@obrienedge annotated response: January 22, 2014

Nanex ~ 21-Jan-2014 ~ Flickering Quote Credits

Subversion of a key U.S. stock market regulation – An annotated rebuttal

Synopsis

A key rule in Regulation NMS (Reg NMS, the body of rules governing the U.S. stock market) may have been subverted in the implementation process, unknown to both the public and the SEC (Securities and Exchange Commission). Had this key rule been implemented as written, exchanges favoring tactics employed by high frequency trading (HFT) would have been at a disadvantage: they would have received a smaller share of the $500 million in exchange fees collected annually from 2.5 million subscribers to real-time stock quotes. The subversion of this key rule removed an important incentive placed by the SEC and the industry to ensure investors receive reliable stock quotes.

@obrienedge Synopsis – Why am I writing this.

I am writing this response so that readers understand that, while our markets could always improve and be more transparent, basing your approach to market structure (and our markets generally) on the belief that it has somehow been "subverted" to advantage some at the expense of others is a path to disillusionment and failure.

This is not to say that at times critics of current market structure that hold such views can be right with respect to any one data point, but they generally are not right, and they view all issues with a bias that significantly compromise their ability to give you information you can apply in an actionable way to achieve your goals. Whether you believe what I say or not, please consider this broader point when thinking about market structure and related analysis going forward.

I have tried to be more vocal, and social, on these issues because it is a medium frequently used to disillusion people in the guise of "education". While responding can be exhausting at times, I feel it is an obligation and I'll continue to try and do so to the extent practicable. Thank the snowstorm for giving me several hours of unanticipated alone time at my computer for the ability to do so in this instance – otherwise I just wouldn't have the time. These comments are based on my own personal experiences (as general counsel and later chief operations officer at an ECN as Reg NMS was debated, and at NASDAQ as senior vice president of Market Data which involved operating the SIP as Reg NMS began to be implemented) and this reflects my observations and opinions alone (and not necessarily those of Direct Edge). As mentioned above, this rebuttal was written with some unanticipated free time. While I stand behind the points I make, which have been formed over a period of years, this is more of a first draft and apologies if spelling and/or grammar reflect that.

My comments will be in red, and I'll try to give some cites to support my assertions. I won't comment on the specific charts because in my opinion, while they are artistically interesting, they provide little analytical value, and there's nothing much to say about them other than that.

Executive Summary

Every year, the U.S. stock exchanges together receive approximately $500 million for providing real-time stock quotes to subscribers of the SIP (consolidated market data). The portion of this $500 million pie that each exchange receives is determined by the number of trades executed and quote credits earned using a strict set of rules specified in Regulation NMS (Reg NMS). Quote credits are earned when an exchange's quote is at the NBBO (National Best Bid/Offer) for at least 1 second. Quotes that change in less than 1 second are called *flickering* quotes.

Regulation NMS itself never includes or defines the term "flickering quote". See the actual text of Reg NMS as approved by the SEC ("SEC Approval Order") at http://www.sec.gov/rules/final/34-51808.pdf, pages 434-523. As an aside, the term "high-frequency trading" (or "HFT") is not mentioned once in the entire 523-page document. So the insinuation that Reg NMS was instituted to somehow curb HFT behavior is without basis – see below.

To be fair, the term "flickering quote" is used extensively in the SEC Approval Order. The reason for this is that Reg NMS made two important changes with regards to quotations. First, it made brokers and exchanges have to respect the better-priced quotations of other exchanges (and other trading centers, but I'll use the term "exchanges" generally from here on out) before trading at an inferior price. This created significant concern in the industry that, given how quickly quotes changed (yes, quotes changed very quickly even in 2005) it would create the appearance that a firm was "trading through" (*i.e.*, not respecting), better prices posted elsewhere, creating the appearance of a compliance violation when there was none. Here is the key quote, when the term is first described along with the reason why it is discussed:

"In many active NMS stocks, the price of [an exchanges'] best displayed quotations can change multiple times in a single second ("flickering quotations"). These rapid changes can create the impression that a quotation was traded-through, when in fact the trade was effected nearly simultaneously with display of the quotation."

SEC Approval Order, at 101. Read the next several pages for further illustration. This was the fundamental reason for speaking about "flickering quotes" in Reg NMS. Not as an example of industry malfeasance, not as a sign of deteriorating market quality, but simply "to allow [brokers and exchanges] a one-second 'window' prior to a transaction…to evaluate the quotations of another trading center." SEC Approval Order, at 102. The main industry association at the time, the SIA, stated it would provide "much needed practical relief" in this regard. SEC Approval Order, at 102.

So that's reason #1 that "flickering quotes" were discussed by the SEC when approving Reg NMS – and probably the main reason. The second has to do with their inclusion in the formula for allocating market data revenue (the main thrust of this piece). Onto that in a moment.

Flickering quotes are specifically excluded from earning quote credits because they are detrimental to the market (high frequency traders use *flickering* quotes to probe the market or to trick other algorithms and humans).

First, a history lesson. Before Reg NMS, market data revenue was allocated amongst exchanges on the basis of the market share, by trades (e.g., two trades of 100 and 100,000 shares counted equally). This created concern regarding the practice of "trade shredding" or "tape shredding", namely breaking up large traders into smaller ones for the purpose of generating more revenue. See a Journal of Trading abstract summarizing the concerns that led to this at http://www.iijournals.com/doi/abs/10.3905/jot.2007.669797#sthash.0eIBz2WS.dpbs. Exchanges took certain actions to prevent this: see for example: http://www.archipelago.com/content/regulation/reg/rbe/2006/RBE-06-02%20Tape%20Shredding%20_4-21-06_.pdf but the concern continued. See also SEC Approval Order at 248.

This was the primary cause for changing the formula for allocating market data revenue. The SEC was concerned that "distortions caused by these [current] formulas are substantial and ongoing." SEC Approval Order, at 248. I can already see Nanex blaming HFT for this practice in my mind's eye, but I can only do so much to contradict conspiracy theories.

So to deal with this concern, the SEC did two things – it made all trades worth the same "credit" if their dollar value was $5,000 or greater, and it made trades only 50% of the formula. The other 50% "credit" was given to quotes. And so the idea of "quote credits" was born. This was meant to reward quoting generally, not distinguish "good quoting" from "bad quoting". According to the SEC, this new approach was:

"intended to address three serious weaknesses in the old formulas: (1) the absence of any allocation of revenues for the quotations contributed by an SRO to the consolidated data stream; (2) an excessive emphasis on the number of trades reported by an SRO that has led to distortive trading practices, such as wash sales, trade shredding, and print facilities; and (3) a disproportional allocation of revenues for a relatively small number of stocks with extremely high trading volume, with a much smaller allocation to the thousands of other stocks included in a Network, typically issued by smaller companies, with less trading volume." SEC Approval Order, at 250.

That last point is also worth noting because the new formula <u>under-weighted</u> active stocks for purposes of handing out market data revenue. There is not one allocation, but thousands done on a stock-by-stock basis based on the square root of each stock's dollar volume (*e.g.*, if there are two stocks, one "A" with $100 (square root = 10) in volume and one "B" with $9 (square root = 3), Stock B would get 3/13 of the revenue (23%) despite being only 9/109 (under 9%) of the volume. This further goes to the point that allocation of market data revenue is somehow an act of pro-HFT gamesmanship, because the formula significantly under weights the high-volume stocks where it is generally recognized most "HFT" (as however you define that term) trades. Accordingly it is hard to see how and why you would try to manipulate the formula's calculation in some effort to cater to HFT or make their activity somehow more "profitable".

The proposal raised several concerns – but not the one that Nanex suggests. Namely, given the historical concerns regarding tape shredding – some commenters raised "the risk of harmful gaming behavior by market participants". SEC Approval Order, at 259. In this context "flickering quotes" was discussed as quotes that are flashed for a short period of time solely to earn market data revenues, but are not truly accessible and therefore do not add any value to the consolidated quote stream." SEC Approval Order, at 259. Flickering quotes were not discussed, as Nanex asserts as a way that HFT "probes the market or to trick other algorithms and humans", and not "specifically excluded…. because they are detrimental to the market". And so I believe any description of the Reg NMS formula as being driven by these concerns is patently false.

The SEC did want to be responsive to the stated concerns, and did agree that the potential for "abusive quoting behavior is a legitimate concern, particularly given that quotations have not been entitled to an allocation of market data revenues in the past. The adopted formula therefore incorporates a number of modifications to the re-proposed formula to minimize the potential for abusive or costly quoting behavior." SEC Approval Order, at 260. Note that this language implies that SEC did not see this as an issue at the time, but wanted to prevent an issue from happening in the future. So again, one of the underlying premises of the Nanex article - that this formula was meant to discourage HFT activity that was viewed at the time as "detrimental" is without basis.

So it was to "minimize the potential (emphasis added – to underscore that no one said it was actually happening at the time) for abusive or costly quoting behavior" that the one-second requirement was born. SEC Approval Order, at 260. I'll also note that this provision of the new formula was not seen as the only reason why the SEC thought gaming behavior wouldn't occur. Many constructs of the new formula work to prevent this, and the market itself did so given the increasing speed of trading and quote access. In particular:

"The potential cost of displaying such quotations, in the form of unprofitable trades, should not be underestimated. Quotations would earn significant revenues only if they represent a significant proportion of the total size of quotations displayed at the NBBO for a stock throughout the trading year. The risk of losses that could result from the execution of orders against large quotations would be likely to dwarf any potential allocation of market data revenues. With the advent of highly sophisticated order-routing algorithms, accessible automated quotations throughout the NMS can be hit at lightning speed. Some of these algorithms are specifically designed to search the market for displayed liquidity and sweep such liquidity immediately when it is displayed. The market discipline imposed by these order-routing practices should greatly reduce the potential for "low cost" quotations at the NBBO. A market participant would have to be prepared to trade at a price, particularly a price as attractive as the NBBO, before displaying accessible and automated quotations to earn market data revenues. Moreover, any quotations submitted for stocks that are inactively traded (and therefore less likely to attract trading interest) will garner a very small Quoting Share allocation because the size of such allocation will be determined by the proportional dollar volume of trading in a stock." SEC Approval Order, at 261-262.

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This language is a good general discussion of why, among many reasons, the Nanex implication that market participants can rack up quote credits and data revenue risk-free is ridiculous.

However, a recent document sent to us by people familiar with the matter, describes an elaborate set of rules and formula, apparently hatched behind closed doors, to allow *flickering* quotes to be eligible for quote credits. These rules involve things like changing the timestamps and prices of quotes. From these altered quotes, the "best" is selected using an elaborate scheme that uses a sliding window of time, sliced into 1/10th of a second intervals. The "best" of these altered quotes is called a RBBO (Revenue Best Bid/Offer), a term not used anywhere else in the industry. These altered quotes are then matched up to the RBBO for the sole purpose of awarding quote credits.

Hard to know where to start here because so much is inaccurate. A quick summary first:

- This document is provided out of context and its importance is grossly over-exaggerated
- I'll describe the process for updating these Plans in response to the Reg NMS required changes below. Any process can always be more transparent but it was not "behind closed doors."
- Any one sub-second order, by itself, isn't eligible for quote credits. One broker or trader's order and one exchange's consolidated quote aren't the same thing.
- Timestamps are never "changed"
- Prices of quotes are never "changed" or "altered"
- Nanex makes the term "RBBO" into some term that has meaning when it is simply made up.

OK, now some context. The document that Nanex refers to as "proof" of some conspiracy was created as the exchanges and others responsible for implementing the new Reg NMS formula were grappling with the complexity of the new requirements. Concerned about the complexity of the formula and the calculation generally were raised at the time of approval. *See* SEC Approval Order at 248-256 generally. Despite the granularity of the new formula, the prospect of many unforeseen issues was raised. SEC Approval Order, at 251. The SEC explicitly acknowledged this, and the process to resolve outstanding issues, and that "the language added to the Plans by the Allocation Amendment can be adjusted in the future pursuant to the normal process of Commission-approved amendments." SEC Approval Order, at 251. Some of the Plans hired consultants to help manage through all the issues with implementation. This PowerPoint is a document from one of those consultants. Nanex doesn't provide the whole document, but it should be clear that: (i) it is the description of the issues as seen by a private party, and not an official document of any exchange; (ii) there is no evidence of any exchange guiding this document's creation much less agreeing with the content; (iii) it is not part of any SEC-approved process of Plan administration (see description of that process below); and (iv) it was created almost <u>two years</u> prior to the actual Plan being updated to reflect the Reg NMS formula, suggesting it was an early attempt to provoke discussion of these issues.

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This is not meant to judge whether the document accurately reflects how the formula is calculated (there isn't enough of the document actually posted by Nanex to try and do that) but the suggestion that it is somehow a "smoking gun" of exchange intent is again, without any real merit.

If this sounds a lot like gerrymandering, it is, except we can't find any public record of this process.

First I'll speak to the "gerrymandering" comment. The way these national market system "plans" are administered, any kind of self-serving machinations are fairly impossible to implement. First, the Plans are governed by multiple exchanges that compete very vigorously with each other on all fronts. They have overlapping, but different constituencies in several respects. Most material plan changes require unanimous approval to implement. See the Plan for NASDAQ stocks at http://www.utpplan.com/DOC/UTP_Plan.pdf (the "UTP Plan). The SEC also observes at all Plan meetings and has to receive filings of all Plan changes. Also since Reg NMS there's an Advisory Committee of industry representatives that participates. Now while I believe the governance and transparency of this process could be improved, the notion of the exchanges running the Plan being able to unilaterally circumvent SEC-intended regulation is a little silly.

If you want to see the public record of this process, look for example at how it works, look at the UTP Plan, Exhibit I, Section 4. These plan documents have to be filed with the SEC every time that they change. For this change in particular, the change was specifically described as being "updated to reflect the Regulation NMS revenue formula" see http://www.sec.gov/rules/sro/nms/2008/34-58863.pdf at page 4.

I think there is a discussion to be had as to whether this could be more descriptive, but the public record does in fact exist. I don't know why Nanex couldn't find these documents.

The date of this document predates the final ruling of Reg NMS, and Reg NMS has no language offering clues of its presence: it doesn't appear that the SEC was aware of this RBBO/*flickering* quote scheme.

One of many reasons why it is hard to use it as the foundation for anything meaningful on a stand-alone basis.

A recent letter from SIFMA to the SEC requesting an audit on sub-second (*flickering*) quotes provides additional evidence of this rule subversion:
.. In addition, the SEC should request an independent financial audit of SIP finances and, in particular, the implementation of the market data revenue distribution formula. This audit should include an analysis of how the revenue formula is accounting for sub-second quotes in the formula and how sub-second quotes are being provided to SIP by Plan participants vs. how they appear in direct feeds. All of these audit results should be made publicly available.

This quote is accurate in the sense that the text is in the SIFMA letter (in the context of a much broader letter in light of the August 22, 2013 "flash freeze"), but the Nanex allegation that it "provides additional evidence of this rule subversion" is hard to understand. What "evidence" does it provide?

Finally, among the many detailed rebate and fee schedules from the 14 different exchanges, we can't find any fee that specifically discourages *flickering* quotes.

This is not only a red herring – it is also untrue. For example, NASDAQ's fee schedule has an "Excessive Messaging Policy" explicitly meant to discourage excessive order activity. See http://www.nasdaqtrader.com/Trader.aspx?id=PriceListTrading2. Direct Edge tried a Message Efficiency Incentive Program for a period of time in 2012 also. http://www.mondovisione.com/media-and-resources/news/direct-edge-introduces-message-efficiency-incentive-program/. NASDAQ and BATS, among others, offer incentives to set a new NBBO, but only if the order is executed (and thus incentivizing only "non-flickering" quotes).

In fact, the word *flickering* doesn't appear even once. That seems highly unlikely, given that *flickering* quotes play a prominent role in a calculation involving hundreds of millions in annual profits.

I have no idea why the absence of the word "flickering" from exchange rate schedules is somehow the sign of a problem. As discussed above, the incentives to quote improving accessible prices clearly exist.

Those of you who know all about *flickering* quotes may wish to skip straight to the discussion of this troubling document.

What are *flickering* quotes?

Flickering quotes are quotes that last for less than 1 second, making them inaccessible to millions of traders and investors who have elected not to spend tens of thousands per month in co-location costs for timely stock prices.

I could write a whole separate document on how that, even if you as an individual may not directly invest in trading technology, you still leverage the investments of your broker and others who do. Also go back to the SEC discussion of sophisticated broker order-routers at SEC Approval Order, pages 261-262. Quotes lasting less than a second are easily accessible within the framework of connectivity and technology that make up modern markets.

Many of these *flickering* quotes are also inaccessible to people who collectively pay hundreds of millions of dollars for real-time data, but receive that data outside of the exchange data center in New Jersey. *Flickering* quotes are quite common - they are a hallmark of High Frequency Trading (HFT) - so examples are plentiful.

There is no basis for saying that inaccessible quotes are a "hallmark" of HFT. To be clear – quotes can be used to engage in market manipulation, such as spoofing and layering. But this is not HFT specific and this been illegal since long before the phrase "HFT" was ever used. As in all aspects of life, there are good and bad people in our stock markets. And again, people in the stock market use computers as they do in all other industries. But the analogy falls flat there.

The charts below show what *flickering* quotes look like. The gray shading is the NBBO spread (best bid, lowest offer from all exchanges quoting this stock). The triangles show the best bid or ask price and are color coded by the exchange that submitted the quote. Best Bids use triangles pointing up, Best Asks use triangles pointing down. Each chart shows about 15 seconds of time on January 16, 2014.

As discussed above, I see no value in theses charts and thus no need to comment on them.

What is the problem with *flickering* quotes?

Regulation NMS (Reg NMS) explains why *flickering* quotes are a problem on pages 259 and 260:

A specific type of gaming that concerned commenters was "flickering quotes" – quotes that are flashed for a short period of time solely to earn market data revenues, but are not truly accessible and therefore do not add any value to the consolidated quote stream.
[..]
Commenters also were concerned that such practices would increase quotation traffic and bandwidth costs, but with little or no benefit for the quality of the consolidated data stream.

See my earlier discussion – the SEC did not see this occurring at the time and it was only talked about as a theoretical problem.

Flickering quotes are behind the enormous increase in the number of stock market quotes leading to an alarming increase in bandwidth, storage and processing costs for the millions of subscribers to the consolidated quote stream. In 1999, the peak number of quotes for U.S. stocks in 1 second was 1000. Today that number is 2 million.

I don't find this alarming at all, as this is a similar trend to all aspects of modern life. While we're at it, let's ban Netflix because video downloads from the internet have gone up astronomically since 2005. Think of that the next time you're catching up on Breaking Bad.

What was Reg NMS's solution for *flickering* quotes?

The solution was simple: discourage *flickering* quotes by disallowing credit towards a $500 million pie.

See the discussion above. The SEC only wanted to prevent quoting behavior solely for the purpose of impacting the formula. There was no belief that "flickering quotes" were a problem at the time or that short-duration quotes needed to be discouraged or restricted generally.

To be fair, I myself at the time thought the new formula could be used to micro-manage market participant behavior (*see* the Brut comment letter, described at page 41, footnote 62, discussed at page 263). But the SEC said any such reading "misunderstood the Commission's objective" SEC Approval Order, at 264.

The consolidated data feed (also known as the SIP) is comprised of a quote feed and a trade feed and is used by millions of traders and investors. It forms the heart of Reg NMS, as all references to stock prices are based on the SIP. The SIP collects over $500 million annually from about 2.5 million subscribers paying for real-time prices coming from these 2 feeds. This $500 million is split between the 14 exchanges using a formula that is based on the volume of shares executed, and more importantly, the number of quote credits earned by an exchange. In simple terms, a quote credit is earned when an exchange's quote is at the National Best Bid or Offer.

A couple of things to consider here. First, the pool of market data revenue generated by these SIPs (there are two for stocks and one for options) does not rise or fall based on trading activity, but rather by the number of reported users and distributors of the data. The revenue the exchanges collectively receive is the same regardless of how quote credits are calculated. So while I believe that the method for calculating them is appropriate and consistent with Reg NMS (see below), it's worth noting that there really isn't any motivation to try and "subvert" the calculation by increasing the number of quote credits. Second, this revenue is shared by all the exchanges, who compete vigorously with each other.

So from the perspective of motive and ability, Nanex's generally theory of an intentional subversion of the formula makes little sense unless: (i) one or more exchanges would disproportionately benefit from a calculation methodology that somehow preferenced "flickering quotes"; and (ii) those exchanges have a disproportionate ability to influence how the calculation is performed. Neither of those things is true – see my earlier discussion of how these Plans are governed with respect to point (ii).

Think about this concept generally when considering market structure analysis in the future. I think all too often critics infer a level of common motivation and coordination among diverse and competing market constituencies that is neither economically justified nor operationally feasible.

The SEC realized that they could encourage quotes that add value to the market place, and discourage quotes that are harmful, by tweaking the formula that awards quote credits. Since *flickering* quotes are highly undesirable, Reg NMS flat out denies awarding any credit for a quote that lasts less than 1 second.

Again, it was not the SEC's goal to encourage or discourage certain quoting, other than to prevent potential new quoting simply for the purpose of generating quote credits.

From Reg NMS, page 260:
The Commission recognizes that abusive quoting behavior is a legitimate concern, particularly given that quotations have not been entitled to an allocation of market data revenues in the past. The adopted formula therefore incorporates a number of modifications to the reproposed formula to minimize the potential for abusive or costly quoting behavior.
First, the adopted formula modifies the language of the reproposed formula to clarify that a quotation must be displayed by the Network processor for a minimum of one full second of time before it is entitled to earn any Quote Credits. This one-second time period is consistent with the one-second time period included in the flickering quotation exception in the Order Protection Rule and is designed to assure that only quotations that are readily accessible can earn Quote Credits. The time stamps assigned to quotations by the Network processors will control this determination. Accordingly, subsecond flickering quotations are excluded from the formula.

Page 276 sums it up:
An SRO will earn one Quote Credit for each second of time and dollar value of size that the SRO's automated best bid or best offer during regular trading hours equals the price of the NBBO and does not lock or cross a previously displayed automated quotation. To qualify for credits, the quoted price must be displayed for at least one full second, and the relevant size will be the minimum size that was displayed during the second

We've already discussed the first quote above and why it is there. The second quote – on page 276 – is important and I'll get to it more shortly. But to foreshadow, think about the difference between an SRO – I'll use the term exchange – BBO and the many individual orders that could comprise that BBO.

But *flickering* quotes have not abated, why isn't this working?

Again, the purpose was not to have flickering quotes, which weren't thought to exist, be "abated"

We obtained what we believe to be an accurate and detailed description for how quote credits are calculated. While reading the document, it became apparent that something happened along the way during the implementation of the part that removes *flickering* quotes. A complicated quote time/price adjustment was introduced which essentially ends up allowing some "types" of *flickering* quotes! Judging by a few examples provided, the types of *flickering* quotes that implementation allows, are the same, inaccessible, unreliable quotes that that SEC and industry wanted to discourage in the first place. And we should note that nowhere in Reg NMS or in any academic paper, is there any differentiation between types of *flickering* quotes: *flickering* quotes are quotes that last for less than 1 second, period.

This significant change appears to have occurred without public comment, or public knowledge for that matter - at least we couldn't find any reference (please let us know if you find otherwise:

pr@nanex.net). One exchange CEO, who ran the Tape C SIP during Reg NMS implementation, recently confirmed his belief that quotes lasting under 1 second (*flickering* quotes) are not eligible for quote credits.

At this point I feel like a broken record about underlying motivations, the process and the transparency thereof so I'll let my explanation on those points rest from here on out. Nanex also tries to use some factual answers I provided as support for their theory but it fails to do so. I can already see the argument coming to the effect that "the fact that I can't understand this means it is really messed up." No – it only means: (i) Nanex hasn't put in adequate time to understand it and truly speak as an expert on these topics; and (ii) anyone relying on such material for the core of their market structure knowledge is doing themselves a disservice. But I digress.

OK – back to the matter at hand. Let's go back to the SEC Approval Order at page 276, saying an exchange's BBO that lasts a few seconds and equals the national BBO ("NBBO") gets a quote credit. At any one point in time, an exchange's BBO is comprised of multiple orders from various members. To see for yourself, look at the "Book Viewer" widget at www.batstrading.com in the symbol BBRY tomorrow during market hours.

This is the critical distinction between exchange quotes for over any one-second interval, an exchange's BBO could equal the NBBO while the size of that BBO, and the member orders underlying it, change considerably. There is no requirement that an exchange BBO has to equal the best price for one second and be directly tied to the same underlying member order for that entire one-second period.

Accordingly, this document is an early-stage attempt to frame how to deal with situations where: (i) an exchange BBO is constantly changing; (ii) an exchange may set the NBBO, but it lasts less than one second – and thus earns no credit – and thus credit needs to be assigned, to that exchange (because it has a BBO a level down that does last more than a second) and/or others.

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Here is the page (stuck way back in the appendix) that discusses the *flickering* quote removal process:

Example A-3a Comments: Remove "Flickering Quotes" -- Complying with Reg NMS

Status	Comment #	Explanation	Examples/Comments
12/31/05	C1.0	Reg NMS states that markets will not receive credit for quotes that do not remain at the NBBO for at least 1 second. (Quotes of less than one second are termed "flickering quotes" and the one-second period is termed the "minimum credit interval.") Flickering quotes may create instability in prices and do not provide "actionable price discovery" even if they are momentarily the "best price."	
12/31/05	C1.1	Unfortunately, in cases where a market posts prices that are at the best, but are not consistently at the same price, simply discarding prices that do not last one full second creates undesirable effects, even though such a practice would conform with a strict interpretation of Reg NMS.	Markets A's Quotes #1,2,3,4 and 5 are all at the best price. Similarly, Market C's Quotes # 6, 7, and 8 are all at the best from the time Quote #5 is removed. However, none of these quotes last for a full second and therefore would be disqualified for credit under a strict interpretation of Reg NMS.
1/1/06	C1.2	To remedy this situation, an alternative approach will be implemented, which is based on the following principle: *A market is eligible for credit if it posts an automated quote or series of consecutive automated quotes that collectively are at the RBBO for the minimum credit interval (1 second). Therefore, flickering quotes do not disqualify a market from receiving credit for a quote.*	This approach is intended to meet the following goals: • Conform with the intent of Reg NMS • Reward market participants for continuously setting the best available prices • Discourage gaming of the system by posting flickering quotes • Avoid awarding credit to markets whose quotes may be significantly away from the NBBO.

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The third row "explanation" is the most important here. The text in italics is what most closely conforms to the language on page 276 in the SEC approval order. The purpose was to allow an exchange BBO lasting a second to earn a credit, <u>not</u> to disqualify an exchange from earning credit because any one member order underlying that BBO might last less than a second.

Example of how the implementation allows *flickering* quotes

The method of computing eligible quotes is very complicated, and involves adjusting quotes to arrive at what's called the RBBO - or Revenue Best Bid/Offer. The adjusted quotes are then compared to the RBBO to determine quote credits. To see an example of how the RBBO enables *flickering* quotes to be eligible for quote credits, toggle between the before and after images below, both taken from the same document.

As discussed earlier, some of these concepts and terms are just plain made up. See earlier explanations.

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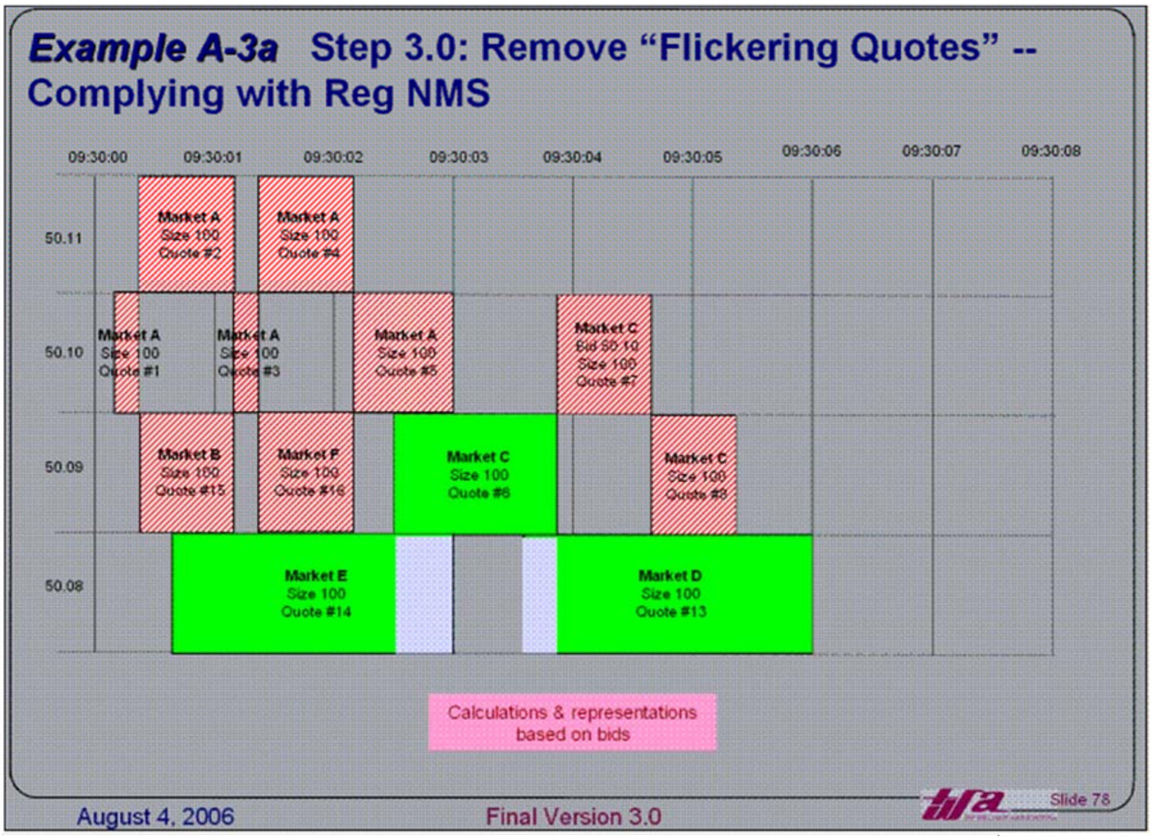
Note the title of the second image - **Quote Credit *Goals***. Whose goals? Certainly not the SEC nor the industry, in either the spirit nor letter of the law as it was written in Reg NMS.

Again, given the aversion to tape shredding at the time, the goal was meant to provide greater incentives to quotes generally, as long as not generated solely to earn quote credits.



Box Color	Eligible For Credit	Explanation
Red	No	*Flickering* Quote - last less than 1 second
Light Blue	No	Inferior price
Green	Yes	Best price and lasts 1 second or longer

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Shouldn't this be public?

Most definitely. In fact, one page makes it very clear that all real-time subscribers of the SIP will have access to everything required to conduct the revenue allocation calculations. We presume this would include how *flickering* quotes get transformed into acceptable quotes. However, in reality, such information doesn't appear to exist.

Step R2: Provide Data to Real-time Data Feed Recipients

Status	Step #	Step	Rule	Examples/Comments
New 1/5/06	R2.0		Each Plan will make available to any real-time data subscriber any additional data required to conduct the revenue allocation calculation. Such additional data will be provided at no additional charge, except for reasonable handling charges.	Any subscriber to a Plan's real-time market data will be entitled to receive any additional data required to conduct the revenue allocation calculation. For example, unbundled trades that are not part of a Plan's real-time data feed would be provided by the plan at no additional costs, except for reasonable handling charges.
Revised 3/6/06	R2.1		Each Plan will make publicly available any rules, processes, and algorithms required to conduct the revenue allocation calculation. However, other than assisting regulators and SIPs' auditors, SIPs will not be required to provide support to anyone who tries to implement the published rules, process, and algorithms associated with the revenue allocation calculation.	

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There is no requirement in Reg NMS or anywhere else to do what this slide suggests, again underscoring its limitation as a source document. That said, the general formula is disclosed in the Plan documents – along with a lot of other material -- at www.utpplan.com and https://cta.nyxdata.com/CTA. As discussed in the SIFMA Letter, whether to require further disclosure is a matter worthy of discussing, but the failure to do so to date is not a compliance deficiency as the requirements currently exist.

Does Reg NMS favor high speed traders over investors?

Emphatically, no. While perusing Reg NMS (worth reading), we came across a few paragraphs relevant to this matter that must be emphasized. The decision to include "some types" of *flickering* quotes certainly appears to have been influenced by, or made to appease, high speed traders (or exchanges that catered to them at the time). Fortunately, Reg NMS makes abundantly clear how the SEC will decide on issues favorable to high speed traders but detrimental to long term investors.

I'd suggest you read the language below very carefully, as Nanex is confusing speed of execution with length of holding period, which are not always the same thing. "Short-term" traders would include someone trading in and out of SPY 10 times a day, even if they're doing so manually, and "long-term investors" would include someone co-located and reading exchange direct data feeds, so long as they hold that position for a longer period. The point was to favor investors over traders, not slow traders over fast traders. You can debate whether investors have benefitted (I firmly believe they have), but don't use this language to support the idea that the trader who hasn't invested in technology or intellectual capital to keep up is someone that deserves protection.

Reg NMS, with the "trade through rule" protecting the best displayed price, was also meant to protect liquidity makers over liquidity takers. See the goal of "protecting the best displayed price" below, regardless of where it came from. At the time, that protection was seen as primarily for retail investors – it was thought that faster traders were not the "rebate traders" many make them out to be currently, but rather "extremely short-term trading strategies that can depend on millisecond response times from markets for orders taking displayed liquidity." SEC Approval Order at 410 (emphasis added). The SEC basically concluded that takers would have to accept longer execution times to route to and fill better priced orders on other markets.

Page 125:
..the Commission recognizes that the existence of intermarket price protection without an opt-out exception may interfere to some extent with the extremely short-term trading strategies of some market participants. Some of these strategies can be affected by a delay in order-routing or execution of as little as 3/10ths of one second. [..] This conflict between protecting the best displayed prices and facilitating short-term trading strategies raises a fundamental policy question – when such a conflict exists, should the overall efficiency of the NMS defer to the needs of short-term traders, many of whom rarely intend to hold a position overnight? Or should the NMS serve the needs of longer-term investors , both large and small, that will benefit substantially from intermarket price protection?

The Commission believes that two of the most important public policy functions of the secondary equity markets are to minimize trading costs for long-term investors and to reduce the cost of capital for listed companies. These functions are inherently connected, because the cost of capital of listed companies is influenced by the transaction costs of those who are willing to accept the investment risk of holding corporate stock for an extended period. To the extent that the interests of short-term traders and market intermediaries in a broad opt-out exception conflict with those of investors, the Commission believes that the interests of long-term investors are entitled to take precedence. In this way, the NMS will fulfill its Exchange Act objectives to promote fair and efficient equity markets for investors and to serve the public interest
Page 409:
..intermarket price protection will significantly benefit the more than 84 million individual investors in the U.S. equity markets by reducing their transaction costs and thereby enhancing their long-term investment returns. Price protection may, however, interfere to some extent with the extremely short-term trading strategies that can depend on millisecond response times from markets for orders taking displayed liquidity. It also may interfere with short-term trading strategies that benefit from volatile and illiquid markets. The dissent claims that the "length of

time an individual owns a stock is not a relevant factor in distinguishing among groups of investors" and that the distinction between long-term investors and short-term traders is arbitrary and unreasonable. But in those limited contexts where the interests of long-term investors conflict with short-term trading strategies, the conflict cannot be reconciled by stating that the NMS should benefit all investors. In particular, failing to adopt a price protection rule because short-term trading strategies can be dependent on millisecond response times would be unreasonable in that it would elevate such strategies over the interests of millions of long-term investors – a result that would be directly contrary to the purposes of the Exchange Act
Page 410:
The dissent also argues that short-term traders often provide liquidity to the market and thereby benefit long-term investors. The Commission certainly agrees with this statement as a general matter, but believes that, in the specific context of an intermarket price protection rule, directly promoting the display of limit orders, which directly provide liquidity to the market, rather than promoting short-term trading strategies that require millisecond response times for orders that take displayed liquidity, is the most appropriate approach to protect investors and enhance market efficiency. Many commenters agreed with this policy decision. For example, T. Rowe Price stated that "we do not believe that speed of access considerations should drive market structure issues if to do so would jeopardize legitimate market linkage initiatives. Connected markets provide the opportunity for information gathering, block trading, and improved price discovery, as well as the legitimacy of the 'last-sale' price. While speed of access and execution are crucial, there is a limit to how fast such linkages need to be in order to protect and enhance our markets."

Conclusion

If this document does indeed accurately describe how quote credits are calculated, then the industry has lost a key rule designed to ensure accurate and reliable quotes. This document neatly explains why exchanges appear unconcerned about *flickering* quotes which significantly impact how $500 million is divided annually. We think it would be prudent for the SEC to find out exactly how quote credits are calculated. We also think this process should be made available to all real-time subscribers of consolidated data as mentioned in the same document..

Finally, we wonder if other aspects of Reg NMS were subverted during implementation. For more on that thought, we encourage you to carefully read SIFMA's recent letter to the SEC.

For a document that speaks in such a quasi-scientific, accusatory and conclusory way, I find it ironic the conclusion questions its own accuracy and "wonders" about other potential subversions of SEC regulation. I'll leave you with these thoughts:

- Skepticism and debate can be healthy for our markets and your navigation of them, but cynicism and blind allegations are not.

- While not perfect, every day thousands of professionals in this industry go to work trying to get it right the best they can.

- The operating efficiency and transparency of our markets can be improved, but should not be confused with a belief our markets are somehow “broken”.

- People can have a bias and that’s OK, but don’t let it dominate how you learn. I have a bias that the market works well, but I’m not afraid to acknowledge that it could work even better and work hard to help make that happen.

Please think critically when reading anyone else’s analysis, regardless of whether it conforms to your own bias or not. The usual playbook to respond to what I’ve written is some combination of: (i) saying my response somehow “proves” there’s an issue; (ii) saying the author’s lack of understanding “proves” there’s a transparency problem; (iii) nitpicking some particular statement to try and undermine my broader points; and/or (iv) pointing out my bias as an “industry insider”. I expect and accept all such tactics in an effort to educate those who are open to it.

Thanks for your time in reading this and keeping an open mind.