



PHIL MACKINTOSH
CHIEF ECONOMIST
165 BROADWAY
NEW YORK, NY 10006

VIA ELECTRONIC MAIL

May 26, 2020

Vanessa Countryman
Secretary
Securities and Exchange Commission
100 F Street, NE
Washington, DC 20549-0609

Re: Proposed Rule on Market Data Infrastructure (Release No. 34-88216; File No. S7-03-30, RIN 3235-AM61)

Dear Ms. Countryman:

As the Chief Economist for Nasdaq, I have taken a keen interest in the market structure implications of the above-captioned proposal. While the proposal is nominally focused on market data infrastructure, in fact it has profound implications for numerous aspects of market structure, including protections against trade throughs, market complexity and fragmentation, and the value of lit quotes. Many market participants with whom I have spoken have not had the time, in the midst of a health and financial crisis, to read the proposal, let alone fully analyze these implications.

In recent weeks, I have written several articles posted on Nasdaq's website on these topics. While Nasdaq is filing an extensive formal comment letter on the proposal, we also feel that the analysis contained in these articles merits consideration by the Commission as it evaluates whether to adopt the proposal. In particular, the articles analyze data not considered by the Commission, and draw conclusions about the costs, benefits, and unintended harm to investors that are quite different from those that underlie the proposal. Accordingly, we are submitting them into the comment file to help inform the Commission's decision-making process.

May 26, 2020

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Please do not hesitate to contact me with any questions.

Very truly yours,

A handwritten signature in black ink, appearing to read "Phil Mackintosh", with a stylized flourish at the end.

Phil Mackintosh

Attachments: NMS II: Why Proposed Rule Changes May Make Markets Less Fair for All
NMS II: A Strange Way to Fix a Two-Tiered Market
NMS II: An Odd Solution for the Odd Lot Problem
NMS II: Shifting Stocks toward a Dealer Model

cc: Honorable Jay Clayton, Chairman
Honorable Hester M. Peirce
Honorable Elad L. Roisman
Honorable Allison Herren Lee
Brett Redfearn, Director, SEC Division of Trading and Markets

NMS II: A strange way to fix a two-tiered market

We've said it before: The U.S. consolidated quote is the envy of the fragmented world. But based on the level of industry complaints it seems we may take for granted the benefits it provides. To the [surprise of many](#), even the SEC has been spurred into action.

The SIP was once such a unifying product, consolidating the whole industry around a single best price, and protecting investors at those levels from missed fills or worse prices, even if they traded off exchange.

New SEC proposals include major rule changes that fragment not only the quote, but also the SIP providers. Instead of a single National Best Bid and Offer (NBBO) there will be a multiverse of Many Best Bids and Offers (MBBOs). Getting there also requires the industry duplicate fixed costs.

That will create a new latency arms race while moving data costs outside the SEC's jurisdiction—two problems the changes were intended to fix.

SEC approves rules to streamline and simplify

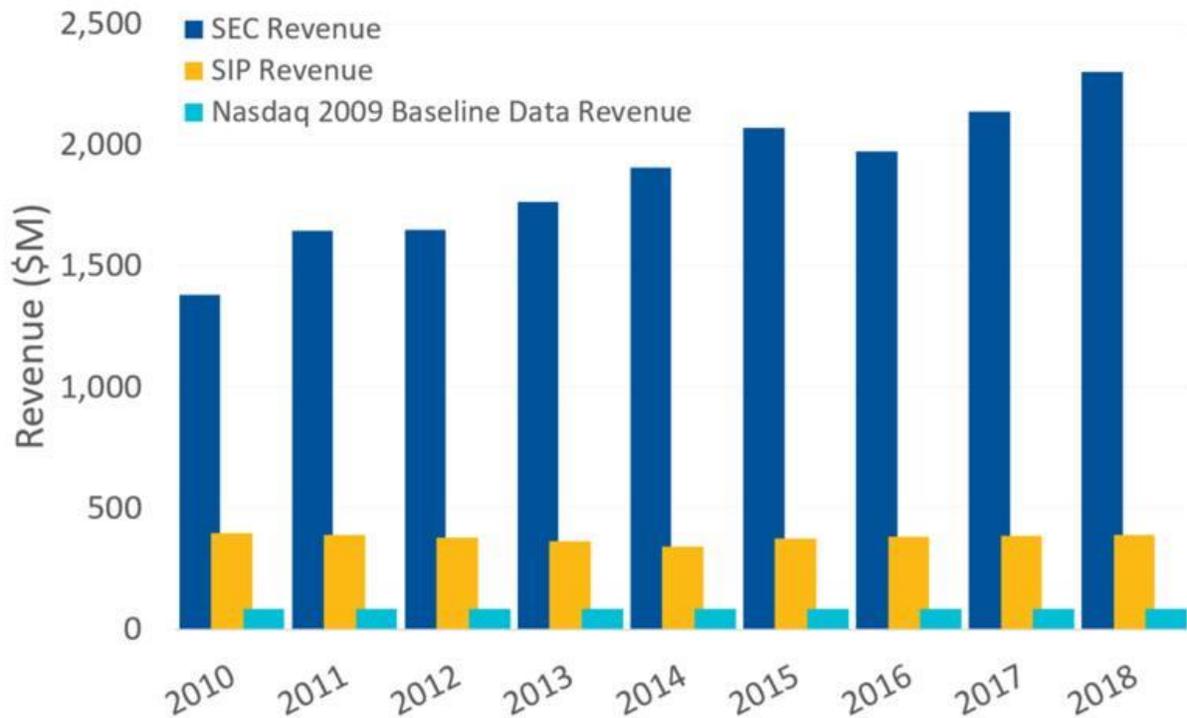
One complaint about the SIP is that, with three tapes and two SIPs, it is unnecessarily complex and duplicates resources. So on May 6, the SEC announced that it approved a [new rule to streamline](#) the SIP into one plan. But that's where the streamlining stops. The only real consolidation is with the administrator. The SIP technology providers will still exist in their current locations.

The SEC also tries to fix a conflict of interest problem. Currently, SROs get to vote on the prices the SIP plans sell their data. The SEC decided to give customers votes and give smaller competitors a greater share of the vote in the operating committee that governs the SIP, which just creates a different conflict of interest. Now the buyers of data get to vote on prices they want to pay without being restricted from using that data to compete with data producers. And this comes after those revenues have been declining.

Chart 1: SIP revenues have been falling since NMS was introduced, and have been reduced from 29% of SEC revenues to just 17%; Nasdaq direct feed costs are also flat over this time

SEC vs. SIP vs. Nasdaq Baseline Data Revenue

Note: SEC revenue includes registration, tender, and merger fees. Nasdaq market data revenue represents 2009 baseline U.S. Equity market data revenue.



Source: Nasdaq Economic Research

Despite the fact that SIP revenues have [actually fallen](#) since Reg NMS was adopted (Chart 1), many also still complain that it [costs too much](#). There is also a concern that the way SIP revenues are allocated back to exchanges also helps start-up exchanges resulting in increased fragmentation.

We [agree it's not perfect](#), and have proposed enhancing the revenue share formula by reducing payments to small exchanges that don't add much to best prices as well as rewarding visible liquidity that actually results in trades. That would ensure that almost all SIP revenues continue to be a reward for price discovery: a market good.

Importantly though, SIP costs now help [offset a free riding problem](#). Ironically, those free riders are among the entities being given more votes on the prices they will pay.

Finally, the SEC's new proposal suggests that data providers are "utilities" and should get paid on a cost-plus basis, but then sets up a "competitive consolidator" model with 12 or more Reg SCI entities distributing exchange data. Hard to see how that won't add new fixed costs the industry must bear.

Although these changes generally reduce the SEC's control of data distribution and resale prices, other changes that include depth in the SIP vastly extend the government's role in what investors will need to buy. But that's a topic for another day.

SEC proposes rules to complicate and multiply

The bigger question is whether competing consolidators fix any other problems. One problem it seems designed to tackle is geographic latency.

We [recently discussed](#) how the additional hop that the SIP data needs to do (going back to a single consolidator to create the NBBO) means the SIP will always be slower than direct feeds. That delay is known as geographic latency. Although it's a subtlety:

- For a human, the geographic latency makes no difference at all (it is *de minimis*).
- For an algorithmic or electronic trader the SIP will never be as fast (it is a *race condition*).

Many complain this creates a “two tier” market. The haves (fast data) and have not (SIP data). But it’s also important to consider who is harmed by “slower” SIP prices. There are two distinct use cases for prices:

1. A cheap and reliable NBBO: The SIP works fine for “slower” human traders, who won’t benefit from additional expensive infrastructure.
2. Solutions for more sophisticated professional traders with race conditions: Each sophisticated trader has [different opportunity costs](#) meaning they also have different optimal investments in speed. Something [we’ve seen](#) from their purchases is that most find custom solutions more cost-effective than being forced to all buying the same products.

Importantly, for the majority of the traders the “two tier” market adds **no cost**.

The “problem” arises when sophisticated users buy the SIP data to save money. Even then, that decision might be optimal, but proving that involves some complicated opportunity cost math, and quantifying (another) conflict of interest between brokers (who pay for infrastructure) and their buy-side customers (who get better fills). But we digress.

Can we minimize race conditions?

Let’s be clear: Race conditions are impossible to solve. Even if you’re fastest by a picosecond, you are still first.

If we really tried to neutralize speed we would create a very EQUAL playing field. With all prices, trades and fills arriving simultaneously to all investors. As our [time is relativity](#) study showed, this would be much easier if all trading took place in one place (we would suggest Carteret).

Unfortunately, even if you did all that, hardware and software set-ups will still create differences in response times. Races would still have winners.

It’s kind of irrelevant anyway, because what the SEC has proposed is close to the opposite of this.

Can competing consolidators eliminate geographic latency?

What the SEC’s [Valentine’s Day](#) proposal includes is a competing consolidator proposal. A “free market” solution to fixing geographic latency and BBO construction.

One thing this will do is remove the “hop” that non-primary-market trades needs make to get on the SIP and then get back to investors (see below).

However it will also:

- Create a multiverse of many BBOs (MBBOs).
- Each that define BBO in their own space-time (and still delayed by transmission times).
- So at the exact time of a fill, MBBOs will all be different (and stale).
- It makes locked and crossed markets [even more](#) likely because in flight orders won’t have to wait to see if the market-wide bid or offer refills after a trade.
- All of which makes it (even) harder to know if you traded through a better quote or missed a quantity at a different venue.

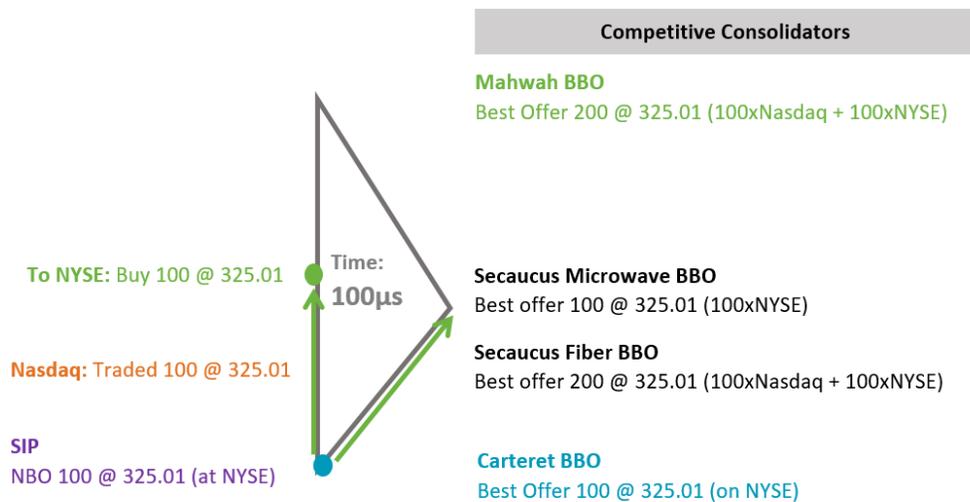
In short, although distributed SIPs remove the most of the geographic latency, the hop to customers means they don’t equalize everyone. But the competing SIPs will by definition create a whole new speed race.

A worked example of competitive SIP BBOs

This example takes the scenario in our [time is relativity](#) study, with a trade starting at Carteret and liquidity in AAPL on Nasdaq and NYSE. We add competing consolidators (BBOs) at each of the three market locations (Carteret, Secaucus and Mahwah). This shows how quotes change as trades travel between venues.

At $100\mu\text{s}$ a Carteret BBO would obviously know about a trade on Nasdaq. But so too would a consolidator using microwave in Secaucus. However, if another consolidator was using fiber, they would not know that Nasdaq had already traded (yet).

Chart 2: The market for AAPL at Time = $100\mu\text{s}$



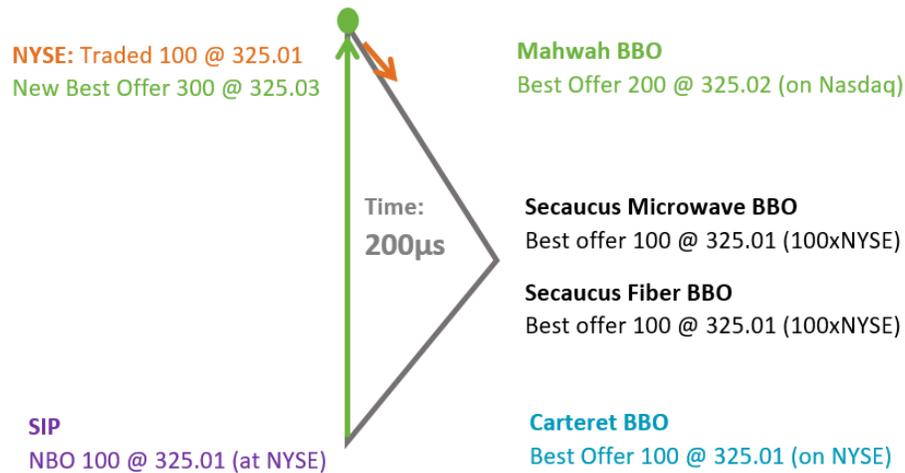
Source: Nasdaq Economic Research

At $200\mu\text{s}$ all trades are complete. In reality, no market is offered \$325.01 anymore.

But only a microwave Mahwah BBO would know that and would be updated to \$325.02, representing the best quote on Nasdaq. It works that way because NYSE is the last market to be cleared in the sweep.

All other BBOs would be “stale” as the report from NYSE would still be in transit. So they would show liquidity still offered at \$325.01.

Chart 3: The market for AAPL at Time = $200\mu\text{s}$



Source: Nasdaq Economic Research

Clearly a competitive BBO located nearer to a customer is faster to update than the SIP. But:

- This won't eliminate the two-tier market.
- It will add fixed costs.
- The investment won't benefit retail or human traders.
- It won't even stop BBO's being stale prices.
- It still won't be faster than direct feeds.

The question is: Will it be worth the cost?

Investing for the 1%?

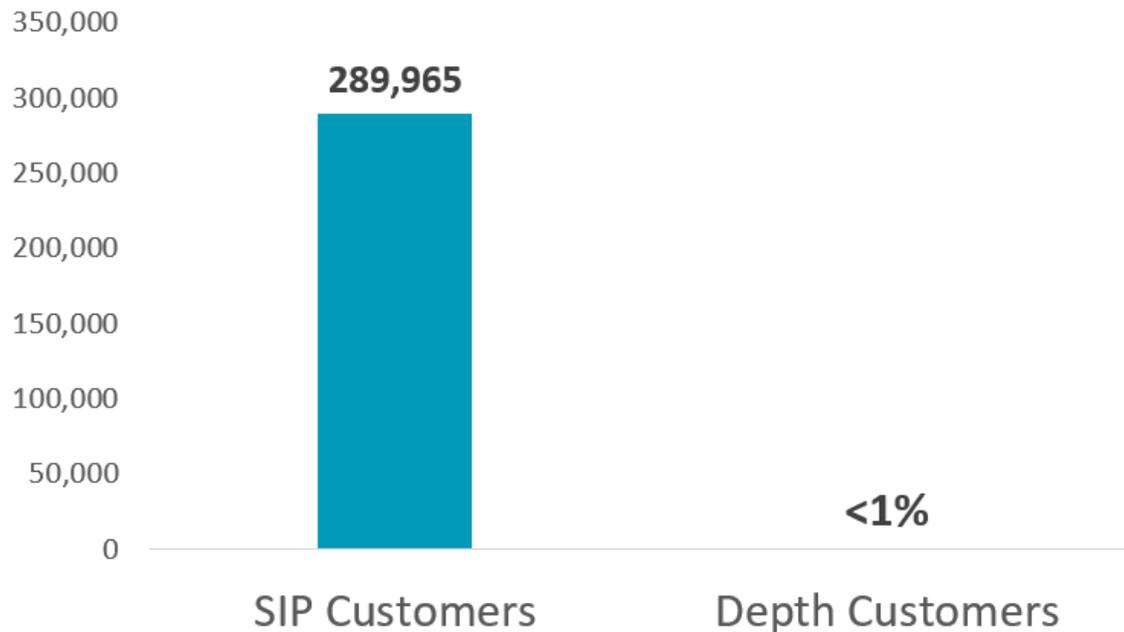
The cost-benefit question is complicated by thinking "who" is this designed to help. Our data shows that direct feed customers make up less than 1% of all SIP customers. But as direct feeds are still faster, the beneficiaries of these 12 new consolidators are a fraction of the 1%.

Whatever costs this creates will benefit a relatively small group of new SIP customers and it's not very fair if the 99% of current SIP users have to pay for it.

Chart 4: SIPs are for the masses; direct feed customers are a fraction of all investors

SIP Customers vs. Nasdaq Depth Customers

SIP Customers based on UTP professional subscribers as of Q4-2018.



Source: Nasdaq Economic Research, UTP Plan

A new arms race?

At its core, much of this debate is predicated on the fact that the “SIPS are slow.” But the charts above show the same race condition (and best-ex-compliance concerns) will also exist with consolidators.

- There will undoubtedly be faster and slower competitive consolidators.
- Many investors will (still) be compelled to buy the fastest consolidator.
- The fastest consolidator would be able to charge more for their data-feed (and will have higher costs too).

That creates a new speed arms race.

Worse, the SEC might lose its ability to approve consolidator mark-ups.

Currently, data prices are regulated by the SEC, which as [we've shown](#), has kept our “same store” rate of growth in line with inflation (Chart 1).

Are we engineering a solution worse than the problem?

This is an extensive and dramatic change to market rules which try to tackle a number of “problems” (things people complain about). Recent 606 changes took years to implement, and were changed significantly at the requests of commenters, but these much bigger changes seem to be on a much shorter deadline.

The costs here are not immaterial. Gone is the golden source NBBO that protects investors and (mostly) synchronizes our fragmented markets. Required are latency arbitrage to keep markets in line. [Studies](#) from other countries with similarly fragmented and unprotected quotes suggest that latency arbitrage profits in the U.S. could rise by almost \$3 billion.

So what are the benefits? Some have noted this is about at most a “[few hundred million](#) dollars” that the 1% pay to exchanges.

Seems a high price to pay given most of the “problems” in the market are far from solved.

Table 1: Tracking the problems NMS II is designed to solve

Problem	Now	NMS-II proposal	Why
Streamline SIP admin	✗	✓*	1 administrator
Streamline SIP infrastructure	✗	✗	More distributors
Geographic latency	✗	✓*	Almost, there is still a hop to customers
SIP conflict of interest	✗	✗	Conflict switched from producers to customers and competitors
Two tier market	✗	✗✗	12 tier market with unprotected best quotes
Missed fills	✓	✗	Trade-throughs allowed
Bad fills (trade throughs)	✓	✗	Crossed markets possible
High speed arms race	✗	✗	Direct feeds are still faster Fast & slow consolidators
Latency Arbitrage	✓*	✗✗	Latency arb required to keep markets “inline”
Duplication of industry costs	✗	✗✗	Additional consolidators add to fixed costs of the market
Fragmentation	✗	✗✗	Unclear if SIP rev share changes to consolidate New “consolidators” add MBBO
Complexity	✗	✗✗	Did we mention the multiverse?
Arms Race	✗	✗✗	Fast consolidators can demand higher fees and may not be regulated by SEC

Source Nasdaq Economic Research (*: Somewhat)

Careful what you don’t comment on...

Unfortunately, these changes are directed at sophisticated investors. The “1%” of customers that manage over 50% of assets and even more of the trading. It requires head traders and market experts to weigh in and think critically.

Although most of them are dealing with COVID-19, the SEC didn’t wait to approve the January proposal and has indicated it is [not open to extending the deadline](#) on the Valentine’s Day proposals.

Comments on the rest of these new rules are due on May 26.

If you don’t comment now, don’t complain for the next decade if trading costs you more, liquidity is fragmented and high frequency trading firms are making more profits.

-end-

NMS II: An odd solution for the odd lot problem

As we [recently discussed](#), the SEC has a number of significant rule change proposals on the slate right now.

One of those proposals involves splitting the old National Best Bid and Offer ([NBBO](#)) into two new kinds of BBO. That's not as simple as it sounds, nor does it completely fix many problems.

What the BBO is going on?

[Currently](#), when you are trading, the SIP shows you an NBBO. That's the best of the best buyer and seller regardless of which exchange they're waiting in, although it needs to be for at least a "round lot" (usually 100 shares). If you're trying to capture spread, that round lot also ensures you have a "protected" quote, meaning you won't miss fills if a large trade causes worse prices to trade at other venues (be "traded through"). It's also the same prices that Rule 605 uses to monitor investors' execution quality and protect them from bad fills.

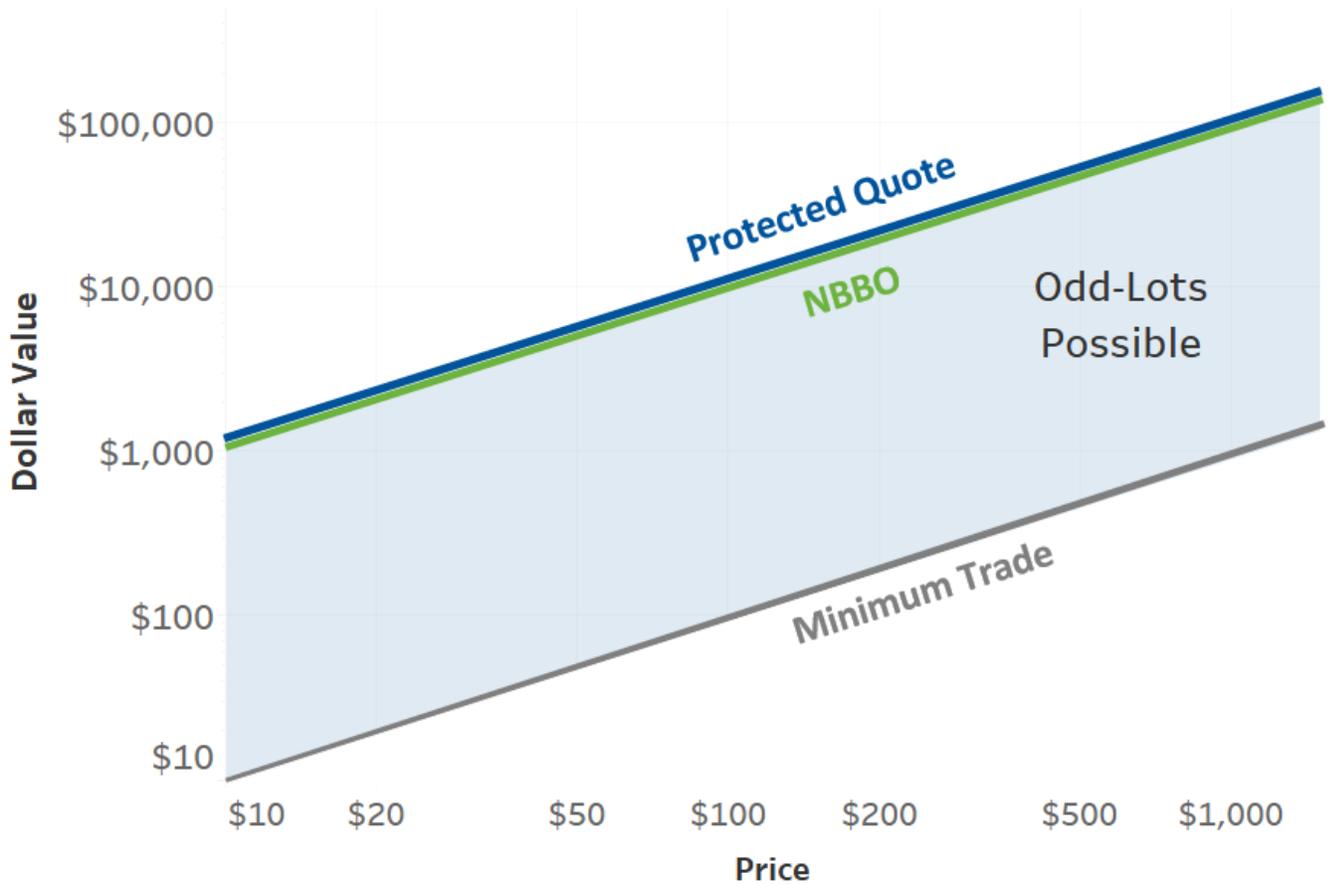
However, the U.S. market has an "[odd lot problem](#)." That's because 100 shares of AMZN (for example), at over \$200,000 not only qualifies for block size but is multiples larger than the average trade or best bid value. So what tends to happen is that algos and individual investors bid for smaller values of AMZN, creating an "insiders" market at better prices than the NBBO shows.

One problem with this is that investors and brokers using the SIP won't know that there are small buyers and sellers at slightly better prices in the market.

But there is a good reason to have round lots in a stock like GE, where 100 shares represents around \$700. Considering the average trade is around \$7,000, the public, protected best-ex quote should represent enough shares to fill the average trade.

Chart 1: Currently an investor is protected at the NBBO but odd lots can exist at better prices

SIP Qualifying BBO vs. Protected Quote vs. Minimum Quote



Source: Nasdaq Economic Research

Dynamic round lots to fix...well not much really

In their [Valentine's Day NMS-II](#) filing, the SEC proposed a solution to the odd lot problem that creates smaller round lots as stock prices rise (see Table 1).

Table 1: New round lot sizes to be used for SIP NBBO but not protected quotes

Stock price	Current round lot	New round lot	% of value traded
Up to \$50.00	100 shares	100 shares	32%
\$50.01 to \$100.00	100 shares	20 shares	21%
\$100.01 to \$500.00	100 shares	10 shares	43%
\$500.01 to \$1,000.00	100 shares	2 shares	1%
\$1,000.01	100 shares	1 share	3%

Source: SEC

The proposal results in an NBBO that has a more consistent value (green line in Chart 2). [Our data](#) suggests this will also significantly tighten displayed quotes for higher-priced stocks. However, there are three consequences that traders might not like:

1. With the size of a round lot between \$1,000 and \$5,000 (for almost all stocks), the official NBBO might represent a smaller quote than almost all spread-crossing trades that will be benchmarked against it.
2. It's possible that a stock like AMZN could be BID and OFFERED for one share at a one-cent spread. That's not the kind of size or spread capture that many think is good for liquidity and price discovery.
3. There are still odd lots.

But that might not matter, because the new NBBO is also no longer protected, so sophisticated investors don't need to trade with those quotes even if they are at better prices.

An odd solution to the odd lot problem

Instead, protected quotes will remain pretty much as before, defined as orders for 100 shares or more, creating a new "PBBO" (Protected Best Bid and Offer) that is much larger than the NBBO, especially for very high-priced stocks.

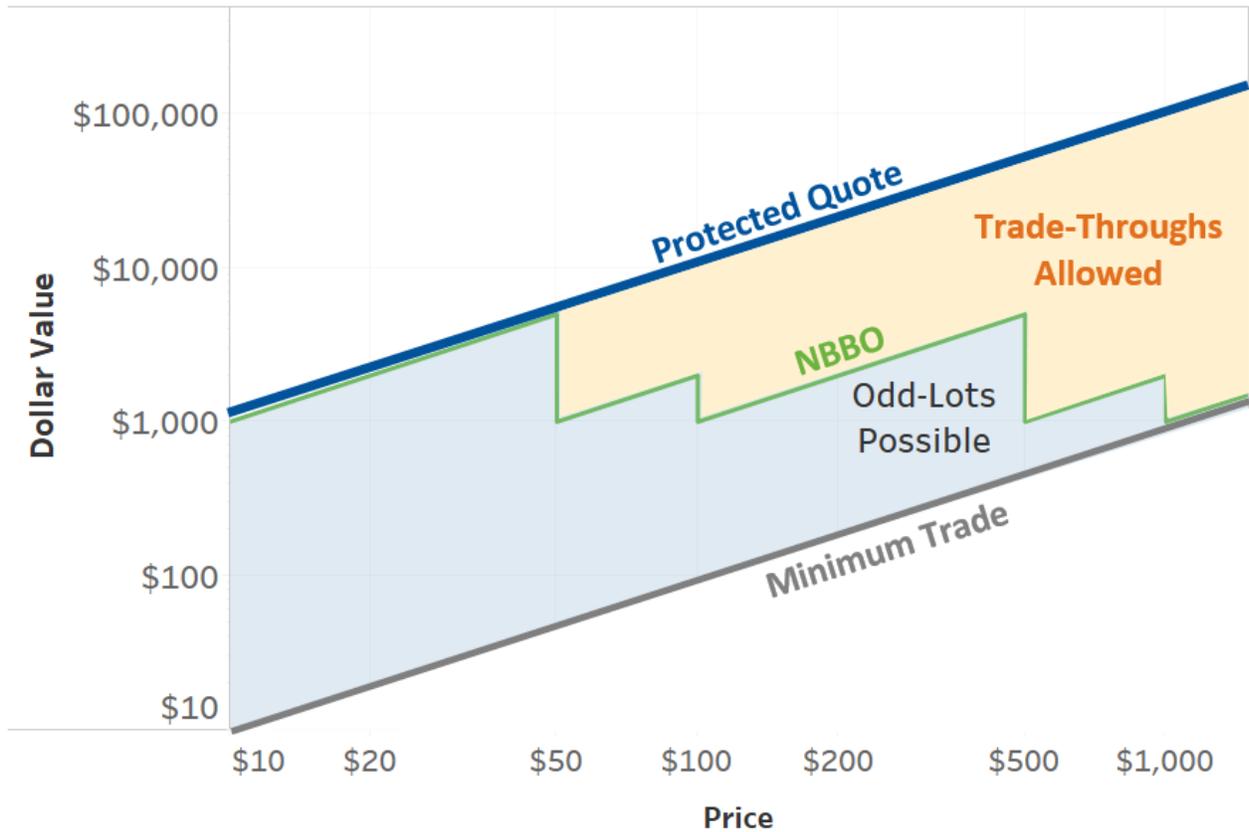
That leaves a complicated scenario where:

- Protected bids and offers are different than the best bids and offers.
- Odd lots will still exist, so the "true BBO" could still be an odd lot at a better price than both the PBBO and the NBBO.
- The NBBO is capped at \$5,000, smaller than most trade sizes.
- Even though the NBBO is public, it doesn't guarantee you a fill.
- The PBBO still represents a very large trade for high-priced stocks.
- Trade throughs are allowed between the NBBO and the PBBO (which means investors could miss fills despite being the best price).

We show how this new rule set works for different stock prices in Chart 2 below. The orange zone shows where trade throughs would now be allowed, while the blue zone shows where better prices will still be hidden from investors buying the SIP.

Chart 2: Under the new rules, the NBBO will be different to the protected quotes (PBBO) while odd lots may still rest at better prices inside the NBBO

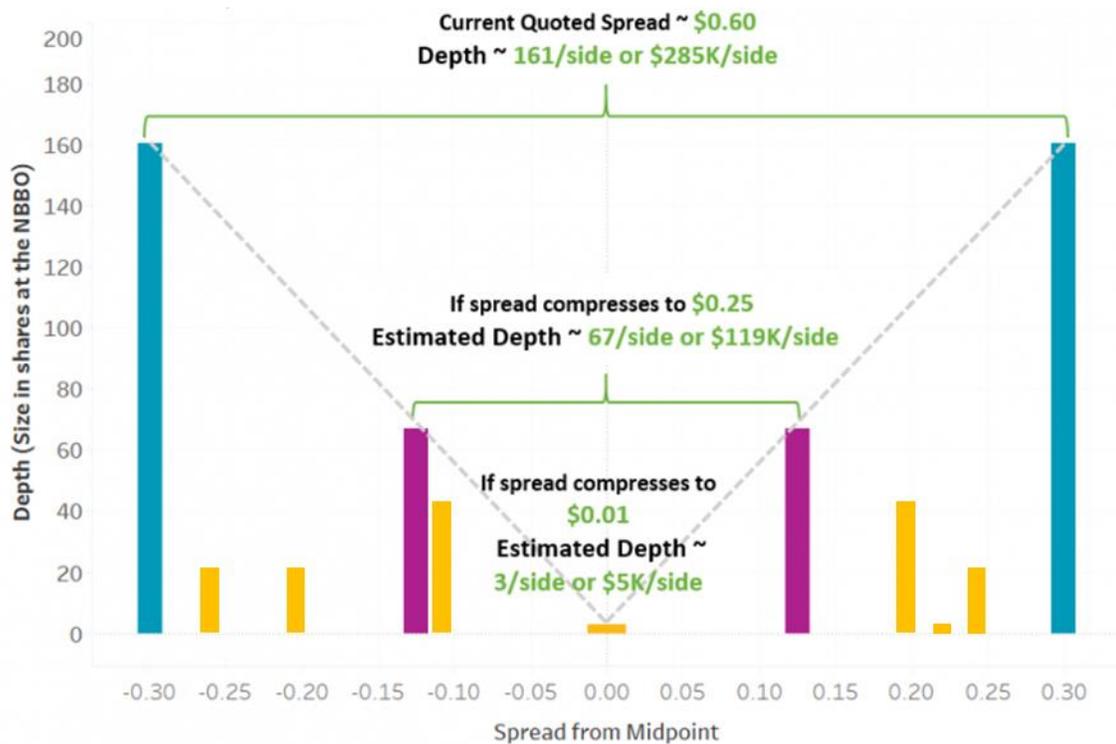
SIP Qualifying BBO vs. Protected Quote vs. Minimum Quote



Source: Nasdaq Economic Research

A more subtle problem with the NMS-II proposal is how to aggregate the odd lots from all the fragmented venues in the market. Currently for high priced stocks, quotes from all 13 venues typically form at random prices inside the NBBO (blue in Chart 3). Under the new NMS-II proposal, for AAPL, with a price between \$100 and \$500, 10 shares on one exchange would represent the NBBO, even if there was a combination of $8 + 6 + 9 = 25$ shares at slightly better prices across three other venues. Moreover, if one exchange had multiple odd lots inside the NBBO, only their “best odd lot” would be collected under this proposal.

Chart 3: Example of how the NBBO and PBO vs. intelligent tick and odd lots could work



Source: Nasdaq Economic Research

An even better solution to the odd lot problem

In other developed markets, the solution to the odd lot problem has been to eliminate the distinction between round lots and odd lots.

Allowing trades in any whole number of shares in turn makes all quotes equal. It also ensures that the true best bid and offer is displayed for all to see.

The downside, as [we've noted before](#), is that nobody wants to be benchmarked against one-share quotes.

Throughout most of the world, markets have adjusted for that by modifying spreads so that they represent consistent returns for liquidity provision. Using Chart 3 again, what that does is force all the yellow bids and offers into the purple queues.

We recently proposed a similar solution for the U.S., using [intelligent ticks](#) combined with the elimination of round lots. Based on our analysis, if spreads are set right, the data suggest the notional depth of stocks will also be [consistent](#) across stock price.

Data also shows that if you widen the increments, depth at each tick should increase, allowing us to control the value at the NBBO. Our estimates show that what tends to happen is \$30,000 worth of shares accumulates at the NBBO, regardless of how many shares that takes.

There are a lot of odd and conflicting aspects of NMS-II. But it would be sad to make wholesale changes that don't even fix the problems.

Table 2: Changing NMS is complex; it's easy to do more harm than good

Problem	Now	NMS-II proposal	Intelligent ticks
Eliminate the odd lots problem	✗	✗	✓
SIP shows the true BBO	✗	✗	✓
NBBO greater than average trade size	✓	✗	✓
Tighten spreads	✗	✓	✓*
A protected "best quote"	✓	✗	✓
Equal price time priority for all orders	✗	✗	✓
Minimize missed fills from not being at the true inside	✗	✓*	✓
Minimize trade throughs	✓	✗	✓
Make trading more consistent	✗	✗	✓

Source: Nasdaq Economic Research (*: likely better than now)

Two things we should all agree on is that U.S. markets are the best in the world and we all benefit if we can keep them that way.

Without a data-driven-solution it is easy to do more harm than good.

-end-

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NMS II: Shifting stocks toward a dealer model

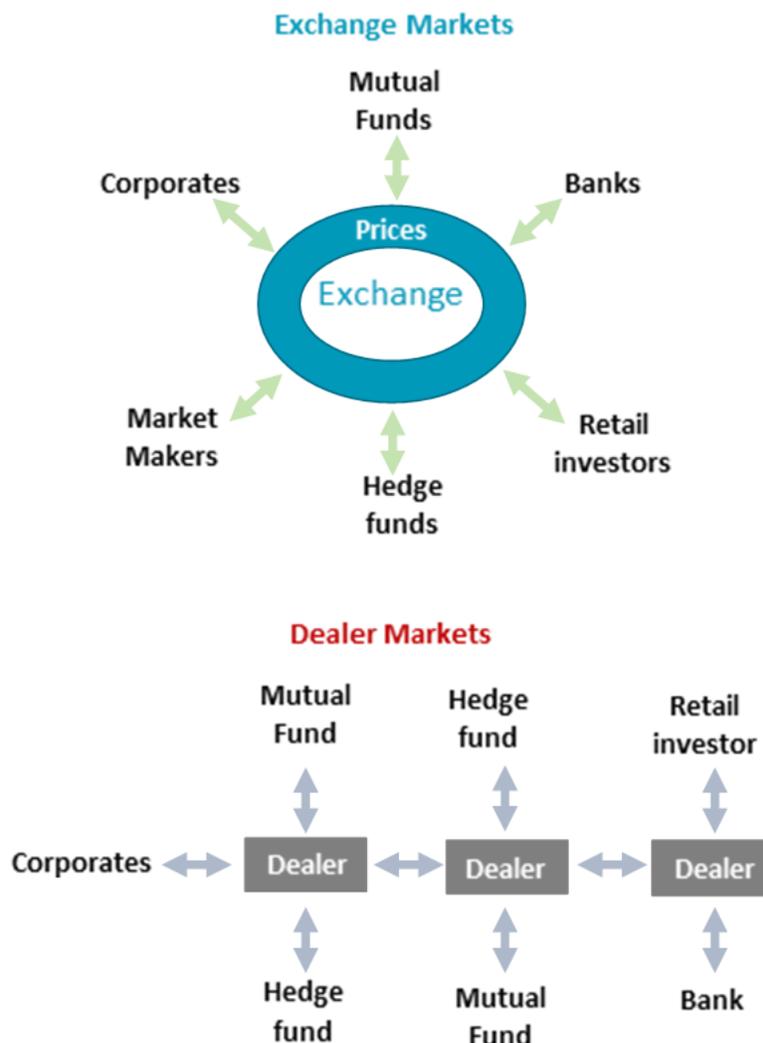
Although most trading these days is electronic, different asset classes still trade in very different ways.

There are different types of market models

At each end of the spectrum are two different ways to facilitate liquidity:

- **Dealer Markets:** Where customers interact as known counterparties with an intermediary, usually a bank. Features of these markets include: bilateral trading and custom prices from quote requests, transactions often required ISDA's and have credit exposure.
- **Exchange Markets:** A centralized marketplace that allows all customers to meet on a consistent single market, usually with anonymity. Features of these markets include: an all-to-all marketplace with a published best prices from continuous quotes and public trade reports, settlement streamlined and netted across venues.

Chart 1: Exchange markets and dealer markets are structured differently



The way each market works is very different for investors. Most exchange markets offer transparent and continuous valuations and price discovery. That includes actionable prices and guaranteed liquidity. Being a single anonymous marketplace has advantages too, as the signal from one participant is masked by the noise of all the others.

In contrast, dealer markets are characterized by “quote requests” and indications of interest. There is often no tape (or record of other peoples trades) and rarely a pre-trade quote. That makes it hard to know if you received a good price, regardless of how good your trader is.

Few markets operate at either end of the spectrum. Futures exchanges are probably closest to pure exchange markets, with a single venue per contract and centralized settlement and clearing. While credit and swap markets are usually closest to dealer markets, with ISDA agreements and often with non-fungible un-cleared exposures.

Stock markets are mostly exchange markets

Stock markets around the world are almost all closer to exchange-driven markets.

There are a lot of benefits to exchange market structure for investors. They typically treat all investors more equally. They are more transparent to all with a record of prices, which makes it harder to give small investors bad fills and easier for investors to value their portfolios and work out their next trades.

Listing exchanges themselves also offer a layer of supervision and quality control to the tickers that are listed. Combined, these traits tend to make them safer and more accessible for smaller investors. That’s why the \$10 trillion U.S. equity mutual fund industry is typically limited to buying listed company shares, while regulators restrict ownership of private equity to accredited investors.

The capital looking to invest in U.S. stocks also lowers the costs of capital for corporates despite structural advantages that make private equity [increasingly attractive](#).

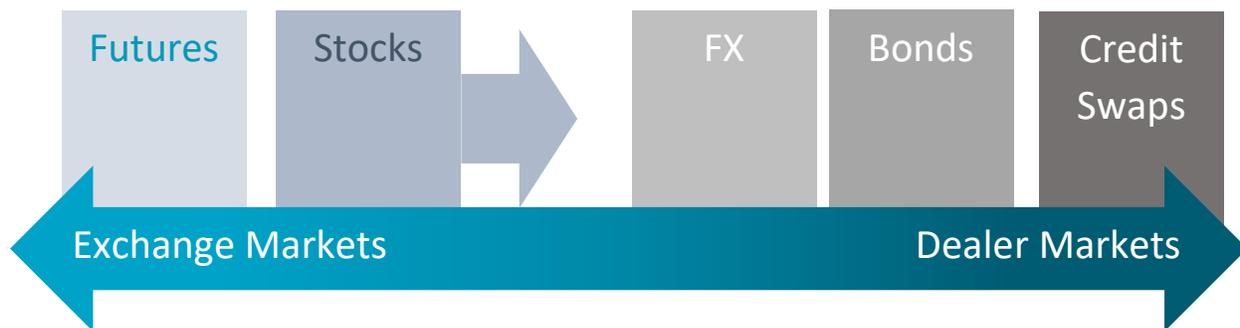
Despite that, U.S. stock markets have some aspects of dealer markets. There is a robust “upstairs” market for retail and block trading, as well as customer tiering and bilateral trading that makes up over 40% of trading occurring off-exchange.

But the current rules still require those off-exchange fills be no worse than exchanges’ lit prices, and the SIP allows investors to prove that accurately after the fact. That’s why it’s important to keep lit quotes as inclusive and competitive as possible.

Although the SEC’s mission is to protect investors, their [new NMS II proposals](#) (also see [here](#) and [here](#)) are subtly pushing equities further along the spectrum to dealer markets. Adding to fragmentation and intermediation, allowing trade-throughs and likely devaluing the lit quote (whether intentionally or not) might make the quote itself less useful.

Today’s litany of markets are far from “equal” in the way that characterizes exchange markets. Lit quotes are already the liquidity of last resort, hit only if bilateral relationships won’t already fill orders. As that segmentation increases, providing quotes becomes less attractive and spreads widen. Just like global warming, there is a tipping point where investors acting individually end up harming themselves as a group.

Chart 2: Where different markets sit on the spectrum



Source: Nasdaq Economic Research

It's hard to quantify costs of less-transparent bilateral markets with no data

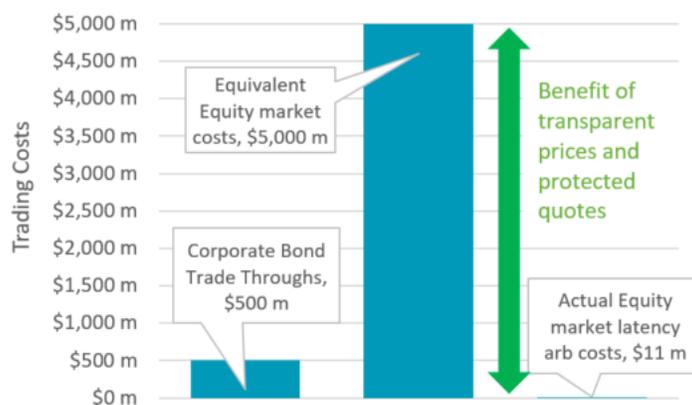
Academics and practitioners, benefiting from the wealth of public data coming from exchange markets, have overwhelmingly overanalyzed the frictions and economics of stock markets. That's resulted in pilots and proposals designed to target the latest small distortion in queue priority or toxicity. Ironically, what most of the findings show is that when markets are fragmented (by rebates or venues or tiers or speed) investors often lose, although usually only a fraction of a penny per trade.

In contrast, the small amounts of research on bonds indicates they are much more expensive to trade, even though there is little data to prove how good or bad executions were.

One study, done by [Professor Larry Harris](#), looked at fills of retail investors buying corporate bonds. That study found that trade-throughs (worse executions than passed over trades available on an electronic market) occurred 43% of the time, and made dealers more than \$500 million per year. That's before the additional \$700 million that dealers added to prices in their own mark-ups.

Given the much lower liquidity in corporate bonds than stocks, a similar lack of competitive lit and protected prices in equities would cost investors between around \$5 billion and \$12 billion each year.

Chart 3: Costs of no-quote data to investors is worse fills and no way to know it

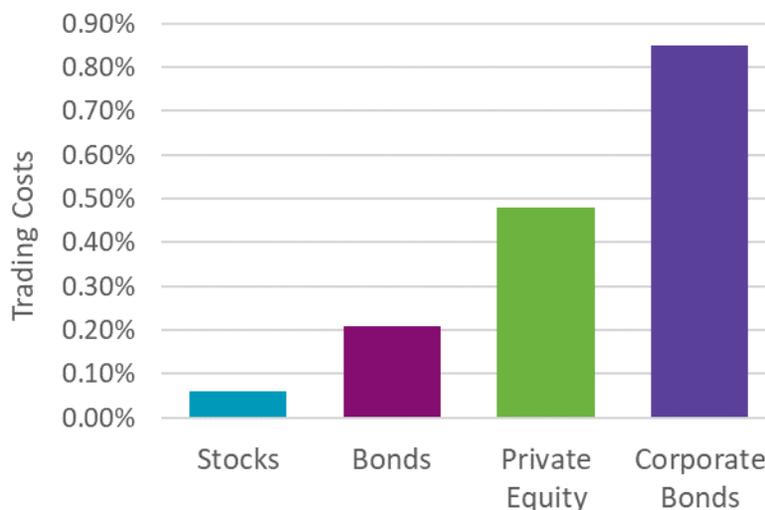


Source: Nasdaq Economic Research

The problem with less transparent markets is it took a professor with access to private data to calculate this. Investors in many dealer markets have no reliable prices to measure their executions (and sometimes their portfolios) against.

In contrast, the leading study on U.S. equity market trade throughs, which is adjusted for the geographic latency, estimated the actual costs associated with latency arbitrage is [\\$11 million per year](#).

Chart 4: Costs of trading increases as market transparency and liquidity falls



Source: Nasdaq Economic Research

The problem is not limited to bonds. A long list of regulatory [fines](#) in the past decade show that dealer and OTC markets, from Libor fixing, to FX and gold close marking, are harder for investors to police best execution, especially when prices themselves aren't available. And of course [dark pools](#) have not been immune.

Amazingly the value of dealer-market fines dwarfs the estimated costs of less transparency in equity markets (above), which in turn dwarfs the ["few hundred million"](#) dollars that the new NMS II rules seem designed to save. It puts the cost of equity market data in perspective!

COVID-Tested

Continuous exchange-driven markets have other benefits too. In stressed environments, they bring all traders together in a single marketplace with equal and actionable quotes. That's especially important if some parties want to fade quotes or reduce risk. It also simplifies the search for prices and liquidity.

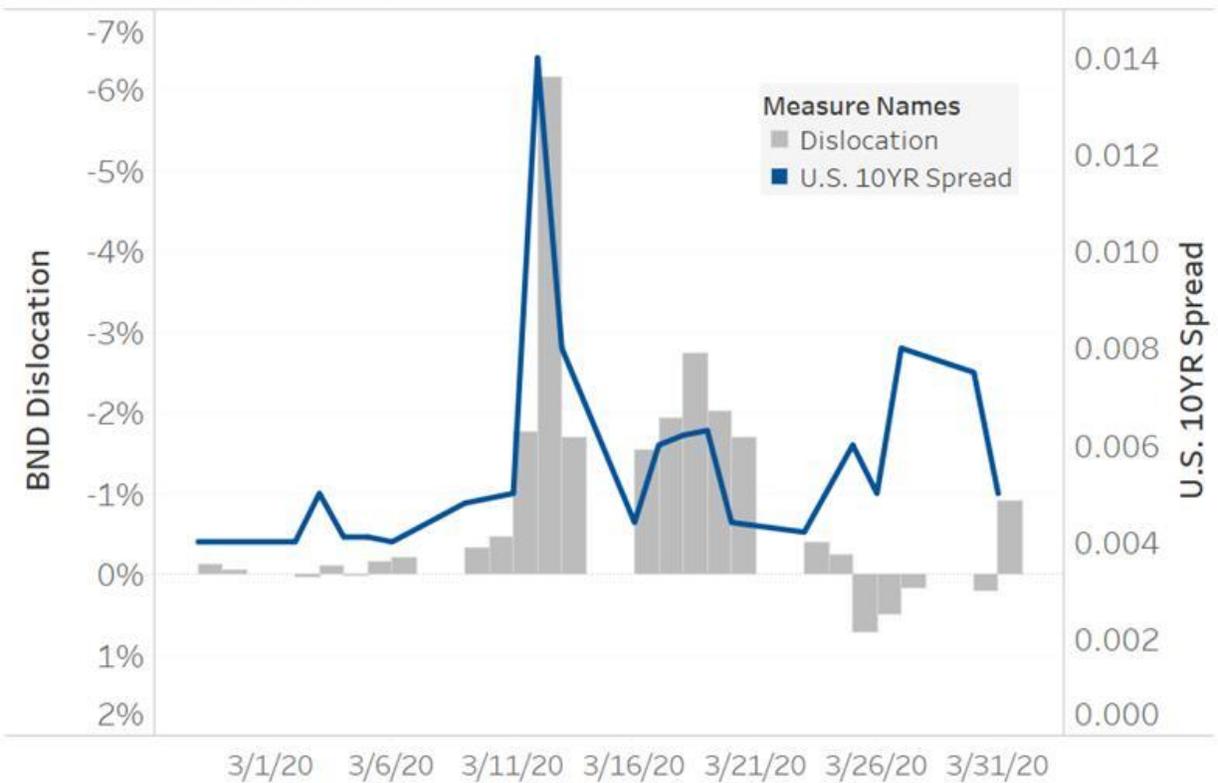
The recent [COVID-19 selloff](#) is a great test case. All [reports](#) point to [bond](#) markets [seizing up](#) again (as they did in 2009). Although spreads widened, bond index volatility stalled, indicating a lack of liquidity and price formation in the physical market. It was later revealed that companies drew-down around \$300 billion in loan facilities just as asset managers saw [record bond fund outflows](#) totaling \$218 billion in two weeks.

In fact, although bond ETFs traded at a discount to their bond market indexes during March, those dislocations coincided with Treasury market yields spiking to around 10-times wider than normal. Given Treasuries are a "risk free" asset, this highlights more the failure of the underlying market more than the ETF market. During that time, the continuous exchange-driven stock market became a price discovery and liquidity source for investors. This is supported by the fact that [bond](#) ETFs sold off even though they saw muted net inflows.

Chart 5: ETF "dislocations" vs bond market spreads indicate the underlying market was not pricing effectively

BND Dislocation vs. U.S. 10YR Bid-Offer Spread

Note: Axis of BND dislocation inverted.



Source: Deutsche Bank, FactSet, Nasdaq Economic Research

The cost of worse price discovery is underestimated

As equity markets deal with free retail commissions and a shrinking institutional commission wallet, it's easy to see U.S. data prices as a friction to be reduced.

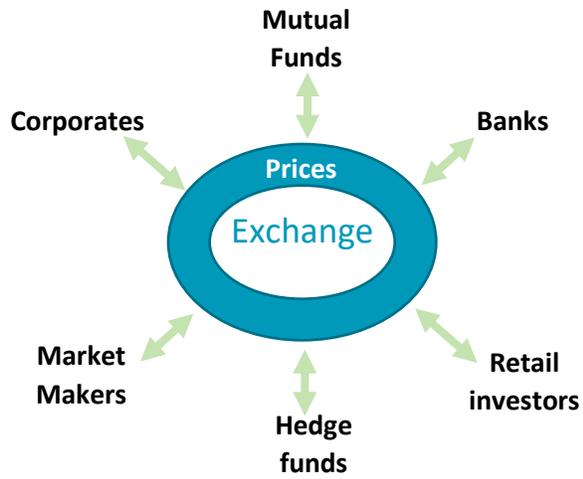
But as this analysis shows, knowing the markets' best prices could quite easily be worth the cost.

Other countries have been working to keep stock markets more open and equal. Canada has trade-at rules to stop free-riding off the public quotes of others, while Europe has dark pool caps that limit trading in dark pools to 8% of total trading.

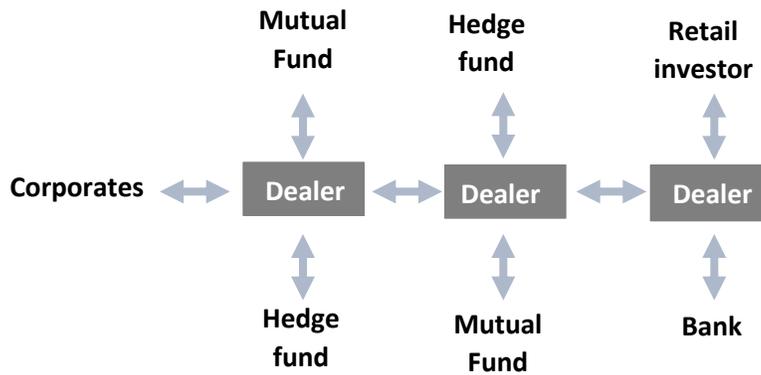
Longer term, shifting U.S. markets from a "single protected NBBO" further toward dealer markets might not result in better prices for all investors. History shows the opposite is likely. Especially once investors don't know what the best prices are.

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Exchange Markets



Dealer Markets



NMS II: Why Proposed Rule Changes May Make Markets Less Fair for All

The middle of a Coronavirus shutdown is probably not the right time to look at reworking the whole U.S. equity market structure. But deadlines are (still, currently) deadlines.

Earlier this year the SEC released almost 700 pages of proposed National Market System (NMS) rule changes, as well as denying Cboe's unprotected lit speed bump before they deferred their decision on IEX's protected lit speed bump.

Within the next four weeks, we're all meant to submit comments on these plans as well as doing our day jobs, from home. Today, I plan to focus on the SEC's proposal and spell out how its plan would truly impact markets.

There is a lot more here than people might realize. This doesn't streamline what we have or remove complexities or inefficiencies. But these rules touch almost all facets of Reg NMS and beyond, and our core understanding of a single protected and actionable NBBO (National Best Bid and Offer). Something that is, ironically, the [envy of the fragmented world](#).

Instead, the proposed rules are designed to create additional new infrastructure, which will likely have unintended as well as intended consequences. In that sense it looks a lot like a U.S. version of MiFID-II.

Where have we come from?

Before we contemplate the problems to solve, let's first think about how we got here.

In the "old days," exchanges listed stocks and investors went to the individual exchanges to trade them.

Then, back in 1994 with the introduction of [Unlisted Trading Privileges \(UTP\)](#), the U.S. Congress mandated that new competitors could set up to trade any stock without the myriad setup costs incurred by those venues that also invest in capital formation and bringing companies to investors. Not surprisingly, competition flourished. There are now [dozens of venues](#) that can trade any ticker.

Over time, it became clear that this also created fragmentation and that added to complexity. There was a lack of transparency into who had the best prices when, which made it difficult to ensure investors were not worse off.

The simplifying principles behind NMS

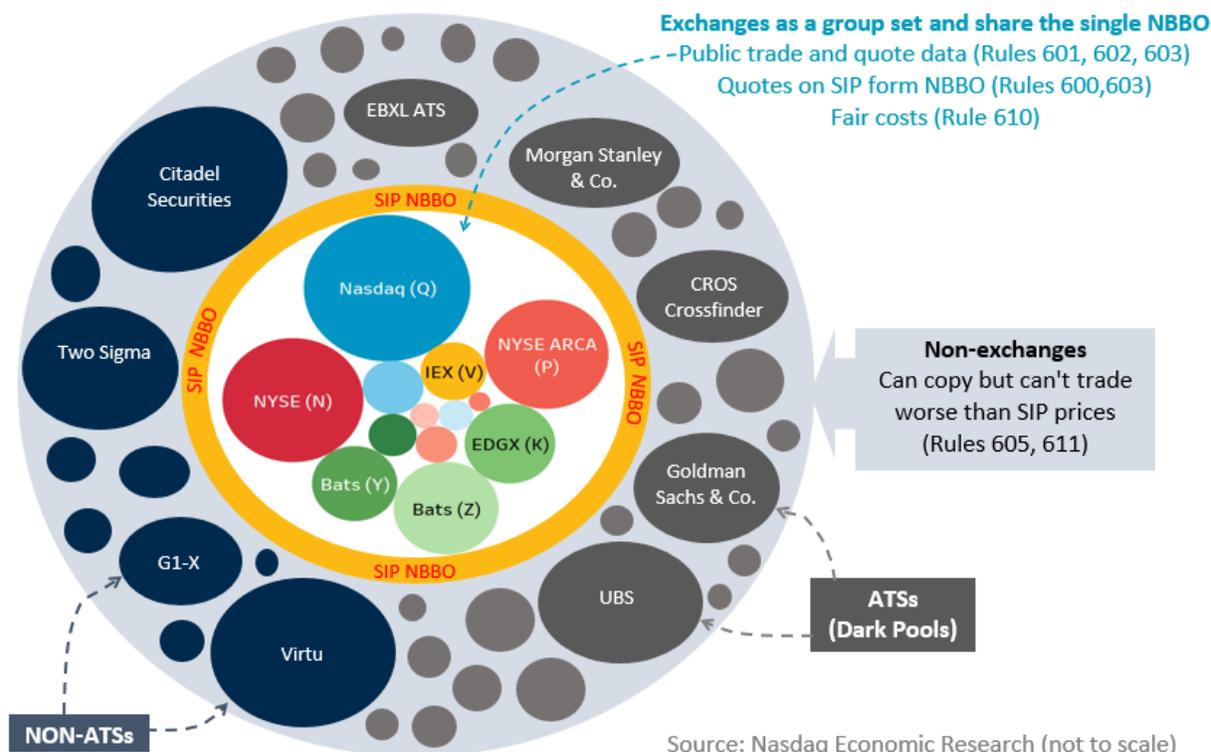
Then along came Reg NMS. Short for "National Market System," NMS in principle stitched the complex and fragmented market back together.

Concepts like the [NBBO](#) and the SIP (Securities Information Processor) were put into their current forms, creating a single "golden source" of best prices for investors—a "virtual single market" in the newly dispersed world.

Routing and execution quality standards were then created to leverage this new NBBO.

Although exchanges also had to provide their pricing data to the SIPs for free, economics were put in place to try to reward them for their data's [contribution to market quality](#) of the combined network.

Chart 1: NMS creates a single NBBO out of a network of competitors



We talked in [Reg NMS for Dummies](#) about what each of the NMS rules do. There are 14 rules that can be grouped into six general categories (Table 1).

Table 1: A summary of NMS rules

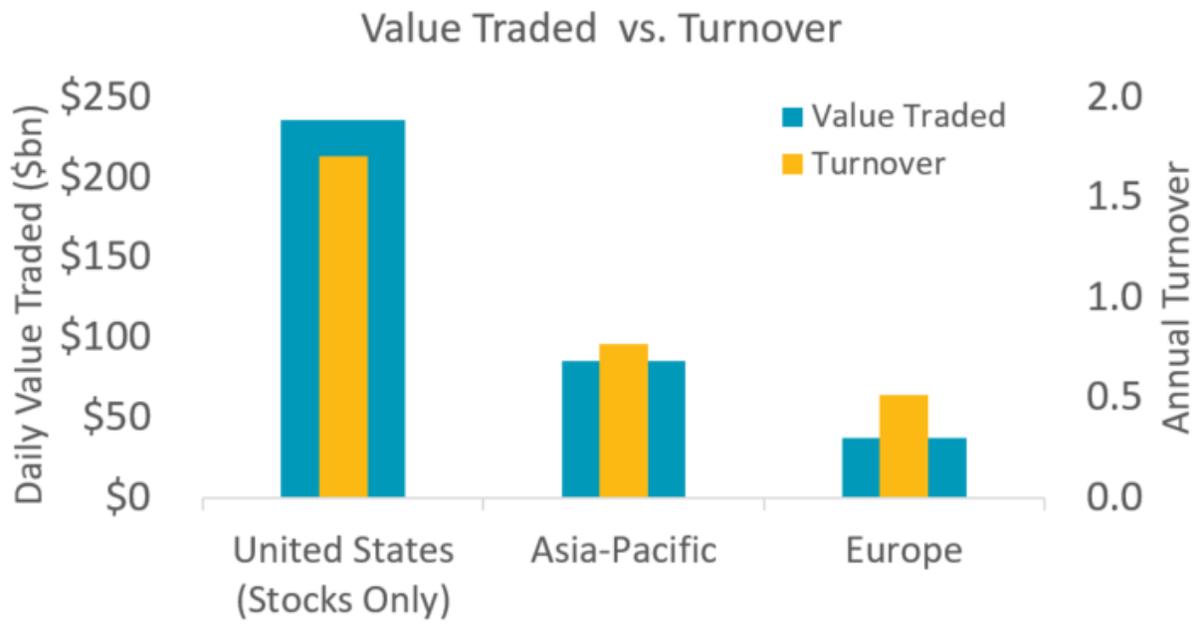
Rule 600	Definitions: defines concepts and terms, which is sometimes pivotal to how the later rules work.
Rules 601-603	Fairness in INFORMATION: are about reporting trades and quotes to the Securities Information Processors (SIPs), ensuring access to data by exchanges.
Rules 604-607	Broker ACCOUNTABILITY: are special reporting and trading rules designed to <i>mostly</i> protect retail investors.
Rules 608-609	SRO rules: Set rules for what Self Regulating Organizations (SROs) need to do to publicly change rules, including SIP operations.
Rules 610-612	Fairness in TRADING: cover trading rules like protected quotes, decimal ticks, and access fee caps.
Rule 613	CAT: is relatively new rule, covering the consolidated audit trail (CAT) which is designed to consolidate and replace other reporting rules that FINRA currently manages like OATS and Blue Sheets and help the SEC investigate and police participant behaviors.

What's wrong with U.S. Markets?

It's clear that U.S. markets aren't "broken." Data shows they are the [most liquid](#), largest and cheapest to trade in the world. And their performance during the recent [Coronavirus selloff](#) confirms they have remained liquid and transparent.

That's in stark contrast to parts of the bond markets which have [virtually stopped](#) providing liquidity [and pricing](#), requiring unprecedented [intervention from the Fed](#) to remain functional for investors.

Chart 2: U.S. market liquidity leads the world



Sources: Credit Suisse, Nasdaq Economic Research, World Federation of Exchanges

But there are some things that many people would like to change:

- Probably the most consistent position is that markets are too complex. Whether that be due to too much [fragmentation](#), order types, message traffic or speed bumps.
- We've talked about the [odd lot and tick size problems](#) in the U.S. market that make trading harder.
- Speed and [latency created by the fragmented markets](#) have created their own list of sometimes conflicting proposals. Some want to make everyone more "equal," removing the "two tier" market the direct feeds are said to create. Others want to give traders more choice by removing the order protection rule and prohibition on locked and crossed markets, making markets much less equal.
- Other proposals include moving economic "rents" from one group of market participants to another without ensuring a net benefit to investors. We'd include in this the [data debate](#), [access fees](#), [SIP governance](#) and [speed bump](#) proposals.

The only thing people seem to agree on is that everything being equal isn't fair either.

This year's actions touch almost every NMS rule

Despite all these facts, there is pressure to "do something." So back in January, the SEC proposed consolidating the three tapes into a [single SIP](#). This simplification and streamlining of markets would modify Rule 608 and Rule 609 that determine how SIPs work. This rule also changed SIP governance, giving consumers and competitors votes on potential new data revenue decisions (Rule 601), arguably increasing conflicts of interest, but we digress.

Then just one month later, a [Valentine's Day proposal](#) suggested the opposite (multiple SIPs) and much more. The rule proposed changes to Rule 600 and Rule 603 as well as adding a new Rule 614, but these changes will likely have unintended consequences on other rules too.

- Creating competing SIPs and consolidators will fragment the NBBO. Without a single SIP there is no gold-sourced NBBO. Instead, we will have MBBO's (**M**any Best Bids and Offers) and the

concept of locked and crossed markets (Rule 610) and execution quality (Rule 605) will depend on your data provider and [location](#).

- That in turn makes “fair access” of exchange data (Rule 602) a little redundant. The SEC hopes there are around a dozen consolidators, so it’s likely some will be faster than others.
- Splitting the definitions of protected quotes (still 100 shares or more) and best quotes (smaller round lots to be included in NBBO) seems unnecessarily complex, but it will also legitimize trade throughs (Rule 611) and make retail best ex (Rule 605) more complicated
- What defines a protected quote (Rule 611) is also open for discussion. In a separate February action the SEC denied the Cboe its 4 milliseconds (ms) (unprotected) speed bump. Coming after the CHX denial (which wanted a protected speed bump quote), this seemed to solidify the view that all lit quotes should be accessible, protected or not. So it was surprising just a week later that the IEX D-limit order type request was extended. Why deny Cboe and CHX but extend the IEX decision? The IEX D-limit would also fade market-wide takers (like Cboe) but was to be “protected” (like CHX). The main thing protection provides clearly isn’t liquidity. But by substituting for rebate economics, it likely earns IEX more SIP data revenues. That is ironic given IEX’s position on rebates and market data. But I digress again...

Rules that affect retail trading, from the ability to price improve (Rule 612) to disclosures of routing and broker incentives (Rule 606 and Rule 607), are the only NMS rules that aren’t changed. Despite that, retail seem to be net losers from the changes to PBBO (Protected Best Bid and Offer), which will make it harder to police whether orders got the best fills available.

What market structure do we want?

The overwhelming desire of most investors is to make markets fairer, more equal or simpler.

Although these rule changes touch almost all of NMS, they seem to mostly help sophisticated traders and others with the time and expertise to navigate more complex and fragmented markets.

We all want to improve markets and believe there are ways to do so. But comments are due soon on these sweeping SEC proposals. So it’s important we put our heads together and look at the data to make sure we don’t do more harm than good.

Speaking of data, there is lots to do to understand the potential costs, benefits and unintended consequences of these changes. This discussion should just be a place to start.

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