

Concentration of Liquidity
(continued)

This table shows the concentration of liquidity for three NASDAQ-listed stocks and three NYSE-listed stocks on March 10, 2008. Liquidity concentration on the bid side is measured as the total cumulative depth down to each stock's low price of the day. Liquidity concentration on the ask side is measured as the total cumulative depth up to each stock's high price of the day. The reported percentages reflect averages across three different snapshots taken throughout the trading day – 9:40:00AM, 12:00:00PM, and 3:40:00PM. The percentages reflect the concentration of liquidity among our three sources of depth-of-book data only and, therefore, do not necessarily reflect the overall concentration of liquidity among all books. Row percentages may not sum to exactly 100.0% due to rounding.

Panel C: Cumulative Depth on Both Sides

NASDAQ-Listed Securities		
	NASDAQ	**NYSE**
AAPL	81.4%	18.6%
GOOG	77.9%	22.1%
MSFT	73.5%	26.5%
Average	77.6%	22.4%

NYSE-Listed Securities		
	NASDAQ	**NYSE**
C	32.4%	67.6%
GE	25.3%	74.8%
XOM	20.5%	79.5%
Average	26.1%	74.0%

NYSE includes NYSE Arca.

Table 7

Concentration of Liquidity
(continued)

This table shows estimates of average concentration of liquidity for NASDAQ-listed stocks and NYSE-listed stocks. NASDAQ and NYSE estimates reflect the averages of the cumulative depths on both sides (Panel C) proportionally adjusted for BATS ECN and Direct Edge ECN estimates. BATS ECN and Direct Edge ECN estimates are based on statistics reported in the SEC Draft Order, Pages 47-48. Row percentages may not sum to exactly 100.0% due to rounding.

Panel D: Estimated Liquidity Concentration Including BATS ECN and Direct Edge ECN

	NASDAQ	NYSE	BATS	Direct Edge
NASDAQ-Listed Stocks	66.1%	19.1%	7.9%	6.9%
NYSE-Listed Stocks	24.0%	68.0%	5.1%	3.0%

NYSE includes NYSE Arca.

Table 8

Retail Order Sizes

This table presents summary statistics related to retail orders. It also compares retail orders sizes to NBBO sizes. The data was provided by a leading online retail broker for a single trading day in May 2008. The numbers in the table reflect market orders and marketable limit orders submitted between 9:30:00 AM and 4:00:00 PM. The size of a buy order is compared to the size of the NBBO ask (offer) at the time the order was submitted. The size of a sell order is compared to the size of the NBBO bid.

Panel A: Summary Statistics for Retail Orders

Order Type	Number of Orders	Order Size (shares)	
		Median	Average
Market Orders	27,167	250	745
Marketable Limit Orders	7,353	500	1,820
Market and Marketable Limit Orders	34,520	300	974

Panel B: Retail Order Sizes Compared to NBBO Sizes

Order Type	Percent of Orders Encountering:		
	Sufficient NBBO Size		Insufficient NBBO Size
	Order Size < *NBBO Size*	*Order Size* = *NBBO Size*	*Order Size* > *NBBO Size*
Market Orders	59.5%	6.8%	33.7%
Marketable Limit Orders	47.6%	6.5%	45.9%
Market and Marketable Limit Orders	57.0%	6.7%	36.3%

Table 9

Depth-of-Book Data Fees

This table contains reported fees and proposed fees for depth-of market data. The reported fees in Panel A are monthly professional subscriber fees per display device as reported on NYXdata.com and NASDAQTrader.com on May 1, 2008. The reported $76 fee for NASDAQ TotalView is the combined monthly professional subscriber fee for NASDAQ TotalView ($70) and NASDAQ OpenView ($6). NASDAQ TotalView subscribers "must pay both TotalView and OpenView usage fees." (http://www.nasdaqtrader.com/Trader.aspx?id=PriceListData). The proposed fees in Panel B are the proposed monthly professional subscriber fees as reported in the SEC Draft Order.

Panel A: Reported Fees

Provider	Product	Securities Coverage	Fee
NASDAQ	TotalView	NASDAQ	$76
NASDAQ	OpenView	NYSE AMEX	$6
NYSE	OpenBook	NYSE	$60

Panel B: Proposed Fees

Provider	Product	Securities Coverage	Fee
NYSE	ArcaBook	CTA Plan and ETF	$15
		NASDAQ UTP Plan	$15

Exhibit 1

NASDAQ TotalView

Product Support Fact Sheet

For Professional Traders

The Best View of NASDAQ on The Street

A wider window on the market

Upgrade to NASDAQ TotalView®, and see the full depth of the market at every price level in NASDAQ-, NYSE-, Amex- and regional-listed securities on NASDAQ®. With TotalView, you see quotes and orders not visible in the legacy Level 2 display. In fact, TotalView provides you with all of the best bids and offers that you see in Level 2, plus more. More than 20 times more.

That's because TotalView displays more than 20 times the liquidity of Level 2 and three times the liquidity within five cents of the inside market. Can you really afford to trade with anything less than TotalView?

The next level

To take full advantage of trading in NASDAQ, you need more than legacy Level 2 information. TotalView traders have an advantage because they can see the maximum amount of information available. This detailed depth helps traders to:

- Follow pockets of liquidity over time
- Better understand how orders are distributed throughout the market
- Identify new trading opportunities
- Pursue unique trading strategies

SAMPLE LEVEL 2 DISPLAY

SYMBOL	AMAT	Applied Materials (NGS)			
LAST SALE	20.15 q	NASDAQ Bid Tick (+)			
NATIONAL BBO	20.15 q	20.16 q	6900 x 3000		

MPID	Bid	Size	MPID	Ask	Size
NSDQ	20.15	3000	NSDQ	20.16	2000
ARCX	20.15	2600	ARCX	20.16	1900
BEST	20.15	1500	TDCM	20.16	1000
NITE	20.15	1400	OPCO	20.17	2100
CINN	20.15	1200	BARD	20.17	1000
BOFA	20.15	1000	CLYP	20.18	2000
AUTO	20.14	5000	SCHB	20.18	1500
LEHM	20.14	1000	NITE	20.18	1100
ABLE	20.14	1000	DAIN	20.18	100
SCHB	20.14	500	TEJS	20.18	100
GSCO	20.14	100	GSCO	20.18	100
RAJA	20.12	1200	MSCO	20.19	1500
TDCM	20.12	1000	JPMS	20.19	100
MONR	20.12	1000	BEST	20.20	1200
SWST	20.12	1000	NFSC	20.20	1000
NORT	20.12	400	FBRC	20.20	800
JPMS	20.12	100	FACT	20.20	100
PERT	20.11	800	UBSW	20.21	1100
PIPR	20.11	100	GSCO	20.21	1000
PRUS	20.10	500	FBCO	20.21	100
FBCO	20.09	1400	LEHM	20.21	100
COWN	20.09	800	RHCO	20.21	100
HDSN	20.09	400	WCHV	20.22	1200
UBSW	20.09	400	GLBT	20.22	1000

Data highlighted in black is unique to TotalView.

SAMPLE TOTALVIEW DISPLAY

SYMBOL	AMAT	Applied Materials (NGS)			
LAST SALE	20.15 q	NASDAQ Bid Tick (+)			
NATIONAL BBO	20.15 q	20.16 q	6900 x 3000		

Bid Price	Total Depth	Ask Price	Total Depth
20.15	10700	20.16	4900
20.14	56100	20.17	9100
20.13	26300	20.18	13400
20.12	9900	20.19	11200
20.11	1700	20.20	8700

MPID	Bid	Size	MPID	Ask	Size
NSDQ	20.15	3000	NSDQ	20.16	2000
ARCX	20.15	2600	ARCX	20.16	1900
BEST	20.15	1500	TDCM	20.16	1000
NITE	20.15	1400	NSDQ	20.17	6000
CINN	20.15	1200	OPCO	20.17	2100
BOFA	20.15	1000	BARD	20.17	1000
NSDQ	20.14	28500	NSDQ	20.18	5000
BEST	20.14	12500	OPCO	20.18	2500
NITE	20.14	7500	CLYP	20.18	2000
AUTO	20.14	5000	SCHB	20.18	1500
LEHM	20.14	1000	NITE	20.18	1100
ABLE	20.14	1000	TDCM	20.18	1000
SCHB	20.14	500	DAIN	20.18	100
GSCO	20.14	100	TEJS	20.18	100
NSDQ	20.13	10000	GSCO	20.18	100
GSCO	20.13	8800	NSDQ	20.19	5500
SCHB	20.13	7500	NITE	20.19	3000
NSDQ	20.12	2200	MSCO	20.19	1500
BEST	20.12	2000	OPCO	20.19	1000
RAJA	20.12	1200	JPMS	20.19	100
LEHM	20.12	1000	SCHB	20.19	100
TDCM	20.12	1000	BARD	20.20	4000
MONR	20.12	1000	BEST	20.20	1200
SWST	20.12	1000	NFSC	20.20	1000
NORT	20.12	400	NSDQ	20.20	1000
JPMS	20.12	100	FBRC	20.20	800
PERT	20.11	800	SCHB	20.20	500
GSCO	20.11	500	NITE	20.20	100
LEHM	20.11	100	FACT	20.20	100
NSDQ	20.11	100	UBSW	20.21	1100
NORT	20.11	100	GSCO	20.21	1000
PIPR	20.11	100	NITE	20.21	1000
NSDQ	20.10	13500	NSDQ	20.21	500
SCHB	20.10	3500	TDCM	20.21	100
TDCM	20.10	2000	FBCO	20.21	100
PRUS	20.10	500	LEHM	20.21	100
GSCO	20.10	100	RHCO	20.21	100
NSDQ	20.09	2500	LEHM	20.22	5000
RAJA	20.09	2200	WCHV	20.22	1200
FBCO	20.09	1400	GLBT	20.22	1000
MONR	20.09	1000	NSDQ	20.22	500
NITE	20.09	1000	FBRC	20.22	500
COWN	20.09	800	DAIN	20.22	100
HDSN	20.09	400	NITE	20.22	100
UBSW	20.09	400	BEST	20.22	100

These displays are only a sample of NASDAQ data displayed by market data distributors. Each distributor has its own proprietary display of NASDAQ market data, which may include detailed depth data, aggregated depth data or both. Please contact NASDAQ or your distributor for more information about the display of NASDAQ data.

TotalView is the best view of NASDAQ

TotalView presents you with:

- All displayed quotes and orders attributed to specific market participants
- Total displayed anonymous interest
- Total size of all displayed quotes and orders
- Net order imbalance information for the NASDAQ Opening and Closing Crosses[SM] as well as for the IPO and Halt Crosses

Opening and closing order imbalance information

TotalView is the only data feed that features Net Order Imbalance information for NASDAQ's Opening and Closing Crosses as well as for the IPO and Halt Crosses. The Net Order Imbalance information provides invaluable details about opening and closing orders and the likely Opening/Closing prices. This insight can help reveal new trading opportunities and also allow traders to maintain their positions by more accurately gauging the true buy and sell interest in securities going into the open, the close, an IPO or in securities coming out of a halt.

Data elements include:

Imbalance Shares and Side: The number of eligible shares that would remain unexecuted at the current reference price and the side of the imbalance. B = buy-side imbalance; S = sell-side imbalance; N = no imbalance; O = no marketable on-open (or on-close) orders in NASDAQ

Current Reference Price: The reference price upon which the paired shares and the imbalance quantity are based. The price is calculated at or within the NASDAQ Inside[SM].

Near Indicative Clearing Price: The clearing price at which the opening (or closing) book would clear against orders in the opening (or closing) book and the NASDAQ continuous market.

Far Indicative Clearing Price: The clearing price at which the opening (or closing) book would clear against orders only in the opening (or closing) book.

How to order NASDAQ TotalView

Contact one of the following market data distributors, or ask your vendor.

3DStockCharts.com, Inc.
ACTIV Financial
ADVFN
AlphaTrade
Assent, LLC
Banc of America Securities
Bear, Stearns & Co.
Biremis [Swifttrade]
Bloomberg
BNY Brokerage
BT Radianz
ComStock
CyberTrader
eSignal
Essex Radez
E*TRADE FINANCIAL
FlexTrade
Genesis Securities
HydraTrade
Instinet, LLC
Interactive Data Real-Time Services, Inc.
Lava Trading
Lehman Brothers
Lightspeed Trading
LowTrades
ML X-TRADE
Money.net
Moneyline Telerate
NeoVest
Nexa Technologies
Quantum5
RealTick
REDIPlus
Reuters-Bridge
Revere Data, LLC
royal**blue** Fidessa
RushTrade Technologies
ScottradeELITE
Sungard Brass
Thomson Financial
Track Data Corp.
TradeStation
Tradeware Global
UNX
Wedbush Morgan

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For professional traders, NASDAQ TotalView costs only $76* per month and includes access to Level 2 data.

* Cost is per terminal, per month. TotalView fees include access to Level 2 data but exclude access to NASDAQ Level 1 data. Level 1 data is billed separately at an additional charge of $20 per month for professional users.

waters RANKINGS 2007 BEST EXCHANGE DATA FEEDS

Inside Market Data | Awards 2007 Winner

NASDAQ OMX[SM]

Exhibit 2

NASDAQ TotalView

Product Support Fact Sheet

For Non-Professional Traders

The Best View of NASDAQ

NASDAQ TotalView® gives you the best view of the NASDAQ® market that's available today — the same view that The Street sees.

A deeper view of the market

NASDAQ TotalView is the standard-setting data feed for serious traders, presenting you with every single quote and order at every price level for all NASDAQ-, NYSE-, Amex- and regional-listed securities in NASDAQ. Now, you can see what The Street sees. With TotalView, you have access to all of the depth available for immediate execution in NASDAQ.

Indispensable information

TotalView provides all the best bids and offers from NASDAQ market participants that you see in Level 2, plus more. More than 20 times more.

TotalView displays more than 20 times the liquidity of Level 2 and three times the liquidity within five cents of the inside market. Can you really afford to trade with anything less than TotalView?

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PIPR	20.11	100	GSCO	20.21	1000
PRUS	20.10	500	FBCO	20.21	100
FBCO	20.09	1400	LEHM	20.21	100
COWN	20.09	800	RHCO	20.21	100
HDSN	20.09	400	WCHV	20.22	1200
UBSW	20.09	400	GLBT	20.22	1000

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CINN	20.15	1200	OPCO	20.17	2100
BOFA	20.15	1000	BARD	20.17	1000
NSDQ	20.14	28500	NSDQ	20.18	5000
BEST	20.14	12500	OPCO	20.18	2500
NITE	20.14	7500	CLYP	20.18	2000
AUTO	20.14	5000	SCHB	20.18	1500
LEHM	20.14	1000	NITE	20.18	1100
ABLE	20.14	1000	TDCM	20.18	1000
SCHB	20.14	500	DAIN	20.18	100
GSCO	20.14	100	TEJS	20.18	100
NSDQ	20.13	10000	GSCO	20.18	100
GSCO	20.13	8800	NSDQ	20.19	5500
SCHB	20.13	7500	NITE	20.19	3000
NSDQ	20.12	2200	MSCO	20.19	1500
BEST	20.12	2000	OPCO	20.19	1000
RAJA	20.12	1200	JPMS	20.19	100
LEHM	20.12	1000	SCHB	20.19	100
TDCM	20.12	1000	BARD	20.20	4000
MONR	20.12	1000	BEST	20.20	1200
SWST	20.12	1000	NFSC	20.20	1000
NORT	20.12	400	NSDQ	20.20	1000
JPMS	20.12	100	FBRC	20.20	800
PERT	20.11	800	SCHB	20.20	500
GSCO	20.11	500	NITE	20.20	100
LEHM	20.11	100	FACT	20.20	100
NSDQ	20.11	100	UBSW	20.21	1100
NORT	20.11	100	GSCO	20.21	1000
PIPR	20.11	100	NITE	20.21	1000
NSDQ	20.10	13500	NSDQ	20.21	500
SCHB	20.10	3500	TDCM	20.21	100
TDCM	20.10	2000	FBCO	20.21	100
PRUS	20.10	500	LEHM	20.21	100
GSCO	20.10	100	RHCO	20.21	100
NSDQ	20.09	2500	LEHM	20.22	5000
RAJA	20.09	2200	WCHV	20.22	1200
FBCO	20.09	1400	GLBT	20.22	1000
MONR	20.09	1000	NSDQ	20.22	500
NITE	20.09	1000	FBRC	20.22	500
COWN	20.09	800	DAIN	20.22	100
HDSN	20.09	400	NITE	20.22	100
UBSW	20.09	400	BEST	20.22	100

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Information is power

When you don't know the true depth of the market, you miss the opportunity to see when to get in and out of a stock. The more you know about underlying price pressure on a stock, the more trading strategies become visible to you, and the more confidence you'll have in those strategies. There are many examples of how trading with TotalView reveals more profit opportunities than trading with just Level 2. Here is an example using real data from TotalView:

Two traders — one using Level 2 and one using TotalView — suspect Tellabs, Inc. (TLAB) might be headed up sharply. They are trying to decide whether to go long up to 1,000 shares by looking for buy-side pressure in the market. At 12:06 p.m., Eastern Time (ET), the inside quote for TLAB is:
bid 7.76 **ask** 7.77 **size** 12,400 x 5,900.

The TotalView trader has an advantage over the Level 2 trader — he can see almost four times the liquidity available for immediate execution within three cents of the inside. In particular, he can see large pockets of extra depth at the second, third and fourth price levels that aren't visible in Level 2. Knowing there is significant price pressure on the bid, he buys 800 shares. On the other hand, the Level 2 trader doesn't see the buy-side pressure because Level 2 displays only modest depth at the second, third and fourth price levels. As a result, he doesn't anticipate a run-up in price and doesn't place a buy order.

Over the next several hours, there is a run-up in the TLAB stock price. At 2:54 p.m., ET, the stock is trading at:
bid 8.02 **ask** 8.03 **size** 4,500 x 3,000.

Bottom line: Without the information TotalView provides, the Level 2 trader misses a valuable profit opportunity. The TotalView trader sells his 800 shares for a tidy profit of $200. A profit made possible only with TotalView.

Opening and closing order imbalance information

TotalView is the only data feed that features Net Order Imbalance information for NASDAQ's Opening and Closing Crosses as well as for the IPO and Halt Crosses. The Net Order Imbalance information provides invaluable details about opening and closing orders and the likely Opening/Closing prices. This insight can help reveal new trading oppertunities and also allow traders to maintain their positions by more accurately gauging the true buy and sell interest in securities going into the open, the close or an IPO or in securities coming out of a halt.

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- Biremis [Swifttrade]
- Bloomberg
- BNY Brokerage
- BT Radianz
- ComStock
- CyberTrader
- eSignal
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- E*TRADE FINANCIAL
- FlexTrade
- FutureTrade
- Genesis Securities
- Hold Brothers
- HydraTrade [Spartan Technologies]
- Instinet, LLC
- Lava Trading
- Lehman Brothers
- Lightspeed Trading
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- Money.net
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