Jonathan G. Katz, Esquire
Securities & Exchange Commission
450 Fifth Street
Washington, DC 20549-0609

Re: File # S7-09-04

Dear Mr. Katz:

This comment letter reflects the views of ten active academic researchers who study the structure of equity markets. We met as an *ad hoc* group to analyze and discuss the Reg NMS proposal and the initial meeting was hosted by the Salomon Center at NYU's Stern School of Business. The researchers who participated in drafting this letter are listed at the end along with their affiliations.

Our goal was to produce a comment letter that broadly reflected the range of opinions of reasonable and disinterested students of the microstructure of equity markets. We did not seek consensus at the outset but, as we proceeded, it became apparent that there was near unanimity on most aspects of the proposed regulation and on the recommendations we had for improving on it. We hope that this makes our letter more useful to the Commission.

Our collective view is that the proposed regulation is a thoughtful collection of ways to improve the functioning of the National Market System, particularly in light of the dramatic changes in the technology associated with order placement and execution and the increased fragmentation of trading and quoting across market venues. Several principles seem to have guided the proposed regulation but one underlying goal seems to us to be a common thread throughout the proposal: the desire to encourage the provision of liquidity by the protection of public limit order traders from excessive predation because of the public good aspects of liquidity. We have a great deal of respect for the clear and consistent way in which the proposed regulation seeks to attain this objective and so it is no accident that all of us support some of the rules as proposed.

While we share the Commission’s desire to enhance market liquidity by encouraging public limit orders, we all think the proposed regulation can be improved by striking a different balance between regulation and disclosure. The main principle that governed our analysis of the proposed regulation was that of transparency in the trading process, both *ex ante* and *ex post*, induced by slightly increased disclosure requirements. Our view is that the goal of *ex ante* transparency can only be accomplished if different trading venues are accessible to most, if not all, market participants and if quotes are comparable across trading venues. Similarly, we feel that greater *ex post* transparency regarding market conditions surrounding executions will further the goals of the proposed regulation. Moreover, we feel that any enhancements to the *ex ante* transparency of the quotation process or to the *ex post* transparency of the execution process can be either a substitute for some of the proposed rules or can be used to augment them.

We have limited our attention to the trade-through, market access, and sub-penny quoting portions of the proposal. While we feel that the market data portion of the proposal is quite important, it is one that requires attention to detail and we simply did not give ourselves enough time to do it justice. Moreover, we have not addressed all of the details of the trade-through, market access, and sub-penny quoting proposals but have instead confined our attention to the basic issues that underlie them.

Our consideration of these issues has led us to make the following recommendations:

1. If an order trades-through the NBBO, the broker-dealer must prominently disclose that fact on the trade confirmation and inform the customer of the relevant available NBBO prevailing at the time of that trade. In fact, we recommend that all confirmations irrespective of whether the transaction involved a trade-through should be required to display the NBBO prevailing at the time of trade.
2. If the trade-through rule is adopted as proposed, there must be a clear opt-out provision designed solely for the use of active, knowledgeable investors, not ordinary retail customers.
3. We support the open access provisions of the market access portion of the proposal. In place of a cap on market access fees, all quotes should be displayed net of access fees and no venue may charge a differential fee to any trader hitting its quotes.
4. All but one of us do not favor the imposition of a minimum tick size by the Commission.
5. We urge the Commission to implement the disclosures detailed in recommendations 1 and 3 even if it chooses to implement the trade-through rule, the market access fee cap, and the minimum tick of one penny as proposed.

In our view, American stock markets already work extremely well. We feel that many of the provisions of the proposed rule Regulation NMS will make them function even better. We also feel that our suggested amendments to the proposed regulation will make equity markets function better still. In what follows, we give our reasons for this belief.

The Trade-Through Proposal

Trade-through prohibitions restrict the prices at which investors are allowed to transact. They are a form of price control; the American economic system is relatively free of such controls. For example, a consumer shopping for a car (which is a fairly big-ticket item) generally has many choices about where to buy. Consumers are not required to buy a specific car at the lowest offered price. In fact, consumers may pay more because they haven't bothered to comparison shop, or because the dealer provides better service or can deliver a chosen car more quickly.

There are also different prices at different security market venues. Again, better prices may represent better deals, but price differences may also reflect different product attributes. Market venues differ in execution speed, anonymity, certainty of execution, and possible order types, among other things. The proposed Regulation NMS elevates price above all other product attributes. In contrast, if investors were regulated like new car buyers, investors would be left to evaluate the alternative venues, take into account the different attributes of each venue as well as the available prices, and optimize accordingly. There would be no prohibition on trading through.

However, securities markets and new car markets are obviously not identical, and we see two main economic arguments in support of trade-through prohibitions. The first is an agency problem between brokers and their customers. Individual investors do not always make the order-routing decision. Instead, they typically hire a broker as their agent, and this introduces the potential for moral hazard. In simple terms, the broker may have an incentive to deliver a low quality execution, and it may be very difficult for the customer to monitor execution quality. Trade-through prohibitions may ameliorate this problem. In principle, prohibiting trade-throughs could eliminate many potential violations of a broker's best execution duty.

Recent technological and regulatory developments in US stock markets have reduced the severity of these agency problems. For example, wide availability of real-time data has made it easier for many investors to monitor their brokers. Decimalization has sharply reduced overall trading costs for individual investors, and Rule 11Ac1-5 disclosures have helped brokers and investors make order-routing decisions by monitoring average execution costs at various venues. Nevertheless, agency problems undoubtedly remain, though there is little hard data on the remaining costs associated with these problems.

In any case, institutional investors are better able to monitor the performance of their brokers and thus may not need this benefit of trade-through protection. In fact, trade-through prohibitions may actually harm institutional traders. In the current decimal environment, depth at the inside quote is often much smaller than typical institutional trade sizes. Without the ability to opt out, trade-through prohibitions may prevent institutional investors from immediately accessing large amounts of liquidity at prices that are just away from the inside quote. For this reason, all of the panelists agree that if a trade-through prohibition is adopted, an opt-out provision is essential.

However, a number of panelists are worried that many retail customers will be inappropriately induced to opt out by their brokers. Accordingly, we recommend that the SEC make it clear that the opt-out provision is designed for active, knowledgeable investors. For instance, this option could be available to institutions and to individuals with direct access or direct order-routing arrangements, but not to other retail accounts. Opt-out statistics should be collected from each broker and venue and disseminated publicly to ensure that the opt-out provision is not being misused.

The second economic argument is that trade-throughs impose an externality on the liquidity suppliers who are traded through. If they get traded through regularly, these liquidity providers may be less willing to provide liquidity, which could worsen overall stock market liquidity. To put it differently, if liquidity supply is a public good, it should be encouraged, or at the very least it should not be discouraged. Again, there is little data on the importance of this externality. Nasdaq currently operates without trade-through prohibitions, and there is substantial liquidity provision there, but the externality could still be important.

It is important to note that the current proposal does not perfectly protect liquidity providers from trade-throughs. For example, the proposed trade-through rule applies only to the top of a venue's order book. In a decimal environment, where the inside quote may not have much depth, this means that only a small fraction of all submitted limit orders may be eligible for trade-through protection. The proposed opt-out further reduces protection for liquidity providers, though all of the panelists believe an opt-out is necessary if trade-through prohibitions are adopted for reasons given previously.

We also think that the current proposal underestimates the difficulties involved in implementation. We leave it to the various market participants to detail the cost of complying with the proposed rules, but we think the cost would be substantial and far in excess of the estimates provided in the proposal. Brokers would have to accommodate opt-out instructions into their order entry systems and routing software. Trade-through disclosure would have to be provided to those opting out. Venues would either need to invest in a single common linkage to replace ITS or arrange individually for access to other venues. Venues and brokers would need to invest in enforcement infrastructure.

Enforcement itself could also be problematic. Rules are pointless if they are not followed, and we are concerned that the current proposal devotes little space to enforcement. For example, under the current ITS plan, a market that is traded through must seek restitution from the offending market. If there is an opt-out provision, how will the aggrieved market be able to distinguish a violation from an opt-out?

Similarly, it may be very difficult for liquidity demanders to satisfy the trade-through rule by sequentially accessing different pools of visible liquidity in a decimal environment with frequent quote and order book changes. Accidental trade-throughs may be common in a market with fleeting quotes and limit orders that persist for only a second or two, making it difficult to effectively identify and sanction deliberate trade-throughs.

We are also worried about how the proposed regulation might affect order submission and quoting strategies. For example, suppose that Venue A offers 200 shares of XYZ at a price of 20.05, and Venue B offers 10,000 shares at 20.07. Under the proposal, Venue A would have access to Venue B, and might decide to offer 200 shares on Venue B at 20.06, thereby hiding Venue B's greater depth from the consolidated quote. We were able to come up with a number of other strategies for gaming the system or gumming up the works, and we have no doubt that traders are much more creative than we are on this score.

Overall, based on the various implementation challenges, most of us think the explicit and implicit costs of the current proposal exceed any benefits that may arise. One of us is in favor of the basic features of the current trade-through proposal. A small number of us are skeptical that any market failures in the current environment are sufficient to require any sort of trade-through regulation beyond the current standards of best execution.

The strong majority advocates trade-through disclosure as an alternative to the proposed trade-through rule. We believe this alternative would accomplish the same goals at much lower cost and with a lighter regulatory touch. We propose that, if an order trades through, the broker-dealer must prominently disclose that fact on the trade confirmation and inform the customer of the relevant available NBBO prevailing at the time of that trade. We understand the burden of adding more disclosure to the trade confirmation, but this kind of disclosure is already contemplated as part of the opt-out provision. We are simply advocating that this disclosure be expanded to all trade-throughs in lieu of a trade-through prohibition. There is precedent for such disclosure in the Commission's regulation of the US options markets.

A disclosure alternative must define a trade-through, and thus our proposal faces many of the same issues as a trade-through prohibition. For example, automated markets might still be treated differently from non-automated markets. Disclosure could be required if an order trades through an automated market, while the proposed one to five cent exemption could be applied to non-automated markets.

Our disclosure alternative would be less costly than the current proposal. The required disclosure is essentially identical to that proposed under the opt-out provision, and no other infrastructure investment would be required. Also, our proposal could actually be easier to implement, because it would be easy to identify at least one of the aggrieved parties in the event of a trade-through. With trade-through disclosure, investors would receive enough information to be able to pursue their own interest. We think that an investor who sees a better price on the trade confirmation will complain vociferously to the broker. Knowing this, broker-dealers will be extremely reluctant to execute trade throughs. As a result, this may be the most effective approach to reducing trade-throughs by far, and we encourage the Commission to consider seriously this alternative approach.

Finally, we all feel that audit trails – even simple ones such as reporting the NBBO at the time of trade – are a good idea in general. Hence, there is unanimous support in our group for these disclosures irrespective of the form that the regulation ultimately takes. Similarly, we all agree that the NBBO should be reported on trade confirmations irrespective of whether the transaction involved a trade-through. Improvements in *ex post* transparency can only serve to further mitigate the agency problems discussed above because it will be easier for customers to monitor execution quality.

Market Access

The Commission's Market Access Proposal sets forth two principles that will govern access to the quotes of different market venues: that quoting market centers and market participants must provide all other such entities with access to their quotes and that any access fee charged to trade against the quotes of any quoting market center or participant should be capped to ensure that any discrimination across traders accessing quotes is *de minimis*. We applaud both the principle of uniform access to the quotations of all quoting market centers and participants and the wisdom in mandating that the marketplace, and not the Commission, should determine the form in which this goal will be accomplished. We all feel that that the principle of open access is the best policy.

The proposed rule also sets forth a de minimis Fee Standard. If implemented, this standard would cap access fees at $0.001 per share by both quoting market centers such as stock exchanges and market participants who disseminate quotes such as broker-dealers. A trader executing a transaction against any such quote would face a total fee of no more than $0.002, which, at this level, would be split equally between the market center and the quote's issuer ($0.001 each).

Under the current rules, market access fees are largely unregulated, being subject only to the following guideline:

> Currently, pursuant to a series of no-action letters from the Division of Market Regulation, ECNs charge fees to non-subscribers in amounts equal to those that they charge a "substantial proportion" of their active broker-dealer subscribers, but no more than $.009 per share. (p. 55)

This has made it difficult for market participants to know the final price of a transaction as the cost depends upon who issued the quote. Market makers must trade at their displayed quotes and any trader who hits their quotes knows that they reflect the true price to the investor. In contrast, an ECN's quote and the price paid by or to an investor will deviate by that institution's access fee. Access fees have thus led, perhaps inadvertently, to reduced price transparency.

Our view is that the de minimis Fee Standard [bnl1]is too strict and may do more harm than good as proposed. Market access fees are used by exchanges to encourage limit orders. If these fees are restricted, limit orders may become difficult to attract within certain market sectors. In general, one can view those submitting limit orders as providing liquidity and those submitting market orders as demanding liquidity. Since investors that submit limit orders are providing a service, they must be compensated, possibly, but not necessarily by fees, if they are to continue to do so.

Here, too, we looked to considerations of transparency to guide our thinking about where fees should be disclosed in the quotation process. In order to make the prices quoted in different markets directly comparable, our group recommends that the SEC require price displays to include the cost of the access fee and that this total cost be considered the official quotation. Prices are simply most comparable when they are quoted net of access fees and requiring venues to display the "net price" permits the public to know the all-in cost of hitting a particular quote with minimal regulation. Moreover, the adoption of our "net price" proposal might well sharply reduce the incidence of locked and crossed markets. We do not see any need to have a fee cap if such a rule were adopted, but we think the SEC should mandate this form of quote transparency even if it chooses to cap fees.

We think that our modification of the proposed market access rule is in the spirit of the regulation proposed by the Commission. While we may be mistaken, we think that the SEC proposed a cap on access fees not to remedy a market failure but as an informal mechanism for making displayed quotes more directly comparable (this is our interpretation of the goal of ensuring that market centers and participants not unfairly discriminate across different traders who access their quotes). If the SEC adopts a minimum price increment of a penny, then the proposed rule would make the posted quotes accurate to within plus or minus 0.9 cents. In fact, we see the proposed fee cap as essential for quote comparability if the SEC adopts the regulation as proposed. By contrast, our "net price" proposal with no cap on fees makes prices quoted on each market venue fully comparable irrespective of the size of any market access fees.

Consider, for example, a market setting in which the best offer is based on two limit sell orders priced at $10.00 that are posted in different market venues. In addition, suppose one market has an access fee of $0.001 while the other has an access fee of $0.004. In the proposed regulation, each market would show each limit order as priced at $10.00 and both would be displayed as the national best offer. Under our suggested amendment, the prices displayed to the national market would be $10.001 and $10.004, respectively, and the national best offer would be quoted at $10.001.

Market venues might design new fee structures in the future and we are concerned that there might be ambiguity regarding what fees need to be incorporated into the price montage under our proposal. Our suggestion is to distinguish between two sorts of fees a trader might confront: those that are applied to all traders in a venue – that is, those that are not trader specific – and those that vary from trader to trader. Our recommendation is that the quoting venue should impound only the former type of fee – that is, any fee that is common to all traders – in the quotes that it disseminates. Examples of such fees are ECN access fees and network and communication charges. Fees that need not be incorporated into quotes under our proposal include commissions and payments for order flow arising from preferencing arrangements. This approach insures that quotes will contain the all-in cost of trading in a particular venue and will make it possible for customers to better understand what portion of their trading costs reflects the chosen venue and what portion devolves from the broker who executed their trades.

An advantage of our recommendation is that it will allow markets to continue to experiment with their access fees as a way to attract limit orders. At this time, it is not clear what the eventual market structure will look like; we can imagine access fees that depend upon the security, the current bid-ask spread, the size of the quote, the length of time that it has been posted, and many other characteristics. In theory, and in integrated markets, fees charged to market orders that are paid to executed limit orders have no effect on liquidity – limit offers are simply reduced by the amount of the fee they receive. However, in actual markets we see no reason to limit the dimensions along which market centers compete for liquidity. Our goal is to enhance competition and we believe that allowing transparent fees is the most efficient way to accomplish this objective.

For example, a venue with a very high fee may initially seem attractive to limit order providers. However, under our modification of the SEC proposal, the displayed prices will be so high for limit sell orders and so low for limit buy orders that they will hardly ever be executed. The low execution rate will then discourage investors from sending limit orders to such a venue, perhaps prompting a reduction in the access fee.

In order to implement the requirement that displayed quotes from a venue include the access fee, we also recommend that the SEC prohibit price discrimination across traders hitting the quotes of any market venue. Thus, a venue would be able to charge an access fee that can depend only on factors related to that quote, security, or market, but any two traders wishing to hit a displayed quote would be charged the same access fee. Admittedly, this does restrict one of the ways in which venues can compete for market orders. However, absent such a rule, it will be difficult to produce simple displays that reflect the all-in price at which an investor will buy or sell shares upon receipt of a market order. The computer, after all, has no way of knowing the identity of the person looking at it and, therefore, must display the same numbers to all. Put differently, the national best bid and offer will depend on who is asking without such a rule, which will also reduce market price transparency.

Finally, our "net pricing" proposal will require displays to include sub-penny quotes but this obligation need not preclude a mandated minimum price increment for trade prices – that is, prices gross of access fees – such as the penny advocated in the proposed regulation. That said, we also believe that sub-penny pricing issues – the focus of the next section of our letter – will resolve themselves if trading venues can compete via their access fees. To the degree that "penny jumping" discourages limit orders, many of us feel that trading venues will need to increase the rewards they offer to limit order traders or they must somehow discourage penny jumping. Just as some venues have permitted sub-penny quotes, others have not while still others have switched from allowing them to prohibiting them. We do not know to what structure the market will evolve and so there does not seem to be a compelling reason to short circuit market experimentation with alternative access fee structures.

Sub-Penny Pricing

The SEC is proposing to prohibit every national securities exchange, national securities association, ATS (including ECNs), vendor, broker, or dealer from ranking, displaying, or accepting from any person a bid or offer, an order, or an indication of interest in an NMS stock with a price exceeding one dollar in an increment less than $0.01. As indicated in the proposal, the Commission would prefer to let the market make the decision of the minimum pricing increment in the absence of any pressing public policy interest. However, the Commission believes a pressing public policy issue is present in the markets today; that is, it believes that the costs of allowing sub-penny pricing outweigh the benefits.

We largely disagree. Conditional on having already introduced decimal prices into the market, a majority of us feel the additional costs imposed on the marketplace by allowing sub-penny quoting are small.

The Commission's concerns with sub-penny pricing are as follows:

1. Sub-penny quotes are not available to everyone.
2. Sub-penny quotes are used mainly to step ahead.
3. Sub-penny quotes will lead to further fragmentation of displayed liquidity.
4. Sub-penny quotes introduce more noise to displayed quotes, making it difficult for brokers to achieve best execution.
5. Sub-penny quotes make it difficult for market participants to comply with short sale regulations.
6. Sub-penny quotes make it difficult for market participants to understand prices.
7. Sub-penny quotes increase the instances of locked markets.

We agree with the Commission's first point. We believe, however, that the market access portion of the proposed regulation should address this concern. We believe that technology can address the concerns raised in points 3, 4, and 6. To the extent that sub-penny pricing leads to the fragmentation of orders across more numerous price points, leaving less depth at each individual price level, data vendors can develop (and some already have developed) front ends that aggregate displayed liquidity at different price points or depth levels. Similarly, vendors can choose to update quotes only when there are 'meaningful' changes. We believe that sub-penny pricing, together with our proposal that market access fees be fully reflected in the quotes disseminated by each trading venue, will decrease the frequency with which locked and crossed markets occur, mitigating problem 7. Since the current trading environment offers many ways around the short sale rule, we are not sure that sub-penny quoting substantively exacerbates problem 5.

Point 2 generated the most vigorous discussions within our group. We all agree that market participants are more willing to display liquidity when there is an economically meaningful minimum tick size (and there is price/time priority). It is possible that allowing sub-penny pricing could aggravate the adverse selection problem that market professionals can impose on limit order submitters, thereby diminishing market liquidity. One member of the group believes that the Commission should establish a minimum price increment, at least at its current level of one cent, and should not permit sub-penny quotes for the reasons given in the proposed regulation. This argument, however, relies on the minimum price increment being a nontrivial barrier to stepping ahead of standing limit orders and most of us are not convinced that a penny is an economically meaningful minimum tick.

Moreover, it is not clear who is stepping in front of whom in the current environment. Are professional traders simply stepping in front of each other, or are dealers and market makers stepping in front of customer orders? If most penny jumping is of the former kind, then it is simply price competition and it would appear that the Commission should not constrain it in any way. Most of us feel that most penny jumping represents price competition, not front running, given the lack of depth at the inside quote in the current decimalized environment. As a consequence, most of us feel that there is no need for the Commission to mandate a minimum tick size.

That said, dealers and market makers do have a last mover advantage that can lead to front-running: they can choose to step ahead of standing limit orders selectively based on the order flow that is visible to them but not to limit order traders. Most of us feel that such concerns are better handled by mandating that market makers and dealers must improve on the prices quoted in their limit order books by some minimum increment, not by the imposition of a minimum tick size. After all, the front-running issue is really about how much price improvement a market maker or dealer must offer when stepping ahead of standing limit orders, not about the minimum tick *per se*. Accordingly, we feel that a minimum tick size is the wrong tool for dealing with any such concerns.

More generally, in a world without strict time priority *across* trading venues, the minimum tick does nothing to preserve time priority *across* market centers. Thus, the proposed rule only affects standing limit orders *within* a trading venue since traders can post limit orders on one venue with equal standing at a price point at which the book of another venue already has standing limit orders. Since trading venues have an economic incentive to attract liquidity (and not to drive it away), we feel their objectives should be in line with the Commission's. We all agree that the inability to enforce time priority across fragmented markets greatly diminishes any benefits that devolve from the imposition of a minimum tick size of a penny.

The recent history of minimum price increments in different trading venues provides some support for the view that the market can make the right decision about the minimum price increment. INET currently permits sub-penny price increments on the QQQ exchange-traded fund, and Brut still allows sub-penny minimum ticks for stocks with prices below $5. However, all other trading venues trade and quote in penny increments as far as we know. Perhaps trading venues have already adopted a penny increment precisely for the reasons behind the proposed rule: the provision of some minimal level of protection to traders who post limit orders. Most of us take this as evidence that the market really can set the right minimum tick without market regulation.

We hope that these comments will help the Commission in its deliberations and we will gladly respond to any requests for clarification or for additional comments.

Sincerely,

Bruce N. Lehmann and Joel Hasbrouck
Organizers, Reg NMS Study Group

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