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Trade-Through Rule Reform: The SEC's Depth of Book Alternative

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Gary Shorter
Specialist in Business and Government Relations
Government and Finance Division

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Summary

When a securities investor submits a stock trade order through a broker to buy or sell stock that is listed on the nation's dominant stock exchange, the New York Stock Exchange (NYSE), the order joins an array of other orders for the stock that are displayed by various interlinked market centers that also trade NYSE-listed stock. These trading venues include various regional exchanges and alternative trading systems. If the investor submits an order to buy or sell X number of shares of stock in company YYY, he or she is legally entitled to whatever the best displayed prices (quotes) across the various market centers are at that time. A trade-through occurs if the best prevailing quotes are ignored, and an order is routed to a market center offering an inferior quote. This is generally illegal under a rule known as the trade-through rule. But some institutional investors, and automated alternative trading systems (ATS) argue that saving a penny or so per share under the trade-through rule can be less important than other execution attributes like speed, certainty of execution, or trade anonymity. The NYSE's largely manual trading protocol generally has the best priced quote, but does not always produce the speediest execution, or provide great certainty of execution compared to automated markets.

On December 15, 2004, the SEC voted to propose Reg NMS for public comment. Among other things, the proposal presented two options: (1) a trading protocol that, when a manual quote (as in the case of the NYSE) represents the best price, traders would be able to bypass or ignore it. When an automated quote (such as from an ATS) represents the best prevailing price, it would be illegal for traders to bypass it. The protocol would apply to both NYSE-listed and Nasdaq-listed securities, which are currently not subject to the trade-through rule and; (2) a voluntary protocol known as the depth of book (DOB) that would include the first option and would also allow for the simultaneous execution of an order's remaining shares at incrementally inferior-priced quotes as long as they were displayed.

As in the case of the first option, the SEC principally touts the DOB option as a means of encouraging the submission of more limit orders. Limit orders inject liquidity into stock markets, enhance price discovery, and can thus help to lower trading costs. These putative benefits are predicated on a widely held theory that limit order submission grows with their likelihood of execution. There are, however, other salient, and potentially complicating factors that underlie limit order submission that involve market conditions. Institutional investors have been critical of the relative dearth of limit orders with which to interact, a condition that a DOB could partially help to address. But a DOB option is likely to cost significantly more than the $167 million that the SEC estimates the first option would cost. And it could result in the migration of large numbers of institutional orders to automated trading venues that ensure order anonymity. This could potentially hurt the traditional markets where small investors generally trade. This report will be updated as developments warrant.

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The various interlinked securities markets that trade New York Stock Exchange-listed (NYSE-listed) stocks are required to route trading orders to the market center displaying the best price or quote. If the order is routed to a quote that is not the best quote, it becomes a trade-through and is generally illegal according to the trade-through rule, a provision in the bylaws that govern the venues that trade in those stocks. The restriction applies to market centers that provide both slower manual quotes (as is largely the case with the NYSE) and automated or electronic quotes[1] as is the case with alternative trading systems (ATS). [2]

In December 2004, as part of a wide-ranging policy rulemaking reform proposal to the Securities Exchange Act of 1934, the Securities and Exchange Commission (SEC) voted to propose for public comment a new stock trading protocol that would allow the remaining shares of orders that cannot be filled at the top of the book to be simultaneous executed elsewhere by incrementally inferior quotes — if the quotes are publicly displayed. The controversial proposal is known as the depth of book (DOB) alternative. Several Members of Congress have written to the SEC expressing their opposition to the proposal. The Honorable Michael Oxley, chairman of the House Financial Services Committee, and the Honorable Richard Baker, chairman of the House Financial Services Committee's Capital Markets Subcommittee, have both criticized the less ambitious trade-through rule proposal, which suggests that they are also at odds with the DOB alternative.

The DOB proposal, which is the subject of this report, has been examined in several congressional oversight hearings early in the 109th Congress, including hearings held by the House Financial Services Committee's Capital Markets Subcommittee and the Senate Banking Committee.

After first providing background on the DOB's regulatory origins, this report then examines: (1) the mechanics of the DOB and some of its precedents; (2) the central arguments and counter arguments surrounding the DOB; (3) how a DOB might affect institutional investors; (4) technology and cost issues surrounding a DOB; and (5) how the DOB would fit into the broker's duty of best execution.

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[1] This is basically defined as the ability to immediately interact with a quote.

[2] ATS, which are also known as electronic communications networks or ECNs, are essentially high powered computers that match buy and sell orders. ATS generally focus on the trades of institutional investors and limit orders in which an investor sets parameters on how high he is willing to buy or how low he is willing to sell certain amounts of shares.

Background

When a securities investor submits a stock trade order through a broker to buy or sell stock that is listed on the nation's dominant stock exchange, the NYSE, the order joins an array of other orders for the stock that are displayed by various interlinked market centers that also trade NYSE-listed stock. These trading venues include various regional exchanges and alternative trading systems. If the investor submits an order to buy 100 shares of stock in company YYY and the lowest and, thus, best displayed price across the various market centers trading the stock is $5.51 per share for that many shares, then he or she is legally entitled to that price. Likewise, if the investor submits an order to sell 100 shares of the stock and the highest and thus the best displayed price across the various market centers is $5.49 per share for that many shares, then he or she is legally entitled to that price.

But if an order to either buy or sell stock ignores the best prevailing prices (in this example $5.51/share to acquire the stock, and $5.49/share to sell the stock), and it is routed to a market center offering inferior prices, it is a trade-through. One of the reasons why a trade-through may occur is the existence of different kinds of trading technologies, each with a unique set of advantages and disadvantages, which may involve being able to provide the best prices, or may perhaps involve being able to provide faster and more certain executions.

The trade-through rule can be found in the by-laws of the Intermarket Trading System (ITS), an association of exchanges charged with governing the order routing communication networks that facilitate trades in stocks listed on the NYSE and the AMEX. The ITS is itself a product of the Securities Act Amendment of 1975 to the Securities Exchange Act of 1934. Among other things, the 1975 amendment directed the SEC to facilitate the establishment of a fully integrated system of securities markets, the national market system (NMS).

The NYSE is predominantly a manual trading market in which most trade executions are conducted through an auction process that takes place on a physical trading floor.[3] The manual trading system generally yields the best prices. But benefitting from recent technological advances, rival trading venues such as ATS and

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[3] In the NYSE's manual trading environment, floor brokers hold customer orders in a stock and enter them into continuous mini-auctions overseen by a specialist assigned to the particular stock. The specialists are responsible for maintaining fair and orderly markets in the assigned stocks and also receive orders via electronic routing, orders that they can use to help fill floor brokers' orders. This auction market has stock traders called specialists who execute trades on a physical floor, announcing the prices at which they are willing to buy (bid) and sell (offer). The specialists are primarily agents who undertake little financial risk and receive commissions for matching buying and selling interests. Their central tool is the limit order book, a compilation of unexecuted conditional orders to buy or sell shares at less or more than certain specified prices that have been submitted to them. About 12% of the orders on the NYSE are filled by an electronic matching system called Direct +, which is limited to small-sized trading orders.

Nasdaq market makers are now able to execute trades at speeds never imagined decades ago, speeds generally faster than those on the NYSE.[4]

Various institutional investors argue that saving a penny or so per share under the trade-through rule can be less important than other execution attributes like speed of execution, certainty of execution, and trade anonymity (which can help prevent other investors from trading against them and bidding up prices). Handling about 80% of the trades in its listed stocks, the NYSE tends to have the best quotes (the best priced offers to either buy or sell various stock at any given time). But there is no certainty that an investor will necessarily always secure those quotes in the relatively slow floor trading (and dominant) part of the exchange where the entities who execute trades have up to 30 seconds to decide whether or not to actually execute a quote.

On December 15, 2004, the SEC's commissioners voted four to one to propose a modification [5] of an earlier and highly controversial February 2004 proposal, Reg National Market System (NMS), which would "redesign" certain rules in Section 11A of the Securities Exchange Act of 1934.[6] Among other things, the February proposal would have effectively preserved but somewhat modified the trade-through rule on NYSE-listed stock, while also expanding it to Nasdaq-listed stocks. Specifically, it would have codified the rule across-the-board, expanding it beyond its present status as merely part of the ITS bylaws.[7] Within up to 5 cents beyond a stock's best prevailing buying and selling prices, it would have allowed investors (like institutional investors) who use automated markets to trade through (bypass) the

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[4] While the NYSE specialists operate in an auction environment in which they have monopolies over the trading in specific stocks, Nasdaq market makers in Nasdaq stocks compete with other highly decentralized market makers in the trading of various stocks. The electronically linked market makers traditionally operate as principals, meaning that they are willing to assume the financial risk of buying from and selling stocks to customers from their own inventories in return for potential profit from the spread. Some Nasdaq market makers trade NYSE-listed stocks, but like the ATS, they account for a small fraction of those trades. Nasdaq-listed stocks are also traded on ATS (including Nasdaq's Supermontage and its newly acquired Brut) like Inet, and a number of fully automated exchanges, the National Stock Exchange (formerly the Cincinnati Stock Exchange), and ArcaEx. A tiny fraction of trades in Nasdaq-listed stocks are executed in manual market centers like the Boston Stock Exchange.

[5] "Regulation NMS," *Federal Register*, vol. 69, no. 247, (Dec. 27, 2004), p. 77424. Proposals are a requisite part of the SEC's rulemaking process wherein it internally interprets one of the several securities laws that govern the securities markets. Those laws, which include the Securities Exchange Act of 1934, also provide the framework for the agency's oversight of those markets. But the statutes tend to be written rather broadly, largely focusing on basic principles and objectives. The SEC's central objectives are to maintain fair and orderly markets and to protect investors. To help it realize the objectives as the securities markets have evolved, the agency has used the authority granted to it under the laws to "flesh them out" through the rulemaking process.

[6] "Regulation NMS," *Federal Register*, vol. 69, no. 46 (Mar. 9, 2004), p. 11126 .

[7] As part of the ITS bylaws, trade-through rule enforcement is triggered by parties who report that they have observed it being violated. Under both the February and December proposals, market centers would have to monitor and report violations "up front."

better displayed price on a non-automated market. On an order-by-order basis, it would have allowed investors to do trade-throughs if they formally opted out of the trade-through rule.

Known as reproposed Rule 611, or the reproposal, the December proposal would also apply to all NMS securities, including those on the Nasdaq.[8] But it would alter the earlier proposal in a number of ways: When a manual quote represents the best price in a particular stock traders would be able to bypass or ignore it.[9] Automated quotes would be protected by the trade-through rule: When an automated quote represents the best prevailing price, it would be illegal for traders to ignore or bypass it. The reproposal eliminated the opt-outs, an integral part of the earlier proposal. It argued that by giving best price protection to automated but not manual quotes, the opt-outs, a favorite of some institutional investors and ATS, were no longer necessary.[10]

Thus, under the December 2004 proposal, best priced quotes produced by automated markets would generally trump other trade execution attributes like speed of execution (not a significant issue in those markets, although there can be some variability), and certainty of execution (the odds that an order will be executed).

Making a general argument for the reproposed trade-through rule proposal, Chairman Donaldson of the SEC noted that while it may be faster to trade another order at a worse price and that while certain individual traders might personally benefit from trade-throughs, the overall market could be hurt by traders who ignore better priced orders [as long as they are displayed by automated markets].[11]

The earlier and the newer trade-through rule proposals give added weight to automated executions. The initiatives are also a reflection of the growing national and worldwide embrace of automated trading over manual trading, developments that have been instrumental in the NYSE's decision to greatly ramp up the scale of its own automated trading. In 2004, the exchange submitted plans for a new hybrid trading system to the SEC for approval. It would marry its manual specialist-based floor trading system with a greatly expanded version of an automated, electronic trading system known as Direct +, which now handles about 12% of the exchange's trading volume. (It can only be used for relatively small-sized orders.)[12]

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[8] The Nasdaq is technically not an exchange but an association. In 2000, it submitted an application to the SEC for conversion to exchange status.

[9] Both proposals would also eliminate the current exemption from the trade-through rule provided to block orders (stock trades of 10,000 shares or more).

[10] By late Dec. 2004, approximately 35 Members of Congress had reportedly written the SEC in support of the earlier opt-out provisions, while eight had written in support of an unconditional trade through rule. Gregory Bresinger, "Congressional Members Press for the Opt-Out," *Traders*, Dec. 31, 2004.

[11] "U.S. Regulators Clash over Trading Rule Changes," *The Asian Wall Street Journal*, Dec. 17, 2004, p. M-9.

[12] CRS Report RS21871, *The Trade-Through Rule*, by Mark Jickling, provides a detailed (continued...)

The Depth of Book Alternative

At present, brokers are required to enter only their best bid and offer for a stock at any given time into a database of consolidated quotes from their fellow brokers. But the reproposal offered an alternative protocol that would extend this requirement to all of their prevailing quotes, not just their best ones: The SEC proposed a voluntary regime under which brokers who sought price protection for all of their quotes would have to display all of their bids and offers in a real time database that is universally accessible to market centers trading the stock. In other words, a market center with the best price would have to hand off the remainder of any stock trade order to other market centers with the next best price if the first market center was unable to complete the order, rather than continuing to execute the trade at inferior prices based on the original or "top of the book" price.

Championed by the financial firms Goldman Sachs and Citigroup, this alternative trading protocol alternative is known by a number of names, including depth of book (DOB), voluntary depth, and a virtual central limit order book (CLOB). The reproposal describes a DOB as a mechanism for brokers who want to fill orders, including large block trades, to "sweep" various markets for the best incremental prices, simultaneously executing trades in the same stock across various markets.[13]

One SEC official succinctly noted that the DOB basically meant, "show your hand and you have a higher probability of success in having your order executed."[14] Among the opponents of a DOB are Fidelity Investments, the largest mutual fund, the NYSE, and Nasdaq.

Consider the trading scenario under the SEC's simple trade-through rule proposal:

Assume that there is a Market A, which is displaying 500 shares at the national best offer of $20.02 (and also has offers at each price level below the best offer). Assume there is a Market B that is displaying 500 shares at $20.03 (its best offer) and also has 4,000 shares at $20.04 that is not displayed. Also assume there is a Market C that is displaying 300 shares at $20.05 (its best offer), and that there is a Market D that is displaying 800 shares at $20.07 (its best offer).

Under the SEC's first trade-through rule option, if an order arrives at Market A to buy a significant amount of shares that would satisfy all the displayed liquidity in the other markets, Market A would only be required to send orders to satisfy the best

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[12] (...continued)
examination of issues surrounding impact of the SEC's trade-through rule proposal on trading in NYSE-listed stocks.

[13] For an additional fee, traders can currently avail themselves of real time depth of book limit order display feeds for both NYSE-listed and Nasdaq-listed stocks.

[14] Rachel McTague, and Kip Betz, "In Move Likely to Stall NYSE, SEC Reproposes Market Structure Rules," Dec. 20, 2004, *BNA's Securities Regulation and Law Report*, p. 2221.

offers at Markets B, C, and D. Even though the 4,000 share order on Market B is for a significant amount of stock, it would be ignored and would remain unexecuted in favor of the inferior-priced orders in Markets C and D because they represent the best prevailing quote from each market. But it appears that under a DOB, if the superior priced 4,000 share quote from Market B was displayed, it would have priority over the best but inferior prices on Markets C and D.

Another way of understanding how the DOB would probably work is this example:

An individual investor whose broker is Merrill Lynch wants to buy 5,000 shares of Walt Disney Co. at a price no higher than $27.05. At the time that investor's order is presented to Merrill, a Lehman Brothers broker's customer is advertising 4,000 Disney shares for sale at $27.00 on the NYSE's floor computer systems. Today, the Merrill broker could buy the initial 4,000 shares for $27.00, but then would have to wait to find an additional 1,000 shares either on the NYSE or another market to complete that investor's order at or near the desired price. But let's suppose that the Lehman broker all along had an additional 1,000 Disney shares to sell at $27.01. Under the proposed rule revisions, the Lehman broker would be required to publish his entire list of sell orders at the beginning, enabling the Merrill broker to simultaneously purchase both the 4,000 shares at $27.00 and the 1,000 shares at $27.01, the next-cheapest price, completing the investor's order in one fell swoop.

Under a DOB, the two transactions would not both have to take place on the NYSE, where Disney shares are listed. The first 4,000 share transaction at $27.00 per share could take place on the NYSE, while a second transaction, the purchase of 1,000 shares from a third broker for $27.02 per share could have occurred (for example) on the Chicago-based automated electronic exchange, ArcaEx.

The DOB would thus allow other brokers who seek to fill orders, including large block trades, to sweep all markets for the best price and to execute trades simultaneously in the same stock across different markets. Brokers would thus be allowed to pick off the best prices from various markets.

Some observers say that it is also important to emphasize that the DOB would only be voluntary, but others predict that competitive pressures will probably result in "first movers" prompting subsequent widespread use.

The DOB: Some Precedents and Basic Arguments

When investors submit an order to their broker to buy or sell stock, that order is either a market order or a limit order. Market orders are requests to buy or sell stock at whatever current prices the market is offering. Limit orders are conditional orders to buy or sell stock that set parameters on the acceptable prices. Examples of a limit order would be an order to buy 300 shares of Xerox stock at $24.00 per share or less, or an order to sell 1,000 shares of Google at $13.55 or more.

Limit orders produce a number of positive externalities for stock markets and investors: They enhance market depth and liquidity,[15] increase market transparency, and improve price discovery.[16] Generally, and particularly for small investors, the more liquid a market is, the less volatile it is, and the lower should be the cost of trading on it. Making the markets more attractive for the submission of limit orders was a central goal of the SEC's February 2004 trade-through rule proposal. The agency has largely framed its DOB policy option as a way to expand on that attractiveness.

There is some history to the idea of a DOB. For example, in 2000, as part of a concept release (a public policy "think piece"), the SEC staff proposed that consideration be given to a more expansive version of its current DOB proposal,[17] a policy option that it claimed might also provide greater investor access to market enhancing limit orders in the increasingly fragmented securities markets.[18] Known as a CLOB, (central limit order book) the policy option was supported by Arthur Levitt, Jr., then the chairman of the SEC, a few high profile Wall Street firms like Merrill Lynch, Morgan Stanley, Goldman Sachs, and at least one ATS. But it also confronted significant congressional[19] and industry-wide opposition. The principal criticism was that the proposal would amount to a government imposed mandate that would hamstring the ability of the securities industry to evolve and innovate via natural competitive forces. The agency never implemented the CLOB.

About the same time, a number of institutional investors raised related concerns that the markets were suffering from a dearth of accessible limit orders. And in 2000, a diverse number of financial industry players, including the Securities Industry Association (the trade group of brokerage firms), the Investment Company Institute (the mutual fund trade group), and a number of mutual funds and institutional investors, formed a group to explore various ways of enhancing limit order transparency without enacting a CLOB.[20]

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[15] Liquidity measures the degree to which an asset or security can be bought or sold in the market without affecting the asset's price. Generally, the higher the level of trading in a particular stock, the more liquid is that market.

[16] This is the method for determining the specific prices for securities based on the interaction of demand and supply.

[17] For example, unlike the DOB option that was proposed in December 2004, the CLOB would have incorporated time priority: When there are several equally priced quotes, execution priority would have been given to those that were submitted the earliest.

[18] "Notice of Filing of Proposed Rule Change by the New York Stock Exchange, Inc. to Rescind Exchange Rule 390; Commission Request for Comment on Issues Relating to Market Fragmentation, Exchange Act Release No. 42,450, S.E.C Docket," Feb. 23, 2000.

[19] Among the proposal's congressional opponents were Hon. Phil Gramm, then the chairman of the Senate Banking Committee; the Hon. Tom Bliley, then the chairman of the House Commerce Committee; and the Hon. Michael Oxley, then the chairman of the House Finance and Hazardous Materials Commerce Subcommittee.

[20] Laura Santini, "Wall Street Firms, Buy Side to Explore Price Transparency," *Investment Dealers' Digest*, June 26, 2000.

Over the last decade, the nation's stock markets have moved from pricing stock in eighths of a dollar, to sixteenths of a dollar, and finally to pennies or decimals (and subpennies in some cases). One manifestation of the move to decimal pricing is that quotes tend to be spread across many more potential fractions of a dollar. While in the pre-decimal days, there may have been 10,000 shares of a given stock available at the best bid and offer prices, there may now be only 200 shares at those prices with a considerable part of the market depth in the form of quotes that may be pennies off of the best bid. But by not being the prevailing best bid or offer, the orders face an additional hurdle that they will not be executed, potentially discouraging traders from continuing to submit limit orders. By granting trade-through protection to non-best priced quotes, the SEC argues that the DOB should help ensure that more limit orders are executed, thus encouraging investors to submit more of them. A major cost of submitting a limit order is that it will go unexecuted, an occurrence that the SEC and some others argue should be reduced with a DOB.

This presumption of a robustly positive correlation between the odds that a limit order will be executed and investor's willingness to submit them is widely-subscribed to theoretical orthodoxy.[21] But actual empirical research on why investors decide to submit limit orders is not very extensive. Some of the research that has been conducted on investors' willingness to submit limit orders has identified a number of other salient market variables. They include average trading volume, the size of the spread, and the level of market uncertainty.[22]

Additional criticism of the DOB has come from the NYSE. Exchange officials say that a DOB would effectively kill the auction component of the exchange's proposed hybrid execution system, a view shared by a number of observers outside of the exchange.[23] From the critical "investor benefit" perspective, there is research indicating that the NYSE's specialist system tends to provide lower trading costs for certain kind of stocks, while for other kinds of stocks Nasdaq's more automated dealer trading appears to provide lower costs.[24]

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[21] Among others, officials at the Investment Company Institute, the national mutual fund trade association, support the idea that by protecting non-best priced quotes, the DOB should help foster greater interest in the submission of limit orders.

[22] Ingrid Lo and Stephen Sapp, "Order Submission: the Choice Between Limit and Market Orders," *EFMA 2004 Basel Meetings Paper; 14th Annual Conference on Financial Economics and Accounting (FEA),* Nov. 27, 2003. Some other financial observers contend that probably the biggest thing that a market can offer to institutional investors to stimulate their limit order flow is better trade anonymity. Also potentially undercutting the robustness of the relationship between limit order execution and individual investor willingness to submit them are surveys that report that the vast majority of individual investors lack a basic understanding of what a limit order is. "Investors Flunk Securities Survival Quiz," *Wall Street Letter,* Aug. 6, 2001, p. 4.

[23] For example, see John Thain [CEO of the NYSE], "The Quest for the Right Balance," *The Wall Street Journal,* Dec. 21, 2004.

[24] For example, see Kee Chung, Bonnie Van Ness; and Robert Van Ness , "Trading Costs and Quote Clustering on the NYSE and NASDAQ after Decimalization," *Journal of Financial Research,* Sep. 22, 2004. The study found that the NYSE's specialist system

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When small investors' stock orders are internalized, a broker routes a customer's stock trade order to his firm's trading desk for interaction with the firm's stock inventory, meaning that the orders bypass exchanges or market centers. Order internalization is very commonplace in the securities industry.[25] For years, institutional investors have identified internalization as a significant reason why they are unable to access substantial pockets of limit order flows, deleteriously affecting overall market quality.[26] The DOB would not address internalization and the isolated pools of liquidity that result from it.

Institutional Investors and the DOB

For institutional investors and the millions of small investors they represent, the most significant cost of trading large blocks of shares is known as the price impact, the change in stock price caused by the potential impact of executing large orders to buy (with rising prices) or to sell (with declining prices). To help minimize the price impact, institutional orders are typically divided up into chunks, which are sequentially put out for execution over the course of a day or more. But this segmented strategy also means that the information about their trades may be subject to leaks and risk being "front run." That is, traders with knowledge of the orders may exploit that knowledge by buying or selling ahead of the institutions' orders for their own gain.[27] Such trading can result in up or down price movements that are detrimental to the institutional investor's yet-to-be-filled order. Institutional trades also tend to incur significant trade transactions costs, and opportunity costs due to changes in market prices during the time it takes to complete a trade.

The DOB could enable institutional investors to get some orders filled before leaks about their orders result in the orders being front run by other traders, an ongoing concern for them. In addition, the ability to get potentially faster, sweeping trades could also mitigate some of the opportunity costs of trading in securities markets with fluid prices.

But a potential cost of the DOB to institutional investors involves the very same issue of potential leaks of trade information and front running: To minimize price impact by trading anonymously, large institutional investor trades for NYSE-listed

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[24] (...continued)
offers low-cost executions for smaller, low-volume stocks, while the NASDAQ dealer system offers low-cost executions for large, high-volume stocks.

[25] A major public policy concern with internalization, which has also been voiced by SEC officials, is that internalization may result in a brokerage firm's interests taking precedence over the interests of investors. Its adherents, however, counter that by making deep proprietary liquidity available to clients, a brokerage firm can offer greater price improvement on more orders.

[26] For example, see Laura Santini, "Wall Street Firms, Buy Side to Explore Price Transparency," *Investment Dealers' Digest*, June 26, 2000.

[27] The cost of front running has dropped considerably with decimal pricing as the front running trader merely has to offer to buy a share of stock at a penny more.

stocks are often intentionally undisplayed by NYSE floor brokers (for NYSE-listed stocks), or by ATS (for Nasdaq stocks). Known as reserve orders, these hidden quotes stand ready to be executed by matching incoming contra orders. And one of the concerns with the DOB is that a better-priced limit order that is hidden in reserve could be ignored because displayed liquidity has priority over non-displayed orders. But because a DOB could result in reserve orders being bypassed, there is another concern that there will be pressure to display them, which can carry its own potential shortcomings.

With institutions seeking to avoid display of their orders, there are concerns that there could be a significant migration of institutional orders to trading venues like crossing networks that exist exclusively for them. One concern is that a substantial migration to such markets could result in a significant diminution in liquidity and a possible erosion in market quality in the traditional securities markets where small investors' orders are traded (and where the bulk of institutional orders are also traded.)[28] Such a migration would, however, take institutional orders significantly away from the institution's professed interest in finding greater opportunities to interact with retail limit order markets, markets that tend to provide superior price discovery.

Technology and Cost Issues

The DOB would require trading centers to monitor a large number of quotes that are protected from normal proscriptions on trading through displayed by other markets, and route orders to execute against those incoming quotes. To do so, the SEC emphasizes that the technology required would have to ensure that (1) market participants had a data source that identified the protected quotes; (2) such quotes data would be available on fair and reasonable terms; and (3) market participants would have fair and efficient access to the protected quotes at reasonable costs.

The SEC's proposal did not provide a cost estimate of implementing the technology capable of handling a DOB. But the DOB would build upon the foundation of the less ambitious trade-through rule proposal. We can assume that it could significantly exceed those costs: The SEC estimated that aggregate costs for the trade-through reform would be $144 million in one-time costs; $18.4 million in compliance costs; and $3.5 million to update written policies and procedures, or a total of $167 million.[29] At least some of the costs of new technology can be passed on to investors.

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[28] Larry Tabb, "The SEC's NMS — To Incent and Protect," *Wall Street and Technology*, Dec. 21, 2004. In addition, officials at Fidelity, the nation's largest mutual fund, oppose the DOB largely on freedom of choice grounds. They assert that the government should not be dictating to investors where they should send their orders. Amy Borrus, "New York Stock Exchange, No More Breaks for the Big Board," *Business Week*, Dec. 6, 2004.

[29] "SEC's Trade Proposal Irks Some in Industry," *Dallas Morning News*, Nov. 29, 2004. As a way of finessing potential data capacity problems, the reproposal notes that interlinked market centers could decide to limit the DOB quotes to a certain fixed number of quotes (such as five) beyond the best prices. Reg NMS, p. 77442.

While the ATS and the venues that trade Nasdaq securities currently have the technology to publish DOB quotes,[30] industry sources say that a DOB could still place significant additional demands on current market data dissemination technology, especially in terms of the need for much more capacity to carry the greater volumes of data that would probably be produced. Through the years, establishing connectivity among the various entities in the securities industry participants has become both cheaper and easier. (There is also currently a glut of telecom capacity in the several dozen or so largest metropolitan markets.[31]) And while some securities industry observers acknowledge the declines in the marginal cost of technology, they complain about its burgeoning total costs.

But at least in the short-run, some questions have been raised about the feasibility of implementing the required technological upgrades in various parts of the securities industry.[32] A DOB might also compel institutional investor trading desks and online brokers who serve retail customers to retool the technology that allows them to view quote data.[33]

Another issue, which the SEC itself raised in the reproposal, is whether the DOB might potentially heighten market systemic risk by providing for more centralized and concentrated data "spigots" — which could possibly become single points of failure. Market center outages do occasionally happen.[34]

The last several years have seen the growing use of trade facilitating technology known as algorithmic trading software (sometimes called smart-routing technology). Used by brokers for their institutional investor clients and at times directly by the institutions themselves, the software can both analyze and implement efficient methods for doing a trade in automated trading markets — trades that may involve multiple market centers. The software is capable of doing "depth of book" types of searches, which has raised questions about the need for a government regulation-initiated DOB. But the technology, which uses statistical modeling is not perfect, is not universally employed for institutional trades, and is generally not used for accessing manual trading markets. And though it began as technology designed to facilitate retail investor day trading, it is generally not available to most individual

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[30] "The Trade-Through Rule," *Wall Street & Technology*, Feb. 1, 2004, p. A-2.

[31] Andrew Goldsmith, "Out of the Box Thinking Equals More Cost Effective Telcom Networking," *Globalnetworking.com*, Jan., 2004.

[32] Ibid.

[33] "Reg NMS Tops the CIO Agenda," *Wall Street & Technology*, Feb. 1, 2005, p. 16.

[34] For example, during the power outages that struck the northeast and the midwest in Aug. 2003, some broker-dealers, ATS, and regional exchanges reported telecommunication problems that caused some problems in their ability to conduct normal trading operations.

investors.[35] Users of the algorithmic trading software could incur additional reprogramming expenses under a DOB.[36]

Another technology-related criticism of the DOB is that it would place the government in the role of dictating the shape and form of future technology. Many argue that these decisions are better left to the market participants themselves. They note that over the years, the advance of market oriented technological innovations has been a significant part of the widely-acknowledged overall drop in trading costs (the emergence of the ATS technology being a prime example of technology that has helped reduce investor costs). It has also been argued that the information-sharing provisions of the DOB would limit such innovation, stymying the ATS' incentives to create faster, more efficient trading models, and constraining exchanges' incentives to innovate technology beyond that which may be minimally required by regulation. The SEC's response is that under a DOB, each market would have the freedom to choose the course of action most appropriate for its particular competitive strategy.

Generally speaking, in both its February and December 2004 Reg NMS proposals, the SEC appears to be eschewing the heavily bureaucratic Intermarket-Trading-System consortium-based model of market center linkages and pushing for more privately-organized market center linkages — somewhat akin to the current linkages connecting the trading venues that trade Nasdaq stocks.

Best Execution and the DOB

In fulfilling its mandate to facilitate a national market system, the SEC has pursued four broad policy objectives: (1) competition among markets; (2) transparency in the pricing of securities; (3) better linkages between market centers; and (4) best execution of investors' orders.

The latter goal, the best execution of investors' orders is at the heart of the issues surrounding the exchange's trade-through and DOB reform proposals. Best execution is the SEC's requirement that in executing an investor's orders, a broker has a duty to seek the best execution that is reasonably available for its customers' orders. This means that a broker must evaluate the orders it receives from all customers in the aggregate and periodically assess which competing markets, market makers, or ATS offer the most favorable terms of execution. Among the factors that a broker needs to consider when executing its customers' orders for best execution include (1) the opportunity to get a better price than what is currently quoted, (2) the speed of execution, and (3) the likelihood the trade will be executed.

Depending on the specifics of a trade and who is doing the trading, best execution can thus have a number of interpretations. For an individual investor who

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[35] "Tower Group Projects Algorithmic Trading Volume to Double to 27% by of U.S. Equity Flow by Close of 2006,"*Tower Group Press Release*, Sept. 20, 2004.

[36] "Reg NMS Tops the CIO Agenda," p. 16.

is an active trader attempting to exploit market volatility, best execution may mean fast executions at the lowest possible prices. But for an individual investor who is a passive investor who lets his portfolio just "lie" for years, best execution may have less overall significance. Many institutional investors are concerned with selling an entire block of stock at a good price rather than selling only part of the block at a somewhat better price, which helps frame their perception of what constitutes best execution. Their particular perspective on what constitutes best execution will be influenced by how they prioritize attributes such as trade anonymity, certainty of execution, and fast executions in fast moving markets, for example.

Thus, historically, best execution has technically been an inexplicit, case-specific construct. But through the years, SEC officials have placed particular emphasis on the ability to get a better price as its core characteristic. It is a position that appears to have been ratified in its later trade-through proposal of December 2004, which would universalize top-of-the-book price protection where a market's best displayed bid or offer could not be traded through for an inferior price. But by only permitting price protection for automated quotes, the SEC appears to be at least partially breaking with its traditional treatment of "best execution" by saying that providing price improvement is still critical but that it will confer a regulatory advantage on automated, and not manual markets that do so.

The DOB proposal arguably represents an expansion of the earlier, February 2004 proposal's interest in reinforcing the "ability to secure better prices" facet of best execution: In order to legitimately access quotes that may be inferior to the best price on a particular market but that may be superior to the best prices on other markets, they would have to be displayed.