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Securities and Exchange Commission
100 F St. NW
Washington, DC 20549-9303
Rule-comments@sec.gov

Re: Market data pricing

File No. SR-CTA/CQ-2021-03 and S7-24-89

Dear SEC:

In summary:

[1] All opinions are strictly my own and do not necessarily represent those of Georgetown University or anyone else. I am very grateful to Georgetown University for financial support. Over the years I have served as a Visiting Academic Fellow at the NASD (predecessor to FINRA), served on the boards of the EDGX and EDGA stock exchanges, served as Chair of the Nasdaq Economic Advisory Board, and performed consulting work for brokerage firms, stock exchanges, other self-regulatory organizations, market makers, industry associations, and law firms. I am the academic director for the FINRA Certified Regulatory and Compliance Professional (CRCP®) program at Georgetown University. I've also visited over 75 stock and derivative exchanges around the world. As a finance professor, I practice what I preach in terms of diversification and own modest and well-diversified holdings in most public companies, including brokers, asset managers, market makers, and exchanges.

- The plans call for charging $12/month for nonprofessional depth-of-book data for all three plans. Ouch.
- The plans call for charging nonprofessionals the same price as professionals for auction data: $30 for just auction data!
- Providing (nearly) free depth-of-book data to retail investors will encourage more retail participation in the market.
- Providing (nearly) free depth-of-book data to retail investors will increase understanding of price formation in markets and thus decrease demands for ill-conceived reforms.
- Wide dissemination of auction data is necessary for validating the process of price discovery for IPOs in addition to the opening and closing auctions.
- Nonprofessional depth-of-book and auction data can be delayed 15 milliseconds so that it is useless to HFTs and algos or else updated more slowly than professional data.

Introduction:

Once upon a time (like now), there were three market data ("tape") plans for US cash equities. Tape A distributes data for NYSE-listed stocks, Tape C for Nasdaq-listed stocks, and Tape B for stocks listed on the other 2,718 national securities exchanges. The exchanges provide their data without charge to the Securities Information Processors (SIPs). The SIPs sell the data, and the exchanges divvy up the revenue according to a complex formula that only the square root of an economist could love.

The Redfearn/Clayton administration didn't like this, and mandated a New Market Data World Order: Tapes A, B, and C would go bye bye. Required core data would be increased to include depth-of-book and auction data. Each exchange would sell its data to an infinite horde of competing consolidators. The magic of competition that we all learned about in Econ 1 would bring the cost of market data down and we would all live happily ever after in a competitive equilibrium.

However, the Redfearn/Clayton administration never specified exactly how much the exchanges could charge the consolidators for exchange data or even how those charges would be determined. Messrs. Redfearn and Clayton opened up the market data can of worms, dumped it on a plate for the incoming regime, and then skedaddled out of town. They left the mess and the litigation for the current Commission and its overworked staff to deal with.

The lawyers are now fighting over this in the courts. In the meantime, the exchanges have proposed rates for the new expanded core data through the old Tripartite Tape Regime.[2] In particular, they are proposing to charge nonprofessionals $4 per month for each tape, or $12 total for three tapes for depth-of-book for all NMS stocks. Who knows what we will have to pay for OTC?

[2] https://www.sec.gov/rules/sro/nms/2021/34-93625.pdf and https://www.sec.gov/rules/sro/nms/2021/34-93618.pdf

In my misspent youth, I worked as a rate engineer doing cost-of-service studies in the utility industry. I am thus well aware of the politics and pitfalls involved in ratemaking. This is especially difficult in the area of market data. Exchanges incur high fixed costs to produce the joint goods of both data and trade matching. Allocating the high fixed costs to either trade matching or market data involves making assumptions that are open to debate. Furthermore, actually determining the rates paid by each class of customer adds another political dimension to the calculus. I do not envy the Commission's role in figuring this out.

In utility ratemaking, the utilities generally propose rates. Then the interveners (various classes of customers) complain that the costs allocated to them are too high, and other rate classes should pay more. I am following in this grand self-serving tradition to argue why retail customers like me should get (almost) free depth-of-book and auction data. It is in the best interests not only of retail investors, but also of the Commission and the industry.

Retail is huge and has a big political influence.

It is traditional in comment letters for participants to signal the amount of political power they have. Commenters often mention how many members they have and how important their constituency is. I don't think I need to point out the huge role of retail investors in the market, nor their huge political influence.

Ignorance of market plumbing makes investors prone to push ill-conceived "reforms."

It is a sad fact of life that many investors, even very intelligent ones, are sadly ignorant of the details of our market plumbing. In addition, it is human nature for us to take credit for our trading successes and to look for someone else to blame when we lose money. Retail investors are thus vulnerable to misinformation that markets are rigged or unfair. Blaming the alleged riggers is easier than accepting responsibility for an investment decision that did not pan out.

Under-informed retail investors are also likely to push for ill-conceived regulatory changes that may or may not do more harm than good. The comment letter regarding the display of securities lending by Professor Daniel Liefwalker, Ph.D., a highly educated and intelligent man, is symptomatic of the attitude of many toward our financial markets.[3] He has "no faith in the traditional stock market." A brief foray into the comment letters on many proposed rulemakings, or onto any internet message board, quickly runs across many similar comments from a broad swath of the American public.

[3] https://www.sec.gov/comments/s7-18-21/s71821-20109888-264229.htm

Subject: File No. S7-18-21
From: Daniel Liefwalker
Affiliation: Research Assistant Professor, Department of Molecular and Medical Genetics, Oregon Health and Science University

December 17, 2021

Comment on S7-18-21 (proposed SEC Rule 10c-1)

I have worked extremely hard to obtain a solid education, and I am now a scientist who values data over bias. Now that I finally have money to save and put away for retirement, I have had the opportunity to invest in several markets. I had to learn complicated rules of finance and technology for each investment. Recently, I decided I would like to diversify some of my income into the stock market. I have been horrified to learn that naked shorting, which is essentially counterfeiting money, is tolerated, and even hidden by SEC rules. This business model is only for the ultra rich, able to run or contribute to hedge funds. I have learned so much about this market and it is so complicated that another Ph.D would be required to understand what happens when you buy a stock and place it in a brokerage account. I am truly saddened by the society that we could have had allowing innovations to move forward, instead of market manipulation to drive prices of stock down in order to ruin those same innovative companies. Currently, I have no faith in the traditional stock market, and I see blockchain technology arising to create a fair and transparent system, which is also saddening to me because it means that many millions of Americans will have their stocks become worthless during their retirement. All for the greed of the rich, who never seem to be punished, exposed, or accountable in any way. I believe that if the SEC served the people instead of the financial markets, many of the problems that we face as a society would be non-existent. I think with a few simple changes the practice of naked shorting and dark pools would disappear and result in a robust market.

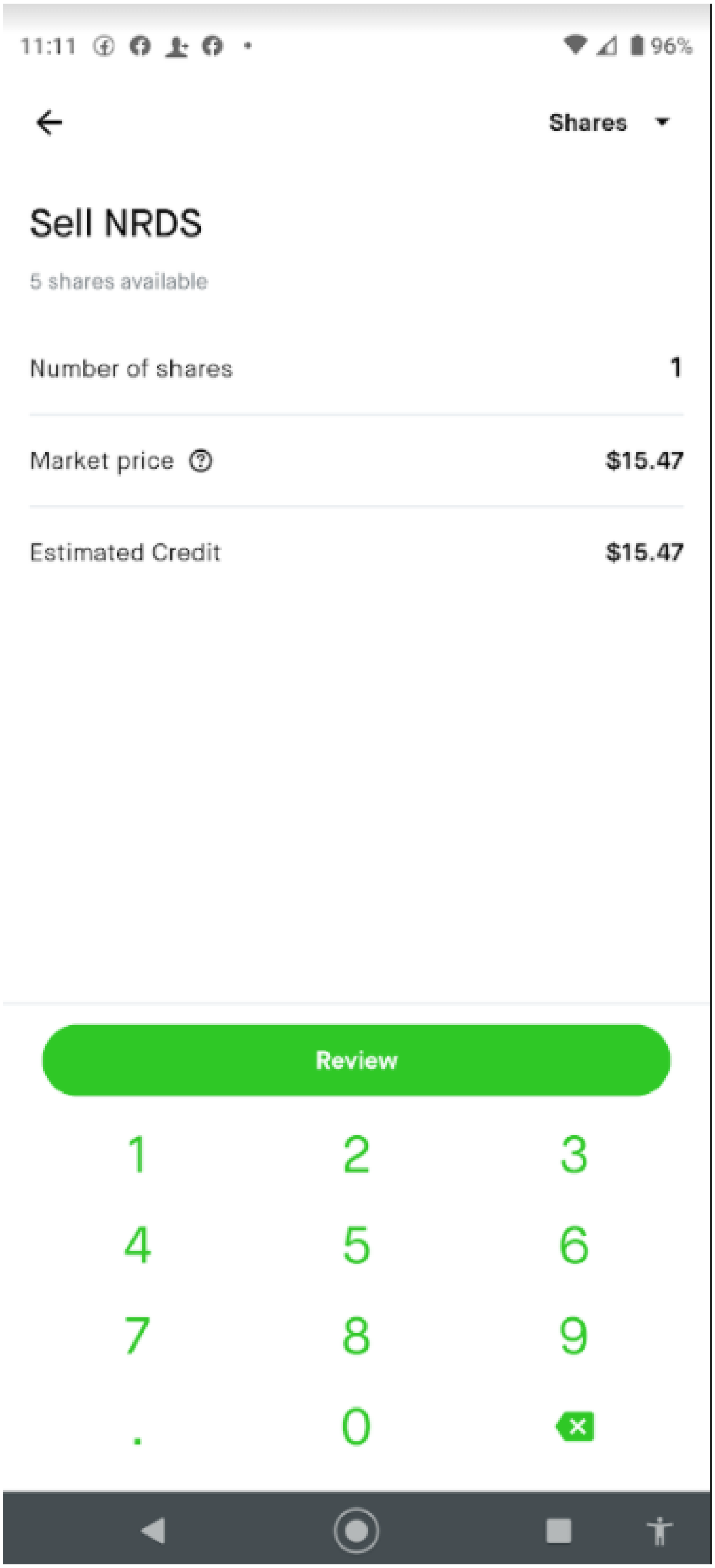
Notify shareholders when their shares are being lent

These retail investors vote, and they contact their Congressional representatives demanding reforms. If they are better informed, they can demand the right reforms.

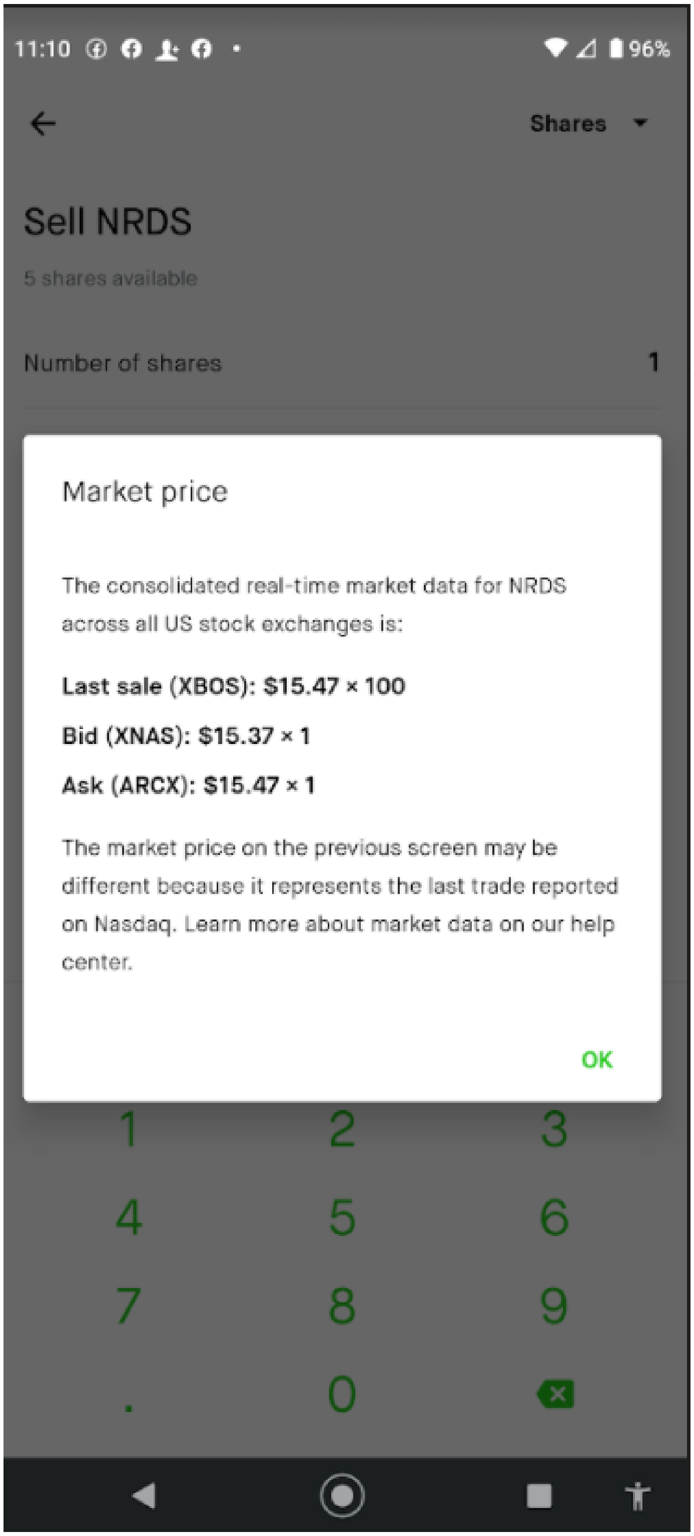
<u>Price formation is a mystery to many investors.</u>

One of the biggest mysteries to many retail investors is the process of price formation. They just don't know where prices come from. Investors click the buy or sell button, and their broker tells them a price. The origin of that price is a mystery. Many think erroneously that prices are set by some white guy standing on a wooden trading floor in lower Manhattan, while manipulative miscreants are cavorting in dark pools hidden away in a villainous underground cavern.

Brokerage firm order-entry screens do little to educate investors on price formation. Here is a screen shot from the Robinhood app that demonstrates what a retail investor sees:


11:11
96%
Shares
Sell NRDS
5 shares available
Number of shares
1
Market price
$15.47
Estimated Credit
$15.47
Review
1
2
3
4
5
6
7
8
9
.
0

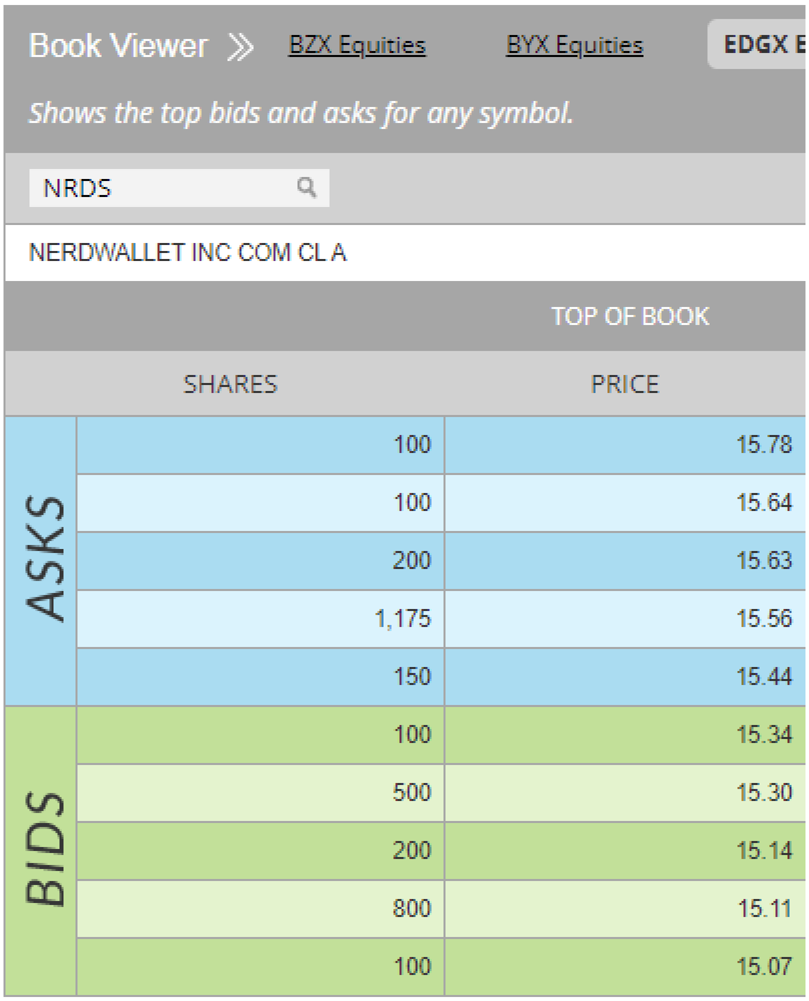
If you click on the little question mark, you do get the NBBO:



<u>Seeing depth-of-book data educates investors on where prices come from.</u>

Displaying the depth-of-book can give investors a much better understanding of how prices are formed. By seeing the buying interest and the selling interest at various price levels, it is much easier to understand what determines the price of a particular trade by watching the interaction of limit and market orders.

Here is a screen shot of some free depth-of-book data that Cboe provides on its web site:[4]



	SHARES	PRICE
ASKS	100	15.78
	100	15.64
	200	15.63
	1,175	15.56
	150	15.44
BIDS	100	15.34
	500	15.30
	200	15.14
	800	15.11
	100	15.07

An investor who sees this kind of data learns faster that prices are set by the interactions between limit and market orders on our exchanges. While I am grateful for the free Cboe book viewer, the data are not

[4] https://www.cboe.com/us/equities/market_statistics/book_viewer/

consolidated and most investors don't even know that it exists. Those brokers that do show the depth-of-book feeds from various exchanges generally charge substantially for it.

Better informed investors are less likely to demand bad reforms.

When investors suffer losses, they often blame others and demand reforms as well as revenge. Indeed, tumultuous markets often display cracks in our market infrastructure that need to be addressed. For example, the Flash Crash of 2010 highlighted the need for better circuit breakers in our cash equity market. The GameStop episode has also highlighted weaknesses in our current market structure.[5]

If investors are better informed about how markets function, they are less likely to fall prey to conspiracy mongering "market is rigged" fallacies. They are less likely to push for onerous transactions taxes, and more likely to push for reforms only when needed.

Depth-of-book data can increase retail participation.

Streaming depth-of-book data are quite entertaining. I, and many others, enjoy watching the prices and quantities bounce around at different price levels in a limit order book. Making the depth-of-book so cheap that brokers give it to all retail clients will do a lot to increase retail participation in the markets. Investors will not only understand markets better, they will be more likely to stick around and participate more.

Depth-of-book data can help retail investors make better trading decisions.

One of the basic decisions an investor must make is how to place an order. Should they place a limit or a market order? In order to make this decision wisely, the investor needs to take into account the current width of the bid-ask spread, as well as the length of the queues. While the NBBO provides information about the quotes, it does not give investors any sense of how large the queues are outside the NBBO. Providing this information to retail investors will help to level the playing field between retail and the professionals.

This is one of the reasons the Commission wisely decided to include depth-of-book in the core data governed by the New Market Data World Order. However, it does not help retail investors if this data is priced so expensively that most retail investors won't see it.

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[5] See my paper GameStonk: What happened and what to do about it, available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3782195 . Things which can be improved include moving to a shorter settlement cycle, better disclosures around short selling and securities lending, improving Rule 204 with respect to settlement failures, as well as improving Rule 15c3-3.

<u>Auction data are important for market integrity.</u>

The opening and closing auctions have become much more important in our markets over the years. A very large amount of price discovery takes place at those auctions. Yet retail investors generally don't get access to what is happening in the auctions. Likewise, IPO auctions get an enormous amount of intention, and once again retail is shut out. This is one of the wise reasons that auction data have been included in the New Market Data World Order. Giving retail a seat at the auction table will not only help dispel myths about IPO prices, but will also increase retail participation.

<u>The exchanges are planning on charging the nonprofessionals the same price as professionals!</u>

The filing proposes to charge nonprofessionals the same price as professionals, with no justification whatsoever. From the CTA filing:[6]

> Finally, with respect to auction information, both Professional Subscribers and Nonprofessional Subscribers would pay $10.00 per device/subscriber per month for each Network's auction information data.

This makes no sense, and I have to believe that it is a mistake. It is clearly unfair and unduly discriminatory against nonprofessional users to charge the nonprofessionals the same price as professionals who make far more use of the data. In justifying the professional charges, the exchanges state that 10% of volume takes place in the auction, so they plan to charge 10% of the depth-of-book fee. Again from the CTA filing:

[6] https://www.sec.gov/rules/sro/nms/2021/34-93625.pdf

> With respect to the fees for auction information, the Participants looked to the number of trades that occur during the auction process as compared to the trading day, and determined that roughly 10% of the trading volume is concentrated in auctions. Consequently, the Participants believed that charging a fee that was 10% of the fee charged for depth of book data was an appropriate proxy for determining the value of auction information. As a result, the Participants proposed a $10.00 fee per Network for auction information, which the Participants believe is fair and reasonable and not unreasonably discriminatory.
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> 14

The UTP filing contains identical language:[7]

> With respect to the fees for auction information, the Participants looked to the number of trades that occur during the auction process as compared to the trading day, and determined that roughly 10% of the trading volume is concentrated in auctions. Consequently, the Participants believed that charging a fee that was 10% of the fee charged for depth of book data was an appropriate proxy for determining the value of auction information. As a result, the Participants proposed a $10.00 fee per Network for auction information, which the Participants believe is fair and reasonable and not unreasonably discriminatory.

Again, the filings contain no information on why they want to charge nonprofessionals the same as professionals for the auction data. Without opining as to the correct methodology for rate setting, it is useful to see what the result would be if we applying the exchange's own stated methodology for pricing nonprofessional auction data. Taking 10% of $4.00 nonprofessional depth-of-book fee per tape yields

[7] https://www.sec.gov/rules/sro/nms/2021/34-93618.pdf

$0.40 per tape, aggregating to $1.20 for all three tapes. This is significantly less than the $30 under the proposal.

Nonprofessional data can be slowed down 15 milliseconds to make it useless to the HFT crowd.

There is a risk, of course, of professional investors masquerading as nonprofessionals in order to get cheap data. One way of dealing with this is to slow the nonprofessional data down just a tiny bit, so that it is useless to the professionals but still good enough for we humans. We humans can't make use of nano-second latency and can be quite happy with slightly longer latency. The entire feed could be slowed a few milliseconds. Alternatively, the nonprofessional book could be updated periodically at intervals of 0.1 second and not continuously. This would make it easier to read by reducing flicker, and would reduce the bandwidth needed to process the data.

Free or ultra-cheap nonprofessional data is in the best interest of both brokers and exchanges.

Because having better data is likely to increase retail investor engagement, that means that there will be more retail order flow, increasing profits for the industry. I believe that the additional retail revenue generated by giving us (nearly) free depth-of-book and auction data will bring in enough net revenue to the industry that it would offset the revenue "losses" to the exchanges and brokers from charging less for the product.

Furthermore, there is a regulatory payoff. Because retail investors will have a better understanding of how markets work, they will be less likely to push for costly punishment of the industry when their investments go down. Just preventing the regulatory costs of one more expensive new rule, or reducing momentum for a transactions tax, will more than pay for the revenue "losses" from giving this data to retail for almost free.

Another way to look at the pricing for nonprofessional users is to look at the value of the data. Yes, there is clearly good value of this data to nonprofessional subscribers. However, there is also very high value to the industry, both brokers and exchanges, from giving this data cheaply to retail investors. Better data, including depth of book and auction data, will result in higher retail trading volume and fewer regulatory headwinds.

Free or ultra-cheap nonprofessional data is in the best interest of the SEC.

It is in the best interest not only of the industry, but also the SEC. There is a lot of discontent among the masses about how our markets are structured. Much of this is from a lack of understanding of market structure and concerns about the unequal resources available to retail investors relative to the pros. Providing better data to retail investors at low cost will reduce the amount of SEC resources devoted to dealing with complaints based on misunderstandings of market function.

Respectfully submitted,

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