

Consolidation and competition in the US equity markets

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Key points

- In fostering strong secondary equity markets, the US Securities and Exchange Commission has sought to balance the competing attributes of order consolidation and intermarket competition.
- Consolidation of orders allows for a high level of liquidity and pricing efficiency. Robust competition among market venues promotes innovation and lowers trading costs, but also fragments and segregates orders, decreasing their degree of interaction.
- Order segregation can lead to opportunistic behaviour on the part of certain market participants who seek to profit from the lessened competition.
- Market quality thus requires a careful balancing between the forces of order consolidation and competition between trading venues.

1. Introduction

Strong secondary trading markets are essential to the formation of public capital. Although private investors in securities may be willing to accept some degree of limited markets in return for the opportunity to invest in a small or young company, or to earn a liquidity premium, investors that buy securities in public offerings desire strong secondary trading markets where they can readily sell their securities at low transactions costs. Strong secondary markets, with their attendant benefits of continuous liquidity and efficient prices, are desired by both small investors, who lack large liquid reserves, and by large investors, the size of whose stock positions require deep markets. Without strong secondary markets, fewer companies would be able to raise capital in the public markets, and companies accessing the public markets would find them more expensive, raising the cost of capital and lowering real investment.

The US Securities and Exchange Commission (SEC) has long recognized the importance for capital raising of strong trading markets. In recent pronouncements, the SEC has said that in regulating trading markets the interests of long-term investors and

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professional short-term traders may conflict, and that in resolving this conflict the SEC will 'uphold the interests of long-term investors'.¹

For this reason, the SEC has sought to foster strong secondary trading markets characterized by integrity, fairness, efficiency and liquidity. Each of these characteristics is important. A market with integrity discovers prices accurately and reliably and operates without manipulation or other abusive trading practices that create distorted prices. It also limits trading based on material non-public information inappropriately, such as through misappropriation or violation of a fiduciary duty.² A fair market treats similarly situated market participants similarly, and ties any systematic advantages provided to a class of market participants to services provided by that class. An efficient market executes orders to trade promptly, safely and with low explicit and implicit transaction costs. In addition, a liquid market facilitates the immediate execution of orders with the least possible price impact.

While all of these market characteristics are important to encourage holders of capital to invest their funds in securities, market efficiency and liquidity in particular are essential to large investors who are weighing the costs of investing in securities markets, because the explicit and implicit transaction costs inherent in inefficient and illiquid markets directly reduces the returns on investing in the instruments sold in those markets. Costly markets can make certain profitable investment strategies infeasible.³ Where a market has high commissions, other transaction fees, transaction taxes, clearing costs, spreads, trading discounts and opportunity costs for unexecuted orders, investors avoid the securities sold in the market or demand a higher return from the securities in compensation.⁴ High costs resulting from inefficient and illiquid markets reduces the range of issuers that can raise capital in the securities market, thus reducing innovation and competition brought by new and growing companies in the economy.

While many factors that influence the efficiency and liquidity of securities markets are beyond the ken of securities market supervisors, one principal driver of efficiency and liquidity—the degree of integration and consolidation of the trading markets—has long been the focus of the SEC and increasingly is of concern to securities market supervisors in Europe and other regions. Efficiency and liquidity of trading depend on some degree of market consolidation to bring together orders to buy and sell so that they can interact and determine the current price. These orders and resulting trades produce information on the current value of the security so others can value positions and assess investment opportunities. As a result, securities supervisors have sought to find the optimal balance

1 Exchange Act Release No 60684, Elimination of Flash Order Exception from Rule 602 of Regulation NMS (18 September 2009) (the 'Flash Order Elimination Proposal') (quoting Exchange Act Release No 51808, Regulation NMS Adopting Release (9 June 2005) (the 'Regulation NMS Adopting Release').

2 It has long been recognized that such a policy results in less efficient prices, in that non-public information does not become incorporated into prices as rapidly as if trading on such material non-public information is allowed. The SEC places fairness concerns above efficient prices as regards such information. For a more detailed discussion, see Manne (1965).

3 Andre F. Perold and Robert S. Salomon Jr. 'The Right Amount of Assets under Management' (1991) 47 *Financial Analysts Journal* 2 (May–June 1991) 31–39.

4 Yakov Amihud, Haim Mendelson and Lasse Heje Pedersen, 'Liquidity and Asset Prices' (2005) 1 *Foundations and Trends in Finance*, 269–364.

between two forces bearing on the securities markets—the impetus to consolidate trading into a single trading venue or tightly integrated trading venues, which can foster competition between orders, and the impetus to fragment trading in a security into separate trading venues, which can foster competition between marketplaces.

The SEC continues to try to find the proper balance between these forces as it adjusts its rules for trading markets, including proposals regarding flash orders in September 2009,⁵ alternative trading systems (ATS) in November 2009⁶ and a concept release on high-frequency trading (HFT) and dark liquidity in January 2010.⁷

In light of these recent proposals, this article considers the tension between consolidation of trading interest and competition between marketplaces, and the past SEC policy regarding consolidation of markets. It then reviews the SEC's current proposals and discusses several pragmatic propositions that may be useful as the SEC addresses consolidation in light of a trading environment that has changed in significant ways since the adoption of Regulation National Market System (NMS).

2. Forces for fragmentation and segmentation

As discussed previously, the consolidation of trading interest is essential to the efficiency and liquidity of securities markets. Without some degree of consolidation, buy and sell trading interest would never meet. As consolidation of trading interest increases, the likelihood of finding the other side of a trade at an acceptable price rises and the quality of the prices available improves. Ideally, orders to buy compete by offering higher prices, and orders to sell compete by offering lower prices until buy and sell orders meet at a single price. Increasing the amount of trading interest interacting at a time and place strengthens competition among orders, increases liquidity and promotes execution at efficient prices. In a market characterized by multiple trading venues and multiple securities, this consolidation creates a 'network effect' that attracts additional trading interest to the venue with the most orders and liquidity, potentially insulating that venue from competition and new entrants. Consolidated markets are often considered a public good that produce liquidity and efficiency benefits for users of these markets.⁸

Spatial fragmentation

Markets do not naturally occur in a consolidated state—fragmentation is often the norm absent explicit action by regulators or market participants. For instance, an early cause of fragmented markets was spatial—arising from the need to meet physically in order to trade a security and to transfer the funds and securities after the terms of trade were

5 See Flash Order Elimination Proposal.

6 See Exchange Act Release No 60997, Regulation of Non-Public Trading Interest (13 November 2009) (the 'Dark Pool Proposal').

7 See Exchange Act Release No 61358, Concept Release on Equity Market Structure (14 January 2009) (the '2010 Concept Release').

8 As an example of the price produced by an exchange being considered a public good, see J. Harold Mulherin, Jeffrey Netter and James A. Overdahl, 'Prices are Property: The Organization of Financial Exchanges from a Transaction Cost Perspective' (1991) *J. of Law and Econ.* 591.

established. Before the spread of electronic communications, regional exchanges compensated for this natural fragmentation by developing throughout the USA to trade securities for investors in that region. Some of these regional markets flourished through local contacts and trust relationships. Once established, these relationships proved durable, even after inexpensive telecommunications developed, as reflected in the operations of regional exchanges today.

Temporal fragmentation

Another type of market fragmentation is temporal—arising from different traders' desire to trade at various times. While the greatest consolidation of orders would be achieved by trading all available orders at a single point of time, investors have sought greater immediacy of execution, resulting in trading of orders on a continuous basis. Initially for the convenience of institutional investors and traders that travelled each business day to an exchange floor or other physical location, trading was consolidated and concentrated during 'normal trading hours', which were shorter than normal business hours. The desire of institutional investors to trade during their normal business hours results today in some local trading in securities whose primary market is located in a different time zone.

Listing segregation

A final example of lower order segregation concerns the listing decision of an issuer. Generally, an issuer chooses where to list its stock based on its determination of the best quality market for its stock, the reputational value of the listing, its cost and the level of corporate governance requirements imposed by an exchange on listed companies. Although an issuers' listing decision could be made determinative of where its securities trade, this approach is not followed in the USA, where a security can be traded in the over-the-counter (OTC) market and by other exchanges pursuant to statutorily recognized unlisted trading privileges.⁹

Owners of markets often operate as monopolists seeking to maximize their profits at a cost to public traders. Traditional exchanges were often organized in a mutual form where exchange members were also the exchange's owners. They favoured forces of consolidation for the increased control over order-flow and terms of trade, allowing members to extract more rents from non-member customers. Exchanges have long sought to limit the internalization and fragmentation of trading in the securities that they trade.¹⁰ The mechanism for limiting such activity can include quantity discounts in

9 See Section 12(f) of the Exchange Act. See also *Golden Nugget, Inc. v Am. Stock Exchange, Inc.*, [1987] 828 F.2d 586 (holding that trading options on Golden Nugget Stock does not give rise to claims of misappropriation, unfair competition and trademark violation against the American Stock Exchange and Options Clearing Corporation).

10 For example, the 1792 Buttonwood Agreement, which marked the formation of the predecessor to the NYSE, required the members to the agreement to give preference to each other in their trading transactions. Marshall E Blume, Jeremy J Siegel and Dan Rottenberg, *Revolution on Wall Street: The Rise and Decline of the New York Stock Exchange* (W W Norton & Company, New York and London 1993) 23–4.

exchange fees, discriminatory trading rules that favour members or explicit prohibitions from trading ‘off-board’.

Thus, markets do not automatically self-organize into consolidated venues, nor is it necessarily desirable that they do so. Although the consolidation of orders in a trading venue builds liquidity and creates a network effect that attracts additional trading interest, there are a number of reasons that all trading in a security does not necessarily congregate to form a single consolidated market. Subsequently, we present several examples of how one or more cohorts of market participants improve their trading prospects through some form of market fragmentation.

Intermarket competition and segmentation

Market fragmentation can be supported when traders seek advantages of transacting in competing markets. The ability to trade a security in more than one venue allows the marketplaces themselves to compete, and thus market quality improves not because of competition among orders but because of competition among markets. This competition can occur on a variety of dimensions. Markets can differentiate themselves on the basis of service quality, including faster executions, more informative reports and more reliable systems. Multiple marketplaces can compete in terms of the price, type and quantity of market information they disseminate regarding the depth and quality of the current market and the prices at which trades have taken place. They can also compete on costs, including the overall level of trading fees and how these trading fees are allocated among participants. Multiple marketplaces also can compete for listings, which can reduce the level of fees charged to list their securities and expand the services provided to these issuers.

Not only do these trading venues compete, but they often ‘segment’ the marketplace, offering terms of trade that favour a particular type of trader, such as a high-frequency algorithmic trader or a block positioner. This segmentation could include the development of innovative trading systems, which might contain new order types, and systems designed for particular classes of traders such as large institutional investors or high-frequency traders. Venues can also structure their rules to attract certain types of orders, giving them favoured treatment or priority over other order types.¹¹ Depending on their location and scale, multiple marketplaces can also offer improvements in systems resiliency, providing a public good that eliminates the single points of failure that could wholly stop trading in particular securities.

Discriminating among trade counterparties

Liquidity providers can profit from trading separately with specific types of investors with known trading characteristics. These liquidity providers trade directly with, or ‘internalize’, uninformed orders away from the primary trading venue, diminishing the network effect. A liquidity provider that trades with all market participants faces the risk

11 ‘Clean cross’ rules are examples of such order types. See SEC Special Study ‘Report on the Practice of Preferencing’ (1997) (noting that practice of exchanges to have rules according priority to execute large orders, ie ‘clean cross’ rules).

that its counterparty may be better informed about non-public information regarding the issuer, or about other large price-moving orders in the market. Trading with informed counterparties creates risks of adverse selection in which the liquidity provider (on average) loses out to those with superior information. To mitigate this risk, liquidity providers seek to trade with uninformed counterparties whenever possible, using the profits from uninformed traders to offset the losses to informed counterparties. Liquidity providers can limit their trading to uninformed counterparties if they can obtain sources of order-flow from customers whom they know to be exclusively or primarily uninformed traders, such as their own or other firms' retail customers or passive institutional investors. Accordingly, some liquidity providers trade primarily with their own customers or pay other broker-dealers to route them their retail customer orders.

The liquidity provider's direct trading with these orders may or may not benefit the orders themselves, depending on the prices and conditions under which they are executed, and the degree of competitiveness in the market to purchase order flow. Irrespective of whether the orders are benefited, however, the fragmentation of trading that results from the internalization of these orders necessarily reduces the interaction of orders that helps create liquidity.

A related example is the desire of certain types of traders to exclude other traders from participation in a market, thereby improving the execution of their particular orders. Even though it benefits investors collectively that their orders all meet to interact, particular investors may see advantages in executing their orders outside of a single consolidated market. For example, institutional investors that trade in large size may receive inferior execution prices if they try to execute a large order directly in a public marketplace. Large orders tend to move prices to the disadvantage of the order, often before the trade is completed or even begun. A large trader may choose a variety of means to discretely execute the order to avoid other investors trading in advance of the order or pulling back contra-side interest. These institutional investors may use a broker-dealer to arrange the other side of the order directly with other large investors or to buy a portion of the block itself. Institutional investors may also seek a marketplace where they can trade with other large traders without the presence of other traders who might use information about the order to trade ahead.¹² Alternatively, these large investors might withhold a portion of the order from the market and execute it in smaller pieces over a period of time.

For their part, small investors may benefit from trading with a liquidity provider that offers to match or improve the prices otherwise available in the market for small orders.

12 Some trading venues, such as Liquidnet or POSIT, seek to limit their users to types of traders that are unlikely to be responding to non-public information about the issuer or short-term trading in the security by only trading large orders. Liquidnet, eg has an average execution size, as of November 2009, of 44,474 shares. See, <<http://www.liquidnet.com/about/liquidStats.html>> accessed 25 February 2010. In contrast, public markets, such as the public markets of the NYSE Group, have an average trade size of less than 300 shares. See eg <<http://nyxdata.com/nysedata/asp/factbook>> accessed 25 February 2010. POSIT holds periodic single-price crossing sessions that by design limits its attractiveness to traders with short-lived private information.

The liquidity provider may also pay the small investors' broker-dealer for its retail order flow, which may reduce the small investors' commissions or other transaction costs.

Thus, some of the sources of fragmentation result in potential advantages to all market participants, such as reduced costs, improved service, innovative systems and a more reliable physical structure produced by competition between markets. Other sources of fragmentation, and especially segmentation, such as the internalization of orders of uninformed traders, offer less benefit to the system as a whole, often favouring one class of traders at the expense of others. Whatever its source, fragmentation of trading, if not appropriately regulated, has the negative effect of reducing the competition between orders in a consolidated market that produces liquidity and accurate prices.

Therefore, securities supervisors are faced with a conflict between competition between orders and competition between marketplaces. This conflict is all the more significant because it is not clear that the network effect of a consolidated market is sufficient to counter the private advantages to be derived from segmented markets, including internalized orders and block crossing systems. As discussed below, the SEC and other securities market supervisors have also focused for a long time on the issue of marketplace consolidation and competition in the organized securities markets.

3. Mechanisms for consolidation

The previous section highlights two types of fragmentation: a benign fragmentation that results from the spatial and temporal dispersion of investors trading demands, and a more pernicious set of forces that can drive markets to fragment in structural ways that favour a subgroup of well-situated market participants at the expense of others. To address the policy concerns that arise from both such forces, and to manage the trade-off between consolidation and competition in these markets, there are a number of different mechanisms for strengthening order interaction. Most of these mechanisms will not be willingly accepted by market participants who own and control, and therefore benefit from, incumbent market structures. Rather, they are likely to require affirmative and compulsory action by the market regulator. Despite this, each of these alternatives has varying consequences for marketplace competition, including implicit trade-offs of the benefits and adverse effects of increased consolidation.

Temporal and spatial fragmentation

Benign issues such as temporal fragmentation could theoretically be addressed by requiring all trading in a security to take place at one point in time in a single call market, or at regular intervals through repeated call markets. This approach would be most beneficial for securities with low trading volume where a call market could concentrate available liquidity at specific points of time. However, the call-market approach is unacceptable to investors who want continuous liquidity in their securities. Continuous trading could be consolidated to a lesser extent by concentrating trading in specified

trading hours while restricting trading in a security after the specified trading hours. A continuous market with specified trading hours can be combined with a call market at the opening and closing of the specified trading hours, as is done on the New York Stock Exchange (NYSE), and with respect to the closing auction, Nasdaq as well.¹³ However, some investors trade in size episodically after normal trading hours, typically based on major news developments involving the security.

Spatial fragmentation, *per se*, is no longer the relevant issue because physical exchanges have been superseded by electronic trading platforms for which physical location is of no relevance.¹⁴ More relevant is the question of order 'segregation', or the inability of orders to fully interact with other trading interests simultaneously present across market venues. Such order-interaction concerns could be addressed by various combinations of information dissemination requirements, access requirements and intermarket priority rules.

Order segregation

One limited means of addressing order segregation is to ensure that each competing trading market publicly disseminates information about trading on its own market. This information informs investors of the current prices available across multiple markets, allowing them to better understand trading conditions and to more precisely price their orders and securities positions. Required market information could include the prices currently available on the market, such as the best quotes to buy or sell a security, and the prices at which trades have occurred. Policy choices include: (i) whether information is required only from marketplaces involving multiple liquidity providers or from each individual liquidity provider; (ii) whether the information includes all buy and sell quotes or just the best buy and sell quote; (iii) the speed of disseminating the current quotes and trade prices; (iv) the degree of firmness of the quote to be displayed; (v) the size of trades and quotes to be displayed; and (vi) whether the quoting and trading parties should be identified. This information could be made available individually by markets or jointly on a consolidated basis. This data could be free, priced according to substantive regulatory oversight or subject only to market forces.¹⁵ Generally, liquidity providers prefer to

13 See, eg Letter by Marc E. Lackritz, Securities Industry Association to Arthur Levitt, Chairman, SEC (Personal correspondence 8 July 1999) (arguing that extended trading hours will be a positive step in improving the competitiveness of the US capital markets, but that rules and infrastructure must be in place before after-hours trading begins).

After-hours trading does not match in volume the trading during regular hours. For example, on 31 December 2009, 37,100,337 shares traded on Nasdaq after hours, compared to 380,177,070 during the regular trading session. See <<http://dynamic.nasdaq.com/dynamic/afterhourma.stm>> and <http://batstrading.com/market_summary/?dt=2009-12-31&data_type=shares> accessed 25 February 2010. See also SEC Division of Market Regulation, Special Study 'Electronic Communication Networks and After-Hours Trading' (June 2000) (noting that 'trading after hours is extremely low in comparison with that of the regular sessions in exchange-listed and Nasdaq securities') <<http://www.sec.gov/news/studies/ecnafter.htm>> accessed 25 February 2010.

14 An exception to this point is the issue of 'co-location', in which a trading venue places the computers of its members in close proximity to its own execution engines, thereby minimizing order latency.

15 In 2006, NYSE Arca proposed to charge a fee for depth-of-book data, and this proposal was challenged. See Exchange Act Release No 54597 (12 October 2006) and SEC file no SRO NYSE-Arca-2006-21. Ultimately, NYSE Arca's proposal was approved. Exchange Act Release No 59039 (2 December 2008). The SEC concluded that the NYSE Arca data product was subject to substantial competition and thus did not require close SEC regulation of its fee levels.

display better quotes to uninformed and other selected investors than they are willing to display publicly to all market participants. Investors typically prefer not to display large orders publicly to avoid other investors trading ahead of their order, and they prefer not to print large orders immediately (although they would welcome others doing so).

A second limited means of addressing order segregation is to ensure non-discriminatory access by market participants to competing marketplaces. Such access reduces the difficulty of reaching liquidity that is dispersed across multiple competing markets. Access could be provided just to registered broker-dealers or also to other market participants. Access could be open to all, or only to broker-dealers or market participants that met reasonable characteristics. Access could be required to be provided by large marketplaces, marketplaces involving multiple liquidity providers or all liquidity providers. Liquidity providers generally prefer to limit access to their best prices to selected customers, while broker-dealers and other market participants desire access to all marketplaces, but may prefer to have access to a marketplace denied to others with different trading styles or investment characteristics.

Compelling order interaction to temper order segregation

A more aggressive means of addressing order segregation is to apply trading-priority rules across all markets trading the same securities. One intermarket priority rule could prevent a market from displaying a bid at the same or higher price as a current offer to sell previously displayed by another market, or an offer at the same price as a current bid previously displayed by another market. This prohibition of locking quotes would limit quoting on one market until the previously displayed quote of another market was executed or withdrawn.

A further intramarket priority rule could preclude trading in one market venue at a price worse than is currently quoted on another market. This 'trade-though' rule would require trading with another market's quote before trading at an inferior price. It presupposes the availability of reliable quote information from the subject markets and the ability to readily access these markets.

Each of these intermarket priority rules imposes a relatively modest degree of interaction between competing markets, and would have an accordingly limited impact on order competition across markets, while preserving strong marketplace competition. Other intermarket priority rules could have a greater effect on order interaction. One stronger rule could preclude trading in one market at a current price previously quoted by another market unless the trading market also displayed a quote at the proposed trade price. While not requiring orders to interact across markets, this 'trade-at' rule would limit the ability of a market centre to simply trade at a price previously quoted by another market without at least itself quoting that price for others to access.

An intermarket time-priority rule would most strongly encourage order interaction across markets. This rule could require that the first quote or order displayed at a price be

executed before any other order could be executed at that price or an inferior price. Under this approach, historically referred to as a 'consolidated limit order book' (CLOB),¹⁶ a market could only trade at a price better than the best price displayed by another market centre unless it first traded with each displayed quote in the order the quotes were displayed. The CLOB could consist either of all displayed quotes integrated in one system or all quotes displayed and maintained by the individual markets.

A CLOB would strongly reward the display of orders by guaranteeing them priority of execution at their displayed price based on their time of display; this would require interaction with displayed orders across markets. Non-displayed orders still would not be consolidated or protected. While a CLOB would encourage order interaction, it would do so by strongly preferring displayed orders over non-displayed orders, whether these were priced orders maintained undisplayed in a market or market orders that were matched without display. This priority for displayed orders could be so strong that it subsumes individual markets into the CLOB, and would disfavour large institutional orders whose display could result in a worse execution for the orders.

These consolidation requirements that have been discussed are unlikely to result from market forces or agreement among competing markets. Thus, they require some form of external compulsion. The most obvious source of this compulsion is regulatory action, based on the view that consolidated markets are a public good and that fragmenting market centres impose externalities on other market participants.

It is important to recognize, however, that the power of regulatory compulsion is limited by territorial reach. Each national regulator is limited to regulating activities within its national borders and to a lesser degree foreign activities that are directed from within its borders. National regulators are not generally successful in imposing their regulations on securities activities that are conducted wholly abroad, although at times national anti-fraud standards may apply to foreign activities in their securities.¹⁷ Thus, in the absence of agreement among national financial services regulators to impose the same national consolidation requirements on all international trading venues, which has never been seriously considered,¹⁸ a national regulator's success in imposing consolidation requirements on its markets is always limited by market participants' ability to move their trading in the subject securities offshore.

We note, however, that government authority is not the sole form of compulsion in these markets. A potentially powerful form of compulsion that could consolidate trading is the use by a dominant market of market power to pressure or require its market participants to trade its instruments only on its market. To be successful, the market must

16 Exchange Act Release No 14416, 'Development of a National Market System' (26 January 1978) (the 'January 1978 SEC Policy Statement').

17 See *Morrison v National Australia Bank Ltd*, 547 F.3d 167 (2d Cir. 2008) (on 30 November 2009, the US Supreme Court granted review of this so-called 'foreign cubed' securities fraud case. The US Supreme Court's decision may determine the circumstances under which non-US companies can be exposed to securities fraud actions in the USA).

18 Cf Technical Committee of the International Organization of Securities Commissions, 'Regulation of Short Selling' Consultation Report (2009) [8]–[9] (noting varying international short sale regulations) <<http://www.iosco.org/library/pubdocs/pdf/IOSCOPD289.pdf>> accessed 25 February 2010.

be sufficiently dominant in an important class of instruments that its market participants would suffer economic harm if excluded from trading on that market. It must also be able to limit its market participants' trading of its instruments by contract or membership agreement, or by preventing the clearance and settlement of the instrument on a fungible basis with similar instruments traded on other markets.¹⁹ The dominant market also could limit trading in its securities if it could preclude by contract the use of its market data by other markets. However, the SEC historically has been unwilling to bear the competitive cost of allowing a dominant securities market to use its market power to consolidate trading.

Other mechanisms to increase order interaction

Although trading rules and market-structure requirements are potent means to enhance order interaction, they are not the only tools at the regulator's disposal. Given their position in the chain of trade execution, market intermediaries such as brokers can play a pivotal role in decreasing the segregation of their customer orders. Regulators can strengthen the broker's role by applying a best execution standard that requires an agent to obtain the best execution for an order reasonably available in the market. This best execution standard could focus solely on the price, or include other factors such as price-impact costs and opportunity costs. Such a standard has the benefit of being flexible and adaptive with regard to changes in technology and trading opportunities when markets, including the order forms and routing possibilities, are evolving continuously.

A less obvious but extremely important condition to both the development of multiple marketplaces and the ability to consolidate orders for the same securities is the ability to transfer funds and securities between markets after a trade is done. In the past, the use of stock and bond certificates as a means of transfer of ownership ensured that transfer could be effected wherever a trade occurred. This portability of securities positions was maintained as securities certificates were immobilized in central securities depositories (CSDs) serving multiple marketplaces. The national clearance and settlement system implemented by the SEC pursuant to the Securities Acts Amendments of 1975 (1975 Amendments) ensured that individual CSDs attached to individual exchanges were linked together so that positions could be transferred from one CSD to another.²⁰ Over time, the individual CSDs merged or were acquired to form a primary CSD for equities and fixed income securities known as the Depository Trust Company (DTC), which enabled the settlement of trades wherever they occurred in the USA. With respect to standardized options on equity securities, the SEC encouraged the options exchanges to use a single clearing house, the Options Clearing Corporation (OCC), to issue and transfer the

19 See, eg 'Comments of the US Dept. of Justice to US Dept. of Treasury's request for comments on the Regulatory Structure Associated with Financial Institutions', 72 FR 58939 (17 October 2007) (noting that Dept. of Justice's conclusion that control exercised by futures exchanges over clearing services has made it difficult for exchanges to enter and compete in the trading of futures contracts).

20 See Securities Exchange Act s 17(a) (the 'Exchange Act') (noting the Congressional finding that the 'linking of all clearance and settlement facilities and the development of uniform standards and procedures for clearance and settlement will reduce unnecessary costs.')

options contracts traded on US options exchanges. A similar process resulted in the development of central counterparties (CCPs) for equity securities that expedited the clearing of trades by interposing a central clearinghouse as a counterparty to each side of a trade. Ultimately, CCPs attached to individual exchanges merged to form the National Securities Clearing Corporation (NSCC), owned by the parent of DTC. The presence of these CCPs and CCDs ensured that trades occurring on fragmented markets are efficiently cleared and settled in a central location.

4. SEC policies towards consolidation and competition in the equities markets

Since its inception, the SEC has sought to find a balance in the equity markets between the consolidation of trading interest and the competition between marketplaces. Over the years, the SEC reacted to changes in the markets caused by the enormous advances of telecommunications and automation, by seeking to encourage marketplace competition while maintaining the benefits of consolidation. As the markets evolved in reaction to technological change and regulatory actions, the SEC in turn needed to adapt its regulations to the market evolution. This process continues in the SEC's most recent regulatory proposals.

Early encouragement of competition

An early instance of SEC intervention in the markets to encourage marketplace competition was its 1936 Unlisted Trading Report and the 1941 Multiple Trading Case. In the 1936 Unlisted Trading Report, the SEC recommended allowing exchanges to continue unlisted trading of other exchanges' listed securities.²¹ When the NYSE responded to the decline in market-wide trading volume in the late 1930s by adopting a rule prohibiting its members from trading in its securities on another exchange, the SEC in 1941 issued an order eliminating this rule.²² These steps helped preserve some minimal level of competition by regional exchanges with the NYSE, which at that time handled 85–90 per cent of all exchange trading, but it did not seriously reduce the NYSE's dominant position.

The SEC next encouraged consolidation in reaction to changes brought on by the growing involvement of institutions in the equity markets. As institutions became the largest owners of equities during the 1960s, they sought ways to avoid paying the high fixed commission rates set by the NYSE for its members. To do so, the institutions traded blocks of NYSE securities in the OTC market, with a non-NYSE member or the institution traded on a regional exchange with a broker-dealer that would give-up part of its commission to another broker-dealer that provided research or other services to the

21 The SEC also recommended allowing exchanges to trade unlisted securities traded in the OTC market, but only subject to stringent conditions to avoid this exchange trading providing a means to avoid registration requirements for securities listed on an exchange. SEC, 'Report on Trading in Unlisted Securities Upon Exchanges' (3 January 1936). See Walter Werner, 'Adventure in Social Control of Finance: the National Market System for Securities' (1975) 75 Colum L Rev 1252.

22 Re *Rules of the New York Stock Exchange* 1941 10 SEC 270, 272–3.

institution. Some institutions even registered an affiliated broker-dealer as a member of an exchange. The NYSE reacted to this fragmentation through enforcement of NYSE Rule 394, later renamed Rule 390, which prohibited NYSE members from effecting trades in NYSE securities in the OTC market.²³ The SEC eventually responded in 1968 by initiating a review of fixed commission rates that culminated in their abolishment in 1975. Eliminating fixed commissions was perhaps the most important step for consolidation that the SEC could take, thus ending the fixed commission distortions that drove trading to regional and OTC markets. However, the commission rate-review process had focused the Commission and Congress on the need for a central market system for securities to address the growth in trading in NYSE-listed stocks on regional exchanges and the OTC market, and these efforts continued even after fixed commissions were abolished.²⁴

In 1972 the SEC took its first direct action to address fragmentation, using one of the least intrusive-consolidation approaches: requiring reports of all trades in exchange-listed securities to be disseminated by exchanges, and later also by the OTC market, on a consolidated basis.²⁵ Included were reports of block-size orders. This step was bitterly fought by the NYSE, which questioned the SEC's authority to mandate trade reporting under its recordkeeping and reporting authority.

National market-system (NMS) initiatives

Questions about the SEC's authority to address market-structure issues prompted Congress to grant the SEC explicit authority to mandate a national market system for securities in the 1975 Amendments.²⁶ These amendments also banned fixed commissions, barred institutional membership on exchanges, provided a safe-harbour from fiduciary liability to investment advisers for using commission dollars to obtain 'soft dollar' research on securities and gave the SEC extensive authority to use automation and telecommunications to structure a national market system. This national market-system authority did not, however, resolve the issue of the proper balance between consolidation and competition; it rather suggested that the SEC was to encourage both.

The SEC moved rapidly, if not definitively, to use this new national market-system authority to address the issues of consolidation and competition. The SEC took the next step in disseminating market information by requiring the exchanges and the National Association of Securities Dealers, Inc. (NASD), the self-regulatory organization for the OTC market, to disseminate the best bid and ask quotes made public on the floor of the exchanges and by significant OTC market makers.²⁷ The SEC required quote dissemination regarding the categories of entities then publishing quotes—exchange

23 The Multiple Trading Case was viewed as precluding the NYSE from prohibiting members from trading on other exchanges. The NYSE unsuccessfully tried to convince the regional exchanges to ban institutional membership. See Werner (n 21).

24 See SEC 'Future Structure of the Securities Market', 37 FR 5286 (2 February 1972).

25 Exchange Act Release No 9850 (8 November 1972) (now Rule 601 of Regulation NMS).

26 See the Exchange Act s 11(a).

27 See Adoption of Rule 11Ac-1-1 under the Exchange Act, Exchange Act Release No 14415 (1 May 1978) (Rule 602 of Regulation NMS now contains this rule). OTC market-makers in listed stocks were required to disseminate their quote if they were responsible for 1 per cent or more of the consolidated volume in the quoted security.

specialists, floor brokers and OTC market-makers. The SEC only required the best quote of each exchange and OTC market-maker, not all of their quotes. In addition, the SEC provided in the quote rule for an exception for quotes withdrawn or executed immediately to avoid publishing quotes that were already stale when published.

In January 1978, the SEC set forth its most aggressive consolidation proposal of a 'consolidated limit order file' whose limit orders would have price and time priority over all other trading.²⁸ In the face of near-universal criticism, the SEC retreated in March 1979 to a more moderate proposal of price priority, but not time priority, for customer limit orders across all markets.²⁹ Even this approach was quietly discarded as the SEC focused on more modest changes. One of these was approval of the Intermarket Trading System (ITS) proposed by the NYSE and the regional exchanges in 1978.³⁰ The ITS system was a rudimentary routing system between the exchange floors, and later OTC market-makers, and a set of rules governing how the participants interacted. Although the ITS system was little more than linked teletype machines without any automated execution capability, it provided just enough access to the NYSE floor to keep the regional exchanges alive and mute their complaints. The ITS also included a 'trade-through rule' prohibiting a participant from trading at an inferior price to that quoted on another participant market without first routing an order to the better market and giving it a minute, later reduced to 30 seconds, to respond.

Beginning in 1975, the SEC initiated three separate rulemakings to eliminate or trim back NYSE Rule 390, thereby fostering competition with the NYSE floor at the price of less order consolidation. These rulemakings resulted in lifting first the Rule 390 prohibition on NYSE members executing agency trades in the OTC market,³¹ effecting riskless principal or principal trades in the OTC market with respect to securities listed on the NYSE after April 1979.³² Although these SEC-imposed revisions to Rule 390 permitted NYSE members to route orders to better prices in the OTC market and to make markets in a growing number of NYSE stocks, few members availed themselves of these opportunities.

In the meantime, Nasdaq, the electronic quotation system for OTC dealers developed by NASD at the SEC's urging,³³ was becoming increasingly aggressive, especially as a competitor with the NYSE for listing new technology stocks such as Microsoft, Apple and Intel. The SEC eventually applied the trade-reporting and quotation-reporting rules to Nasdaq stocks,³⁴ thus increasing the appetite of institutions for Nasdaq-listed stocks.

28 See the January 1978 SEC Policy Statement. See also, Harold M. Williams, Chairman, SEC, 'The Future of the Securities Industry', Gustave L. Levy Memorial Lecture, Twelfth Annual Conference on Wall Street and the Economy (New York 28 January 1978).

29 See Exchange Act Release No 15671, 'Status Report on the Development of a National Market System' (22 March 1979).

30 Exchange Act Releases Nos 14661 (14 April 1978) and 15058 (11 August 1978).

31 Exchange Act Release No 11942 'Off-Board Trading by Members of National Securities Exchanges' (19 December 1975).

32 Exchange Act Release No 16888 'Off-Board Trading Restrictions' (11 June 1980).

33 Michael J Simon and Robert LD Colby, 'The National Market System for Over-the-Counter Stocks' (1986) 55 *Geo Wash L Rev* 17.

34 Exchange Act Release No 16589, Adoption of Rule 11Ac1-2 (18 February 1980).

As Nasdaq grew, it clamoured for elimination of the off-board trading restriction of Rule 390, as well the repeal of NYSE Rule 500, which imposed almost insurmountable conditions for an NYSE issuer to delist.

However, Nasdaq itself had competitive issues, as the SEC's 1996 report of investigation of the Nasdaq market and its enforcement action against Nasdaq market-makers revealed. These market-makers had colluded in order to limit quoting by market-makers to 1/4 point spreads despite the availability of 1/8th quotation increments, while trading among themselves at narrower prices on Instinet, a private electronic trading system.³⁵ Nasdaq market-makers also prevented customers from narrowing the quote by refusing to publish their limit orders. Nasdaq had failed to investigate allegations of collusive trading arrangements by its dealers, and had discriminated against electronic traders that used Nasdaq's small order-execution system to trade electronically against Nasdaq market-makers' quotes.

Order-handling rules and Regulation ATS

The SEC in 1996 addressed these Nasdaq issues through enforcement action and by adopting the 'Order Handling Rules'.³⁶ These rules required OTC and exchange market-makers to publish customer limit orders in their quote unless the customer requested otherwise or the limit order was of block size. Market-makers were also required to include in their quotes any prices published in an electronic communication network (ECN), unless the ECN published the market-makers' prices directly in the consolidated quotation system.³⁷

Nasdaq immediately undertook to include ECN quotes within its quotation and order-routing systems. This provided an avenue for new ECNs to publish their quotes and draw order-flow through nationwide systems, and they immediately began to thrive, changing Nasdaq increasingly into a vibrant electronic market.

As ECNs grew in number and size, the SEC recognized that continuing to regulate them primarily as broker-dealers ignored their true status as trading markets. Despite this, the SEC also recognized that marketplace innovation would be stifled by requiring ECNs to register as exchanges, with attendant self-regulatory responsibilities, restrictions on institutional members and securities-registration requirements. Accordingly, after a long period of study, the SEC in 1998 adopted Regulation ATS and Rule 3b-18.³⁸ These rules exempted most alternative trading systems (ATSs) from registration as an exchange on condition that they were operated by a broker-dealer, were not the dominant market,

35 See SEC 'Report Pursuant to § 21(a) of the Exchange Act Regarding the NASD and Nasdaq Market' (August 1996) <<http://www.sec.gov/litigation/investreport/nasdaq21a.htm>> accessed 25 February 2010. See also Stipulation and Order, *US v Alex Brown & Sons Inc. et al.* (1996) 96 Civ [5313] (SDNY), available at <<http://www.justice.gov/atr/cases/f0700/0741.htm>>.

36 Exchange Act Release No 37619A 'Order Execution Obligations' (6 September 1996) (the 'Order Handling Rules Adopting Release').

37 An ECN is an electronic system that disseminates orders to more than one person and enables those orders to be executed. See the Order Handling Rules Adopting Release; see also Regulation NMS Rules 604 (the limit order-display rule that was originally adopted as Rule 11Ac1-4 was renumbered as a part of the adoption of Regulation NMS).

38 Exchange Act Release No 40760 'Regulation of Exchanges and Alternative Trading Systems' (8 December 1998) (the 'Regulation ATS Adopting Release').

did not exercise self-regulatory powers over their users and did not use the word 'exchange' (or a variant) in their name. ATs also were required to comply with certain exchange-like consolidation requirements. ATs were required, once they exceeded 20 per cent of the volume in a security, to include in the consolidated quotation system any quotes that they distributed to more than one person; to adopt fair-access procedures for potential users and to adopt system-reliability processes.³⁹ The ATs quotation and fair-access thresholds were later reduced to 5 per cent.⁴⁰ As broker-dealers, ATs were already required to report their trades.

One little-noticed requirement in the Order Handling Rules set the stage for the next competitive change. Because existing ECNs often traded in increments of 1/16th or smaller, the Order Handling Rules required a quotation system that published their quotes in eighths to mark with an indicator when the ECN quote actually was smaller than 1/8th. Nasdaq asked for relief from this requirement in return for allowing quoting on Nasdaq in sixteenths.⁴¹ Soon off-exchange market-makers in NYSE stocks began quoting in 1/16ths, prompting the NYSE to shift to 1/16ths also.⁴² This move to an unwieldy increment prompted the SEC and Congress to press for trading in decimals,⁴³ which was achieved through an industry plan in 2000.⁴⁴

The combination of decimal prices and ATs trading led to a large increase of trading volume, particularly in the Nasdaq market, and increased institutional discontent about their orders being leapfrogged by orders priced only one cent better. The NYSE came under pressure for more electronic trading, and criticisms mounted of the ITS trade-through rules' impediments to electronic trading. Under pressure from specialist front-running cases, the NYSE agreed to propose elimination of Rule 390 despite its continuing concerns about fragmentation of trading in its securities.⁴⁵ In response to these concerns, the SEC accompanied its approval of the withdrawal of Rule 390 with a discussion of fragmentation concerns and possible solutions, including discussion of matching, or 'trading at' a previously published quote.⁴⁶ The SEC subsequently adopted

39 Regulation ATs Adopting Release.

40 Regulation NMS Adopting Release at 207.

41 Letter by Richard R. Lindsey, Director, Division of Market Regulation to Robert Aber, Vice President and General Counsel, Nasdaq (Personal correspondence 31 July 1997).

42 The first market-maker to trade NYSE listed stocks in fractions smaller than 1/8th was Bernard Madoff Securities.

43 See Exchange Act Release No. 42914 'Order Directing the Exchanges and NASD to Submit a Phase-In Plan to Implement Decimal Pricing in Equity Securities and Options' (8 June 2000); Exchange Act Release No 42685 'Order Staying the Deadlines for Decimal Implementation; Notice Requesting Comment on Revised Decimal Implementation Schedules' (13 April 2000) and, Exchange Act Release No 42360 'Order Directing the Exchanges and NASD to Submit a Decimalization Implementation Plan' (28 January 2000). These SEC releases followed Congressional pressure. For example, in 1997 former Representative Michael Oxley introduced legislation to amend the Exchange Act s 11(a) to add a provision requiring quotations 'in dollars and cents' for transactions in equity securities. See HR 1053 (106th Cong. s 1 (1997)).

44 SEC Notice 'Decimals Implementation Plan for the Equities and Options Markets' (24 July 2000) <<http://www.sec.gov/rules/other/decimalp.htm>> accessed 25 February 2010.

45 Exchange Act Release No 42758 'Order Approving Proposed Rule Change to Rescind Exchange Rule 390' (5 May 2000).

46 Exchange Act Release No 42450 'Notice of Filing of Proposed Rule Change to Rescind Exchange Rule 390; Commission Request for Comment on Issues Relating to Market Fragmentation' (23 February 2000).

the mildest of these solutions, a rule requiring trading centres to publish statistics on their execution quality and brokers to publish their order-routing destinations.⁴⁷

Regulation NMS

Ongoing concerns about ‘trading through’ customer limit orders in the Nasdaq market, as well as the inadequacies of the ITS trade-through rule, led in 2004 to the adoption of Regulation NMS, the most recent SEC action on consolidation and competition.⁴⁸ Regulation NMS included a rule prohibiting trade-throughs of the quotes of electronic markets. The trade-through prohibition only applied to the best quote published by an electronic market, and not the depth of book, and it only prohibited trades at inferior prices, not trades that matched a preexisting quote. Regulation NMS also indirectly prohibited quotes that locked and crossed another electronic market’s quote. It required ongoing publication of consolidated quotation and trade prices, furthering the goals of consolidation, but allowed markets to sell other market-data products individually, encouraging and rewarding market innovations. In addition, it limited quoting in most stocks to one-cent increments, and capped the fees that could be imposed for access.⁴⁹

Regulation NMS is the most recent example of the SEC’s episodic reaction to consolidation and fragmentation issues, in which the SEC responds to particular enforcement issues or market developments with additional regulation. Typically this regulation builds on the framework established decades ago, often loading requirements on regulated exchanges, broker-dealers and market-makers.

Current balance of competition and innovation

Collectively, through these episodic efforts, the SEC has managed to create a system that balances consolidation and competition in the markets. To encourage integration of markets, this system requires reporting by all broker-dealers of all trades, block or non-blocks, within 30 seconds. It also requires display of their best bid and offer by exchanges, significant OTC market-makers and significant ATs (those ATs that publish quotes to more than one person and exceed 5 per cent of the volume in a security). These exchanges, market-makers and ATs must provide fair access to their quotes, and for ATs and exchanges, to their trading systems.

In addition, broker-dealers are subject to best execution requirements and must disclose to which trading centres they route their orders. For their part, trading centres must publish statistics to show what quality of markets they provide. Exchanges must maintain intramarket priority rules across their own market. In addition, trading centres must not trade at inferior prices to the best quote published by other electronic trading centres, or lock or cross their quotes.

47 See Exchange Act Release 43590 ‘Disclosure of Order Execution and Routing Practices’ (17 November 2000) (adopting Rules 11Ac1-5 and 11Ac1-6).

48 Regulation NMS Adopting Release.

49 Regulation NMS Adopting Release; See also Regulation NMS Rules 612 (minimum pricing increment) and 610 (access to quotations).

These requirements establish baseline integration requirements designed to ensure that broker-dealers take into account the best quotes when executing trades, and market centres do not ignore other market centres as their trading results in market moves. These requirements, however, leave many orders on individual markets isolated from other markets' trading.

The SEC has also fostered innovation and competition by encouraging the development of individual markets. The SEC has relaxed exchange-registration requirements for new markets through Regulation ATS, and allowed exchange groups to own multiple exchanges. The SEC has allowed exchanges to be owned by consortia of broker-dealers, if no single broker-dealer owns more than 20 per cent of the exchange. The SEC prevented the NYSE from precluding its members from internalizing on an exchange, and pressured the NYSE to eliminate Rule 390 to allow NYSE members to route orders to OTC markets or trade with them internally. In addition, the SEC has allowed exchanges to slacken their priority rules to allow market-makers to internalize their own customer orders, without giving priority to other quotes already present at that price on the exchange if the market-maker matches the best price in the market.⁵⁰

The results of Regulation NMS have been dramatic. All US exchanges have become primarily electronic, including the NYSE and American Stock Exchange. The replacement of the ITS with Regulation NMS trade-through rule has encouraged widespread electronic trading in NYSE stocks, with greatly increased volume and greatly reduced trade size. Similar trends have prevailed in Nasdaq stocks, although the change has been less pronounced because of the prevalence of electronic trading before Regulation NMS. Electronic traders that trade frequently (high-frequency traders), although few in number, have become a large part of the trading volume in listed stocks.⁵¹

Institutional traders appear to increasingly trade in ATSS that do not publish quotes. Many of these so-called 'dark pools' do not publish quotes at all, while others show prices internally but are exempt from public display of their quotes under the 5 per cent market-share exception in Regulation ATS. Some dark pools have sought to attract trading interest from market participants by distributing 'indications of interest' (IOIs) to other markets. Because IOIs are excluded from the quote-rule requirements, ATSS and other market participants have not treated IOIs as quotes even when they may be actionable.⁵²

European experience with consolidation and market competition

In recent years, non-US regulators have increasingly developed regulatory systems to address similar consolidation and market-competition issues. Generally, in most

50 See, eg the 'preferencing rule' of the National Stock Exchange, approved in Exchange Act Release No. 37046 (29 March 1996), 61 FR 15322 (5 April 1996).

51 Rosenblatt Securities Inc. 'An In-Depth Look at High Frequency Trading' (7 September 2009) (estimating that over 60 per cent of trading volume in US equities is from high-frequency traders) (the 'Rosenblatt High Frequency Report').

52 At present, the definition of 'bid' or 'offer' in Rule 600(b)(8) of Regulation NMS excludes 'indications of interest.' Because the terms 'bid' and 'offer' are used in Rule 602 of Regulation NMS (the 'quote rule'), indications of interest are excluded from the quote rule.

countries trading of domestic equity securities was concentrated on one national exchange, and where, as in Germany, this trading was dispersed over regional exchanges, these local exchanges coalesced into one national exchange. Banks could trade large institutional orders off the exchange, but these trades were eventually reported to the exchange or national market supervisor. Under these conditions, little competition existed and consolidation was assured.

However, when national exchanges converted from mutual organizations owned by their members to for-profit exchanges, their ambitions exceeded the scope of their domestic markets. Particularly in Europe, exchanges began competing fiercely for market share in non-national companies. These efforts were hindered in some jurisdictions by 'concentration rules' that required all trading in a security to take place on a single national platform. While the EU's 1995 Investment Services Directive largely did not address cross-national trading issues, the EU ultimately resolved national disputes over this fragmentation by adopting in 2004 the Markets in Financial Instruments Directive (MiFID) (in force 1 November 2007). MiFID eliminated the concentration rules.⁵³ It also imposed a set of requirements on European market participants similar to those adopted by the SEC over the course of the three preceding decades. MiFID required the disclosure of trade reports by exchanges, multilateral trading facilities (equivalent to ATSS) and systematic internalizers (equivalent to US market-makers).⁵⁴ Importantly, and distinct from the USA, MiFID allowed the deferred publication of certain block trades, and did not create a consolidated system for trade reports.⁵⁵

MiFID required investment firms to make public their customer limit orders, typically by transmittal to an exchange or multilateral trading facility. It also required systems that continuously match orders to publicly disclose their top five levels of quotes, and it required market-maker-based systems to disclose the market-makers' best quotes. The quotes of these market centres do not need to be consolidated with other market centres.⁵⁶ Waivers from pre-trade disclosures apply for large trades and for dark pools.⁵⁷

MiFID also imposed a best execution rule on broker-dealers that focuses on obtaining the best possible result for the client. The execution price is not determinative, as best execution also includes 'price, costs, speed, likelihood of execution and settlement, size, nature, or any other consideration relevant to the execution of the order' as well as the characteristics of the client (retail or professional), the type of order, the characteristics of

53 Commission Directive 2004/39/EC[2004] <<http://eur-lex.europa.eu/LexUriServ/site/en/consleg/2004/L/02004L0039-20060428-en.pdf>> accessed 25 February 2010; Commission Directive 2006/73/EC[2006] <<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2006:241:0026:0058:EN:PDF>>; Commission Regulation (EC) No. 1287/2006 <<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2006:241:0001:0025:EN:PDF>> accessed 25 February 2010.

54 See European Commission Directive 2004/EC arts 28, 30 and 45; see also European Commission Directive 2006/EC arts 27 and 28 (providing that the following must be made public: trading day and time of execution, instrument identification code, unit price, price notation or currency, quantity of shares traded and the execution venue).

55 Several data vendors offer services that consolidate quotes and trades from multiple markets.

56 See European Commission Directive 2004/EC arts 27, 29 and 44; arts 17–26 of the 2006 European Commission Directive 2006/EC arts 17–26.

57 See, eg Committee of European Securities Regulators 'Waivers from Pre-trade Transparency Obligations under the Markets in Financial Instruments Directive' Ref.: CESR/09-324 Updated 6 January 2010 <http://www.cesr.eu/data/document/09_324_Update_06102010.pdf> accessed 25 February 2010.

the financial instruments in question and the characteristics of the trading venues through which the order can be executed.⁵⁸ Despite this, MiFID does not impose a common law agency duty on brokers with respect to best execution, nor does MiFID impose an explicit trade-through rule on trade executions.

These changes have resulted in a significant increase in market competition in Europe, with the still-dominant national exchanges being challenged by the rise of over 100 new multilateral trading facilities.⁵⁹ The EU is also experiencing an increase of HFT and the use of smart order routers. Concerns have arisen about the dispersion in the EU of market information from individual reporting of quotes and trades by market participants.⁶⁰

5. Current SEC concerns

Two years after full implementation of Regulation NMS, the SEC has initiated an intensive review of the relationship between dark pools and public markets, together with targeted proposals to address particular issues involving the integration of trading markets. This review is yet another episode in the SEC's effort to maintain a balance between consolidation of markets and competition between marketplaces.

Flash orders

The SEC took the first step of this review in September 2009, by proposing to ban 'flash orders' in the equity and exchange-traded options markets.⁶¹ The term 'flash orders' refers to a practice whereby a trading centre, whose quotes are not at the National Best Bid and Offer (NBBO), will for a few milliseconds show certain trading centre participants its customer buy orders priced at the national best offer, or customer sell orders priced at the national best bid. Market participants with fast electronic connections can then execute the orders at the flash price. If the order is not immediately executed, the trading centre withdraws the order without exposing it in the consolidated quote.⁶²

The SEC was concerned that although flash orders provide a customer whose order is flashed with a better price, they are a device to avoid interacting with other markets and thus undermine the relatively modest consolidation requirements in Regulation NMS. Of

58 See European Commission Directive 2004/EC art 21, see also European Commission Directive 2006/EC art 44–46.

59 The market share of regulated exchanges has fallen from 80 to 65 per cent. See CFA Institute Centre Publications 'Market Microstructure: The Impact of Fragmentation under the Markets in Financial Instruments Directive' (December 2009).

60 For example, in a recent survey of members involved in European markets, the CFA Institute Centre for Financial Market Integrity found no empirical evidence that fragmentation has been detrimental to the quality of the price-formation process, but did find that market fragmentation in the EU has created difficulties in trade-reporting obligations. The CFA Institute Centre concluded that the findings highlight the need for an accurate, complete and clear picture of market prices. Investors should have fair access to such consolidated data. The Centre recommended that European authorities pursue the implementation of a consolidated tape for quote and trade data for European equity markets. A consolidated tape would improve market transparency and best serve investors' needs. *Ibid.*

61 See Flash Order Elimination Proposal.

62 Davis Polk and Wardwell LLP, *Client Newsflash*: 'SEC Proposes to Ban "Flash" Orders; Announces Broad Review of Market Structure Issues' (21 September 2009) <<http://www.davispolk.com/files/Publication/afe67958-1fc3-405b-8fc0-6b5b35b33da7/Presentation/PublicationAttachment/c8d05d5c-608b-491c-b301-6e1967c420de/09.21.09.SEC.ban.flash.orders.html>> accessed 25 February 2010.

special concern to the SEC was the inability of most investors to interact with these flash orders because they did not become part of the public quote. The SEC also was concerned about the conflict between flash orders and Regulation NMS's prohibition on 'locking quotes', ie quotes that 'lock the market' by matching the quote on the opposite side of the best bid and offer. To address these concerns, the SEC proposed to remove the exception from the quote rule which excludes from the requirement to display quotes '[a]ny bid or offer executed immediately after communication and any bid or offer communicated by a responsible broker or dealer other than an exchange market maker which is cancelled or withdrawn if not executed immediately after communication.' As a result, flash orders on an exchange would need to be included in the exchange's public quote. As a practical matter, these flash orders could not be displayed at their usual prices because they would lock the public quote.

Dark pools

In November 2009, the SEC followed up its salvo against flash orders with a broader proposal regarding dark pool ATSs.⁶³ This proposal was intended to integrate dark pools more closely with the public markets by increasing the information that dark pools make public and restricting their use of IOIs. The dark pool proposal sought to increase transparency and mitigate fragmentation by (i) treating actionable IOIs as quotes; (ii) lowering the trading volume threshold at which an ATS is required to display its best-priced orders for a listed stock and provide non-discriminatory access to such orders to non-subscribers from 5 per cent to 0.25 per cent of market share in such stock and (iii) requiring real-time disclosure of the identity of each ATS that executes a trade, instead of reporting these trades generically as having been executed 'over-the-counter'. Each proposal had an exception for block-size quotes or trades.⁶⁴

The dark pool proposal reflects the SEC's growing concern that the balance struck in Regulation NMS and prior actions was not resulting in sufficient integration of competing markets with trading interest on other markets. In the dark pool proposal, the SEC sought to remedy this imbalance by using the mildest form of integration, which entailed increasing the dissemination of market information regarding dark sources of liquidity.

The IOI proposal was intended to prevent ATS, exchanges and OTC market-makers (the traditional categories of entities required to publish their quotes) from avoiding publishing their trading interest by labelling it an IOI when it was actually tantamount to a quote. This proposal would force dark pools to remain dark or to publish quotes, rather than use IOIs to solicit trading interest. In doing so, the proposal favours quote dissemination over less formal, and less public, means of interaction.

63 See Dark Pool Proposal.

64 Davis Polk and Wardwell LLP, Client Memorandum: 'SEC Proposes Additional Transparency for "Dark Pools" and Intends to Issue Additional Market Structure Proposals and Concept Release Soon' (17 November 2009) <http://www.davispolk.com/files/Publication/7ff00278-17a7-465e-82cb-02bcd05f3bcd/Presentation/PublicationAttachment/e65fe65a-2101-405b-a083-041668a9cb33/111709_dark_pools.pdf> accessed 25 February 2010.

The 0.25 per cent quote threshold proposal was intended to require ATS quotes to be made public and accessible at a much earlier stage of ATS development than under Regulation ATS. Regulation ATS erred on the side of promoting development of new trading centres by applying a quoting threshold of 20 per cent, lowered to 5 per cent by Regulation NMS. The dark pool proposal will constrain the approximately 12 dark pools that disseminate quotes only to subscribers, but not the approximately 61 dark pools that do not disseminate quotes.⁶⁵ The dark pools' 0.25 per cent threshold seems aimed at preventing dark pool users from avoiding quotation display by spreading their trading interest among a number of sizeable dark pools who operate just below the 5 per cent quoting threshold.

The proposal requiring disclosure of ATS identity on trade reports is designed to help traders identify which ATSs are active in a security and may have current trading interest. The identification proposal may unintentionally reduce ATS competition without increasing integration if the identification of a dark pool as the source of a sizeable print discourages institutional traders from entering block orders in dark pools.⁶⁶

These proposals tweak existing disclosure mechanisms to increase the interaction between dark pools and other markets. The SEC followed these proposals in January 2010 with a broad review of market structure issues.

Concept release

On 14 January 2010, the SEC published a concept release on equity market structure.⁶⁷ The release seeks the public's view about whether or not the current state and trajectory of equity market structure is conducive to capital formation and long-term investment, and whether non-professional traders, both retail and institutional, are at a disadvantage relative to trading professionals. After reviewing the current state and structure of equity markets, the release targets three specific areas of concern: market performance and quality, HFT and undisplayed liquidity (including dark pools.)

With respect to market performance, the release asks whether current market structure has struck the correct balance between serving the needs of short-term traders and long-term investors, while acknowledging that the two may at times use similar trading techniques. The Commission asks whether current measures of trading costs, including those in Rule 605 of Regulation NMS, are sufficient to judge market quality.⁶⁸ The Commission also questions whether institutional traders need different market-quality metrics than retail traders. Although the Commission discusses the usefulness of data from Rule 605 of Regulation NMS, it is notable that the release does not re-examine the role of the broker in the execution process. The utility of Rule 605 and 606 statistics is

65 Dark Pool Proposal at 54.

66 See, eg Comment Letter by Liquidnet Inc. to the Dark Pool Proposal (21 December 2009) <<http://www.sec.gov/comments/s7-27-09/s72709-25.pdf>> accessed 25 February 2010 (stating that aspects of the Dark Pool Proposal could take away trading choices from institutional traders who are concerned about information leakage).

67 Concept Release on Equity Market Structure, Release No 34-61358, 14 January 2010.

68 Rule 605 requires market centres to disclose various types of information about execution costs, including quoted and realized spreads, price improvement, execution time and fill rates.

based on the idea that an informed investor would look at a broker's routing practices to see if orders were being routed to low-cost venues. However, smart routing causes many trades to be 'conditional' orders, in that orders are routed to venues on an order-by-order basis given current (to the millisecond) data. In such a world, the best trade may be obtained at a traditionally slow or costly venue. The Commission may wish to reconsider how execution statistics are computed. Investors should care about the expected costs of using a particular broker, given that broker's technology and routing strategies. Thus it may make more sense for the Commission to require brokers to compute and disseminate all-in cost statistics at the broker level, rather than the disaggregated routing and trading venue numbers that are produced today. In this way, investors can directly compare brokers' execution cost figures and include these figures in their calculus along with other aspects of broker quality.

The second broad topic raised in the concept release is HFT. Although there is no precise definition of HFT, the release observes that it is generally associated with strategies that use high-speed computers for generating and routing orders, makes frequent use of order cancellations and results in trading positions with no net exposure at the end of the day, among other things. HFT has become a large majority of the trading volume in listed equities.⁶⁹ High-frequency traders pursue many strategies, including price arbitrage and momentum strategies. The release also discusses HFT order-anticipation strategies that attempt to use public information to trade in front of large market-moving orders, often to the detriment of such orders.

Most notably, the SEC considers the role of HFT to supplant traditional provision of liquidity by market-makers and specialists. In the recent past, market makers would use time and place advantages to quote continuous two-sided markets, providing prices and liquidity to traders while profiting via the bid-ask spread and superior short-term information. This liquidity has in large part been supplanted by algorithmic HFT. These traders have none of the obligations or advantages of traditional market-makers, yet have contributed to the narrowing of spreads. Such traders have made traditional market-making untenable in many trading venues. The Commission asks whether liquidity provision by such means should be left to competitive forces or whether a regulatory touch is required. The release also asks specific questions about advantages provided by co-location of the computer servers of high-frequency traders in close proximity to an exchange's computer system.

The third area in which the Commission seeks information relates to undisplayed liquidity. Many of the issues here are not new in that the release addresses whether hidden liquidity harms execution quality for some traders and harms price discovery more generally. The Commission raises an issue considered around the time Regulation NMS was adopted, the 'Trade-At' rule, which would prohibit market centres not quoting at the NBBO from merely matching the NBBO when an inbound order arrives. The venue would instead be required either to price improve the order relative to the NBBO, or to

69 The Rosenblatt High Frequency Report (n 51).

route the order to a market centre quoting at the NBBO. Perhaps most importantly, this section of the release asks about the current fair access requirement associated with Regulation ATS. Fair access to ATS trading in a particular stock is required when the ATS's market share in that stock exceeds 5 per cent. The SEC has proposed to lower the display threshold, but not the fair access threshold to 0.25 per cent; the concept release explores whether the fair access threshold should be lowered to match the quote threshold. Because the Regulation ATS requirements are for 'fair' access, and not 'equal' access, the release asks probing questions about how terms like 'fair' could be administered by the ATS, or by the Commission in its oversight of ATS processes.

The concept release is not surprising given the SEC's recent pronouncements and the proddings and letters the Commission has received from Congress and key constituents, and the section on dark liquidity echoes themes in the earlier proposed rulemaking. A number of issues in the concept release are worthy of discussion and perhaps rulemaking. It will be important for the Commission to separate such issues out from the negative rhetoric that is in the air about dark pools and HFT, and progress in a substantive sound manner.

6. Propositions to guide consolidation requirements

In its recent concept release and rulemakings discussed above, the SEC is trying yet again to find a balance between the need for consolidation of trading interest and competition between market venues. Finding the appropriate balance ensures that the equity markets are liquid and efficient. Divining the balance is difficult; maintaining the balance is even more challenging in the face of ever changing market developments and trading strategies, many of which are unfamiliar to the SEC until they become widespread and entrenched.

Improving conditions for individual investors

We believe that several guiding propositions, crafted with an eye towards pragmatism, may be helpful in making difficult decisions regarding whether to impose consolidation requirements in particular situations. One such proposition is that order-consolidation requirements should be relaxed when this benefits individual investors. Because individual investors are typically less informed, use less technology and are less sophisticated than the marginal trader, execution of their orders deserves special consideration. As discussed previously, the orders of individual investors are profitable for liquidity providers, and so under competitive conditions liquidity providers will provide price improvement and reduced costs for individual investor orders. In these circumstances, individual investors will benefit from dealing directly with liquidity providers, and imposing the full panoply of consolidation requirements would reduce these benefits.

For example, while generally the quote rule would require market makers to publicly disseminate their best quote, it would be consistent with this first principle to allow internalizing market-makers to quote at a price away from the best bid and offer to

market participants generally, while trading with individual investors at prices better than the best bid and offer, or at the best bid and offer but with enhanced depth. Internalizing dealers can do this because individual investors are uninformed, and thus no adverse selection arises from giving them very favourable terms of trade. Were these same favourable prices to be offered on a market-wide basis, the liquidity provider would systematically lose money to traders with superior non-public information, such as hedge funds. The necessary condition for such a policy to benefit individual investors is that the market for order-flow is sufficiently competitive that dealers are forced to give good executions to these orders, and not keep the economic surplus for themselves.

However, this proposition would not preclude applying consolidation requirements to all providers of liquidity to individual investors. In many cases, the internalization of individual investor orders primarily benefits the liquidity provider while offering nothing to the retail order. In these cases, applying consolidation requirements to the liquidity provider would better integrate the markets without hurting individual investors. The SEC's recent flash quote proposal may be an example of this situation: flashing individual investor orders to selected liquidity providers at the existing quote clearly benefits the liquidity providers, who can trade with the orders without exposing their interest in a quote. However the flashed orders themselves, which can represent retail trading interest, do not necessarily benefit as they merely receive an execution at the NBBO, and would do no worse had the order been routed to the inside market. However, they miss out on any opportunities for price improvement that they might obtain on away markets, perhaps due to hidden trading interest. Finally, flashing these orders lessens the incentives for other markets to quote aggressively to attract orders. Liquidity providers with access to an exchange's flash order feed can free ride on the quotes of other exchanges, enjoying a free option to interact with the flashed order. Restricting these flashed orders would therefore be consistent with this first proposition.

Responding to dominant markets

A second proposition is that deconsolidation should be permitted when there is a dominant market venue that can exert market power over the terms of trade in securities. As discussed above, a highly consolidated market can promote efficiency and liquidity, but it can also confer monopoly status on the exchange itself. As a monopolist, an exchange will overcharge for its services and will underproduce its core offerings. Consolidation will come with self-interested behaviour on the part of the exchange and its members. In order to keep the market contestable, a regulator may promote policies that allow orders to migrate from the exchange to other trading venues, and may work to actively promote new trading facilities within the national market.

For example, as discussed above, the SEC fought the NYSE over off-board trading restrictions that prohibited their members from trading listed securities away from the exchange. Though such a policy weakened order interaction, it enhanced the nascent over-the-counter market that eventually grew to be a serious competitor to the NYSE, for

both large and later for small orders. Similarly, in the early 1990s the SEC allowed the regional exchanges to ignore time priority of orders and to engage in the practice of preferencing order-flow to exchange members. This practice allowed regional exchanges such as the Cincinnati Stock Exchange to internalize the order-flow of its members, in effect granting a regulatory subsidy to regional markets. This had the effect of drawing orders to the regionals at a time when their economic viability was in doubt. This in turn put pressure on the NYSE to compete more intensively for these profitable orders. A final example can be seen in the explicit policy of the SEC to allow embryonic 'exchanges' to be created and to grow free of regulatory encumbrances, subject to Regulation ATS described in Section 3.

Recognizing investor privacy

A third proposition is that deconsolidation of orders should be permitted in situations where the customer will never permit its orders to be consolidated or to be exposed to the public. These wary customers typically include institutional investors trading in large size, where revelation of the order will result in adverse market moves with the order receiving a worse execution. In these circumstances, imposing consolidation requirements will not succeed in exposing the order. The only question is where the order will be kept dark: in the institutional investor's own order-management system, in a dark pool or as dark interest on a public market.

Consistent with this proposition, the SEC's limit order-display rule, adopted as part of the Order Handling Rules, allowed investors to choose to not have their limit order displayed. It also exempted block-size orders unless their owner requested display of the order.⁷⁰ For similar reasons, the SEC approved dark order types offered by exchanges, and did not object to dark orders being maintained on ECNs subject to the Order Handling Rules.

This proposition may be used to examine the SEC's proposal to require the identification of trades printed by dark pools. If a dark pool must identify its trades on a real-time basis, institutional traders may shun dark pools tailored to large institutional trades, and will trade only in small size in generic dark pools and public markets or in large size with block desks whose prints need not be identified under the proposal. Little is advanced in such an equilibrium, which suggests that the SEC may want to reconsider this aspect of their proposed rule.

Encouraging competition on execution quality

Two other closely related considerations may be relevant to the design of a regulatory consolidation policy. The first is the degree to which traders can evaluate the quality of their execution, and the second is the degree to which the market for retail brokerage services is competitive. With respect to the evaluation of execution quality, note that the core problem in markets with limited consolidation is that orders may receive poor

⁷⁰ Regulation NMS Rule 604.

executions due to lack of order interaction or through broker self-dealing. Such concerns can likely be mitigated if traders, even on an *ex post* basis, can measure and compare the quality of their executions. If they can do so, brokers and execution venues will develop measurable reputations and track records, allowing market discipline to penalize those participants who provide poor executions, whether through neglect, ignorance or self-interest. SEC rules such as Regulation NMS Rule 605 and 606 lower the costs of these comparisons.

Similarly, while we cannot expect retail investors to engage in such measurements and comparisons, their broker-agents can. Brokers will have an incentive to do so, and to avoid self-dealing behaviour, only to the extent that the market for their services is competitive. If it is, then brokers will not be able to expropriate the returns of naïve retail customers without suffering a loss of market share. Aggressive enforcement of best execution obligations by the regulator can further enhance these competitive forces.

These propositions for applying consolidation requirements are not simple in application and require considerable factual analysis. While they do not solve all market-structure problems, these propositions apply to many recurrent market issues. Indeed, they are inherent in many of the decisions regarding the balance of consolidation and competition that have shaped the current US equity market structure.

7. Conclusion

Vibrant primary equity markets require liquid and efficient secondary trading markets. Liquid markets in turn require sufficient consolidation of trading interest to provide the ability to buy and sell in size and at efficient prices. However, efficient markets benefit from competition between market venues, which reduces cost, improves service and fosters innovation. Thus regulators' desires to consolidate trading interest while simultaneously promoting competition between market venues are in tension, and deciding how to balance the two necessarily involves trade-offs. The issue is further complicated by certain market participants who, when insufficiently regulated, will use the interstices of market regulation to decrease order interaction to their own economic benefit.

Over more than seven decades, the SEC has taken actions that affect the balance between consolidation and competition between marketplaces. Many of these actions responded to activities of exchanges, market-makers or other market participants, often addressing particular problematic conduct. Subsequent regulation built on the framework of the earlier actions. These regulations required ongoing revisions to address changing technology and trading innovations. While it is possible that allowing a dominant market to exercise fully its market power could achieve a consolidation solution, the costs of this process were long ago deemed unacceptable for the US equity markets by the SEC, and subsequently by Congress.

In the wake of Regulation NMS, the SEC recently has begun reexamining the proper balance between consolidation and competition between marketplaces, and has proposed

three rules strengthening certain of the consolidation requirements of the earlier regulations. It has also sought comment on how to achieve the proper balance between dark pools and public markets, and the role of HFT in these markets. These issues are endowed with consolidation and competition implications. In addition, the SEC's success in achieving the proper balance between order consolidation and competition between marketplaces is of major importance to investors and the US capital-raising process.

In view of the importance of achieving this balance, this article has suggested several guidelines that can help resolve consolidation issues. These guidelines for when consolidation requirements should be relaxed—to benefit individual investors, respond to dominant markets, recognize customer privacy and rely on competition in execution quality—have long been inherent in the choices of the SEC. We believe they provide useful guidance in future decisions on integration and segmentation issues.