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Securities and Exchange Commission  
100 F St. NW  
Washington, DC 20549-9303  
[Rule-comments@sec.gov](mailto:Rule-comments@sec.gov)

Re: Comments for Consideration In Advance of the SEC's Roundtable on Market Data and Market Access (Oct. 25-26, 2018)

File 4-729

Dear SEC:

Here are my comments on market data for the Roundtable on Market Data and Market Access

### **My background**

In addition to my academic experience as a finance professor who studies market structure at Georgetown, I have served on the boards of directors of the EDGX and EDGA stock exchanges prior to their acquisition by BATS Global Markets. I was also the Visiting Academic Fellow in residence at the

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<sup>1</sup> All opinions are strictly my own and do not necessarily represent those of Georgetown University or anyone else. Disclosure: At one time or another over the decades I have consulted on various issues for just about every side in this fight, including exchanges, market makers, brokerage firms, fund managers, plaintiff bar, defense bar, and my mother. These remarks are my own and have not been written or reviewed by anyone other than myself.

NASD and am the former Chair of the Nasdaq Economic Advisory Board. I recently posted a paper on market data fees that is available at [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3268916](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3268916).

Before switching to finance, I was employed as a utility rate engineer doing cost of service studies for a major electric utility. I am quite familiar with the pitfalls involved in trying to allocate high fixed costs in a regulatory environment.

## **Background**

Good market data are essential for the fair, orderly, and efficient functioning of any market. The standard economic theorems that hold that market solutions are optimal rest on the foundation that the market participants have proper information about the price and quality of products. They must also have freedom of action to freely choose whether or not to buy or sell a particular product.

There have been fights over market data going back over a century, and will probably continue for centuries more as there is no one solution that everyone agrees upon. The “ticker tape” cases of long ago held that market data belonged to the exchanges that have produced them. They are intellectual property. In recent years, there has been an increasing emphasis on protecting intellectual property rights. U.S. trade representatives regularly push for other nations to do a better job of respecting copyrights, patents, and trademarks.

When the NYSE attempted to keep its competitors from accessing its ticker, Congress stepped in with the 1975 “National Market System” amendments (§11A) to the Securities Exchange Act of 1934.<sup>2</sup> The 1975

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<sup>2</sup> Congress was really prescient and dictated a competitive market structure that the rest of the world is following. The text of the beginning reads:

SEC. 11A. (a)(1) The Congress finds that—

(A) The securities markets are an important national asset which must be preserved and strengthened.

(B) New data processing and communications techniques create the opportunity for more efficient and effective market operations.

(C) It is in the public interest and appropriate for the protection of investors and the maintenance of fair and orderly markets to assure—

(i) economically efficient execution of securities transactions;

(ii) fair competition among brokers and dealers, among exchange markets, and between exchange markets and markets other than exchange markets;

(iii) the availability to brokers, dealers, and investors of information with respect to quotations for and transactions in securities;

(iv) the practicability of brokers executing investors’ orders in the best market; and

(v) an opportunity, consistent with the provisions of clauses (i) and (iv) of this subparagraph, for investors’ orders to be executed without the participation of a dealer.

(D) The linking of all markets for qualified securities through communication and data processing facilities will foster efficiency, enhance competition, increase the information available to brokers, dealers, and investors, facilitate the offsetting of investors’ orders, and contribute to best execution of such orders.

amendments called for a competitive market structure that linked competing exchanges and off-exchange entities “through communication and data processing facilities.”

The final result was a situation in which the data called for in §11A(a)(1)(C)(iii), “quotations for and transactions in securities”, also known as the top of book and last sale, are gathered through so-called National Market System (NMS) plans by Securities Information Processors (SIPs). The SIPs then sell the data to various users, and the net SIP revenues are shared among the exchanges that contribute the data to the SIPs.

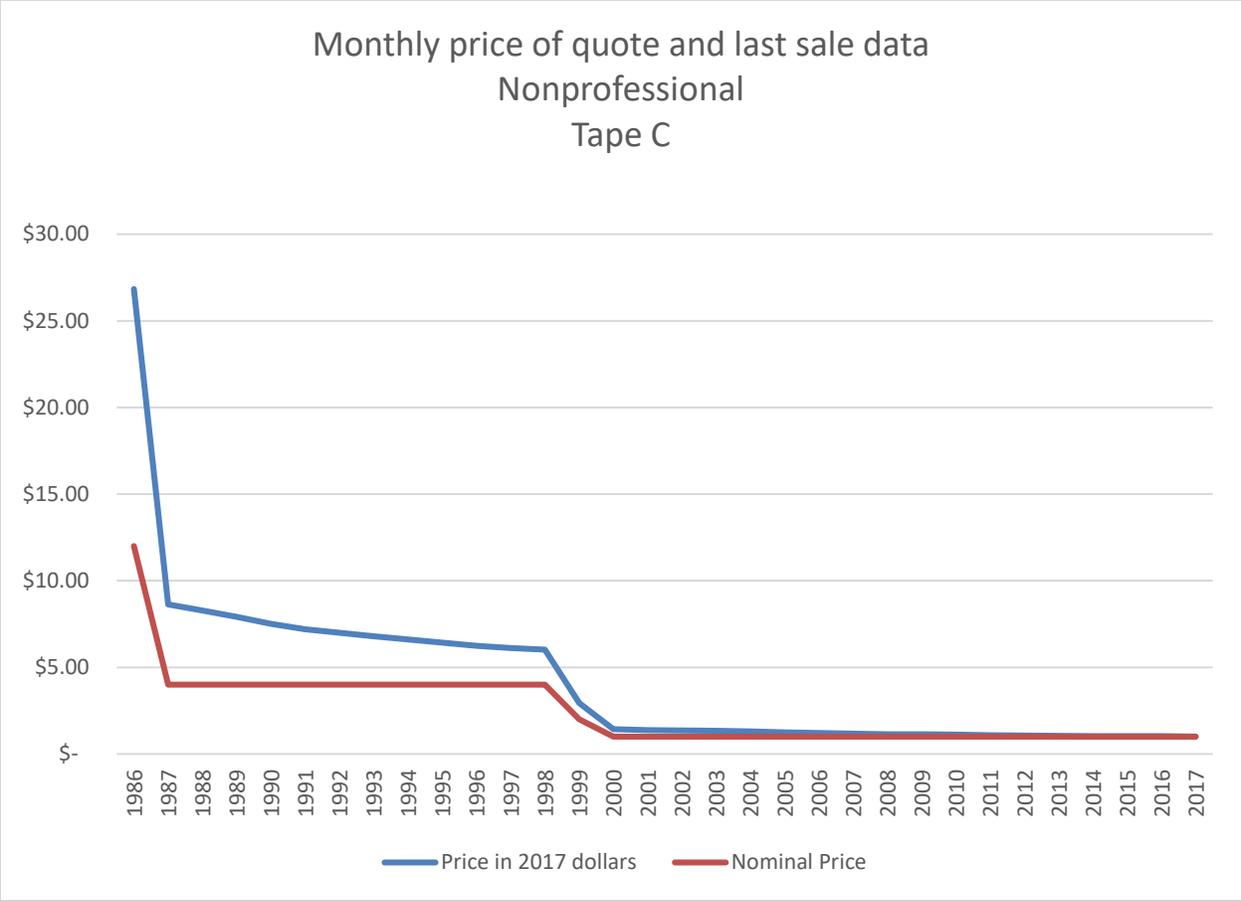
In short, an armistice line was drawn in the market data battles: The National Best Bid and Offer (NBBO) and last trade were collectivized in the SIP data, and everything else was the private intellectual property of the exchanges. Now the cease-fire has been broken. Some market participants are demanding price controls on data products whose prices had effectively been unregulated.

As a retail investor, I like the fact that the charges for SIP data are mostly borne by professional investors. Indeed, the data released by the SIPs show that nonprofessional investors pay less than 20% of the SIP charges. Indeed, the average monthly cost to a major broker of SIP data for nonprofessional customers comes to about \$0.17 per month, about the same as a sip of Starbucks.<sup>3</sup>

The cost of real-time data to nonprofessional investors has also dropped significantly. The inflation adjusted price of real-time nonprofessional Tape C data has dropped 96.3% since 1987 as seen in the following graph:

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<sup>3</sup> For details see my study at [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3268916](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3268916)



The issue is mostly over the proprietary data sold by the exchanges outside of the SIPs. These data products include high-speed feeds that include not only the top-of-book and last sale, but also additional information about trading interest outside the top-of-book. The SEC traditionally approved whatever prices the exchanges wanted to charge for those services. However, some market participants now complain that the prices are excessive and are calling for the Commission to reject rule filings with respect to the proprietary feeds.

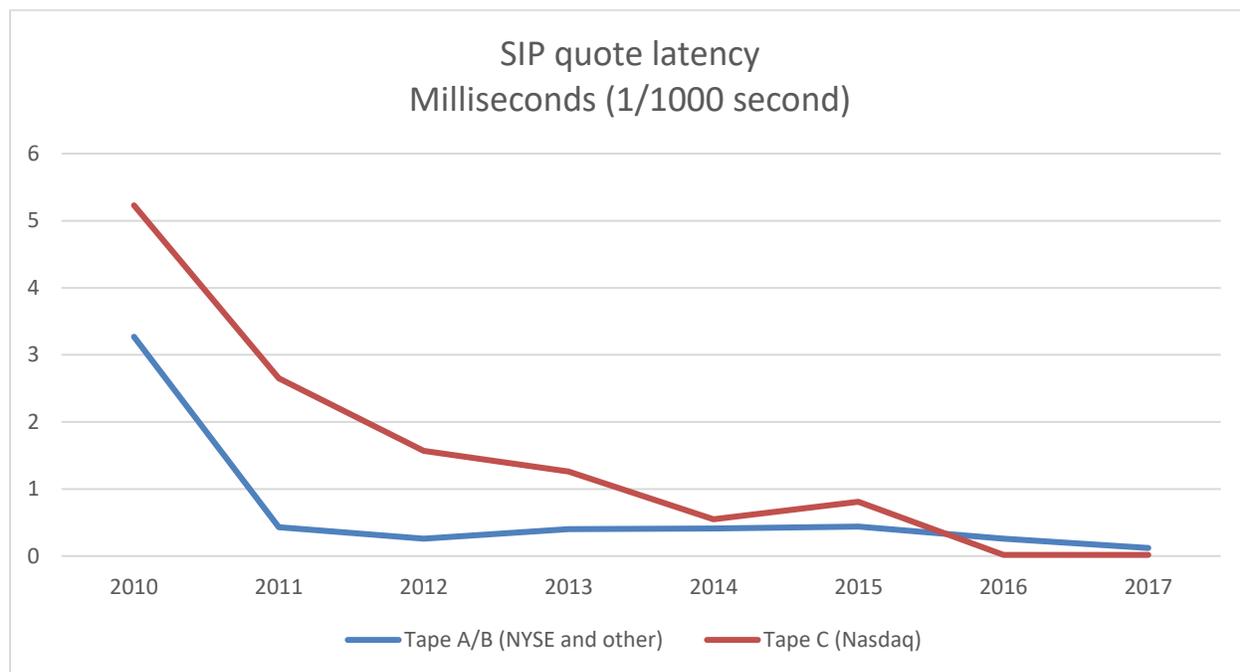
These data feeds are important for market participants who value low latency. While the exchanges are prohibited from delivering market data to others before they deliver data to the SIP, the SIP data have some inevitable delays. In particular, it takes a minimum of 185 microseconds (millionths of a second) for a signal about a trade in a Nasdaq-listed stock at the NYSE’s Mahwah data center to travel at the speed of light from Mahwah to Nasdaq’s SIP in Carteret. It takes the Nasdaq SIP an average of 17 microseconds to process the trade. Thus, a market participant in Mahwah might want to purchase NYSE’s proprietary feed to find out about the trade without having to wait for the trade information to travel all the way to Carteret and back.

For some trading applications having the fastest data is an important advantage. For example, market makers are necessary and important participants in the market ecosystem. They provide the important

service of convenience for investors who want to trade quickly, and they do this by being willing to trade at posted prices. However, they are at risk of being “picked off” when the market moves from one price to another, and thus they need to be able to detect market moves quickly so they can adjust their quotes quickly. Similarly, arbitrageurs race to keep related financial products such as ETFs properly priced relative to cash equities, a service that allows retail investors like me to purchase an ETF confident that the market price of the ETF will usually closely reflect the value of the ETF’s underlying portfolio.

**SIP latency is now much lower.**

In the past, the SIPs were much slower, and some market participants felt compelled to purchase the proprietary high-speed data feeds for their own applications. However, the SIPs have invested substantially in their technology and greatly reduced latency. The latency of the Tape C SIP has fallen 99.7% since 2010, as seen in the following graph based on public data posted by the SIPs:



In the past, many low-latency market participants felt it necessary to purchase the high speed feeds.

**The legal task before the Commission: Assuring terms are not “unreasonably discriminatory”**

In its grant of regulatory authority to the SEC in 11A of the Exchange Act, Congress only specifically mentioned information regarding “quotations” and “transactions.” Congress was silent about other data,

which presumably remain the private intellectual property of the exchanges that produce them. Thus, the traditional armistice line would seem to reflect the intent of Congress. It is unclear the extent to which the Commission has a legislative authority to regulate prices for services other than “quotations” or “transactions.”

The Exchange Act calls on the Commission to assure that the specified quotation and transaction data sold by the SIPs and SROs are obtainable by “all other persons” “on terms which are not unreasonably discriminatory.”<sup>4</sup> In short, SROs could not deny service to anyone, not even competitors.

A separate paragraph provides an additional standard on data sold TO the SIPs. It calls on the Commission to assure that the specified quotation and transaction data are sold to the SIPs on “fair and reasonable” terms.<sup>5</sup> This section was presumably needed to prevent an exclusive processor of data from charging excessively for the data sold to the SIP. As the SROs provide the data to the SIPs for free, it is hard to argue with the fairness or reasonableness of such terms. (The SIPs do distribute the revenue they receive above and beyond direct SIP costs to the exchanges. However, this allocation is based on their contributions to trade volume and quote quality and not based on any kind of cost recovery budget.)

I will leave it to the lawyers and the courts to determine the exact meaning of the legal requirements. What really matters is the overall impact of the rules on market quality.

### **The economic task before the Commission: Impact of market data fees on market quality**

The Commission has a well-known threefold mission: investor protection, capital formation, and market integrity. A well-functioning secondary market is necessary for capital formation. The question is how the current market structure for market data affects market quality. Is there a better system than we have now? Will market quality improve if fees for prop data are lowered, and if so, why and how much? Or is the battle over fees just a “wealth transfer” with no impact on market quality for investors?

Many if not most of the users of the high-speed data are known as high-frequency traders (HFTs). Lowering the cost of market data would lower the entry barrier to becoming an HFT and likely result in more HFT activity. To the extent that HFTs compete to provide liquidity, this could be a good thing. Similarly, there could be more arbitrage and news reaction activity as well. But would this result in a measurable increase in market quality? It is very unclear. The number of HFTs appears to have gone down in recent years due to the shakeout in the industry without a noticeable decrease in equity market quality.

### **Marginal cost pricing doesn't work for data**

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<sup>4</sup> 11A(B)(6)(c)(1)(D)

<sup>5</sup> 11A(B)(6)(c)(1)(C)

In a competitive market with low fixed costs along with easy entry and exit, one would expect price to equal marginal cost. This is seen as the ideal price that maximizes the total producer and consumer surplus to society. However, information markets have very high fixed costs and average costs higher than marginal cost. In such markets, setting price equal to marginal cost will not recover the total cost of production. The standard economic solution in such cases is so called “Ramsey” pricing where prices are a function of elasticity of demand of each customer class. In other words, prices should be set so that the customers who value the product the most pay the most for it.

### **Exchanges produce trade matching services and market data as joint products.**

However, calculating even the average cost of market data is a difficult exercise. When an exchange matches buyer with seller, it also discovers the price. This is an example of what economists call “joint products.” They can’t produce one without the other. The classic economic example is that of sheep that produce both wool and mutton. Determining a production cost for just the wool or just the mutton becomes difficult if not impossible. Although there are numerous conventions for allocating fixed costs, they are just conventions and are often highly controversial, especially in the realm of utility rate regulation. Coming up with an acceptable method to allocate the high fixed costs of running an exchange to the trade matching service and the different types of market data services would be extraordinarily difficult and highly controversial.

### **Beware of demands for cost-based prices.**

Some market participants are calling for data prices somehow related to the cost of data production. They should be careful in what they ask for, as they may not be happy with the results. As a former utility rate engineer I am very familiar with standard cost allocation methodology. Also as a former stock exchange director I am familiar with stock exchange technology and costs. While I have not done a formal cost allocation study (a laborious exercise), my professional intuition is that such a study may justify much higher fees than are currently being charged for prop data.

### **“Fair” prices share the benefits between producers and consumers**

We have seen that standard economic theory of cost or marginal-cost pricing doesn’t provide a clear answer in this situation with low marginal costs and hard to allocate fixed costs. Determining the impact on market quality of changes in prices is also hard.

Another approach is from philosophy. Philosophers have literally been arguing over the concept of the “just” or “fair” price for millennia, from Aristotle to the present. Without going into a lengthy exposition of the various philosophical schools, a common theme is that the fair price shares the benefits with both the consumer and the producer. Any price in which the benefits accrue disproportionately to one party is unfair. In order to determine whether there are disproportionate benefits, one would have to look at the

profitability of the dark pool operators, market makers, arbitrageurs and others who consume the high-speed prop data. In a time of record industry profits, it appears that they are doing quite well.

**Recommendation: The improved SIP is good enough and no one should be required to buy prop data.**

Some market participants feel that they are required to buy prop feeds at unregulated prices in order to fulfill their regulatory requirements. They have a good point. No one should be required to buy data from an exclusive processor at unregulated prices to fulfill their regulatory requirements. Most of the basic concepts of the appropriateness of market prices are based on freedom of action. If there is no freedom, then there is a risk of monopolistic exploitation.

The issue is how to fix this problem. One approach would be to impose price controls on the prop data feeds. This brings up all of the problems in determining the appropriate prices.

A simpler approach is to recognize that the SIP data have improved dramatically in recent years. Once upon a time, the SIP was slow, and it was easy to see how direct feeds would lead to better results in filling regulatory requirements. However, the SIPs are now much faster and the latency with the SIPs fallen to extremely low levels.

The SEC should declare that the SIP data are good enough for all regulatory purposes and no one is required to purchase any other proprietary feeds. This would include order routing by brokers, order routing by exchanges, order execution by market makers, price determination in dark pools, and any other applications. The proprietary data would remain just that, the private proprietary intellectual property of the exchanges.

I look forward to the upcoming roundtable and am eager to learn about other views and potential solutions to this problem.

Respectfully submitted,

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