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Regulation and Innovation: Comparing U.S. and European Equity Trading Markets

Stavros Gkantinis

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Date: February 16, 2006

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Regulation and Innovation: Comparing the U.S. and European Stock Trading Markets

Stavros Gkantinis*

ABSTRACT: In the last two years, the major jurisdictions for equity trading, the U.S. and the E.U., introduced significant reforms in their market structure regulation, following diametrically opposite approaches. While the E.U. effort is deregulatory and decentralized, aiming to facilitate competition among marketplaces and enhance investors' choices, the U.S. regulation limits competition in a critical respect: price. To understand this divergence and predict likely effects on the underlying markets, this paper compares the previous regimes in the two jurisdictions and their outcomes. It illustrates that European market participants in a fiercely competitive regulatory environment revolutionized their trading services and organizational structure. In contrast, innovation in the U.S. has been modest, largely due to the long-standing dominance of the New York Stock Exchange, a dominance reinforced by SEC rules limiting competition on price. As recent reforms strengthen the earlier choices of each jurisdiction, the paper argues that the US policy of limiting price competition extends past failures into future policies. The conclusions of this paper illuminate debates on the optimal degree of regulatory intervention and theories of allocation of regulatory authority.

Introduction

Setting the rules of the market is a primary challenge for every policy-maker: how far should regulatory intervention go, so as to safeguard the interests of consumers while preserving the dynamism of market competitors? The image of a stock exchange floor exemplifies the vitality of markets, representing the constant interaction of buyers and sellers to form prices and close trades. Besides serving as a site of competition for incoming investors' orders, however, stock exchanges have also been engaging in competition with one another, as well as with other marketplaces, for the provision of trading services. Technological advances have allowed exchanges to expand their network beyond the confines of their physical locations, have facilitated the establishment of proprietary electronic trading systems that claim a significant portion of trading activity, and have provided new methods to disseminate trade information. This paper examines regulators' efforts to intervene in this "market for markets" and their consequences for stock exchanges, financial intermediaries and ultimately investors. In particular, the paper discusses two major questions every regulatory design involves: how invasive regulation should be, and where the authority to determine the structure of the

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market should lie. To assess how different approaches on these two issues affect the overall effectiveness of a regulatory system, this paper evaluates a system's success in promoting innovation, an important (and leading) indicator of market efficiency. It shows that interventionist regulatory systems tend to favor certain market participants over others, thus shielding them from competitive pressures and reducing their incentives to innovate. Only under regulator pressure will such protected market participants introduce reforms that have benefited markets in other jurisdictions for years.

The case of stock exchange market structure offers many advantages to research on the effects of regulation on advancing innovation in the underlying regulated industry. In the 1990s, the combined effects of rapid technological evolution and increasing globalization of finance triggered a series of developments in the stock exchange industry that put pressure on the existing market structure. These developments include growing cross-border trading volumes and increased institutional investor participation in the equity markets. In parallel, lower costs of entry in the market and speedier means of order execution permitted new entrants to challenge established market players and attract market share. In addition to market participants, regulators around the world also had to adjust their approach to the new realities of the marketplace. Responding to these developments, regulators in the two most important jurisdictions for equity trading, the U.S. and the E.U., made dramatic changes in the rules governing stock exchange market structure in the last two years. While both aimed to foster competition among trading venues, in practice they followed diametrically opposite approaches. In 2005, the U.S. Securities and Exchange Commission ("SEC") adopted Regulation NMS (National Market System) that introduced detailed rules regarding the interaction of orders originating in multiple trading venues in the U.S. In contrast, the 2004 E.U. Directive on Markets in Financial Instruments (the "Directive") required publicizing all information on trades relevant to market participants and did not include order interaction rules. This choice seems counterintuitive: in many policy fields, the U.S. has leaned towards lessening regulation and the E.U. has often been accused of devising burdensome regulatory schemes.

To explain this surprising choice of regulatory design, this paper connects the current wave of regulatory initiatives with past policies regarding market structure in each jurisdiction. Since 1975, the U.S. has been building a system of detailed rules and mandated electronic linkages among markets, administered by a federal agency, the SEC. On the European side regulatory intervention in market structure had been minimal. However, in the 1980s, and especially in the 1990s, European exchanges, operating in an environment of fierce competition with limited regulatory restraints, introduced substantial innovations in their trading and organizational models and completely transformed themselves in the process. In the meantime, the centrally mandated principles and infrastructure of the U.S. National Market System reinforced the advantages of major U.S. exchanges and left limited space to competitors seeking to gain market share by introducing innovative trading techniques. As major U.S. exchanges, thus shielded from competitive pressures, resisted specific commitments to innovation, the SEC was almost obliged by the circumstances to introduce regulatory changes that pushed reluctant exchanges towards long overdue reforms. Thus, greatly divergent policies pursued by these jurisdictions over the years allow a comparison of their

different effects on competition in the underlying markets and their consequences for innovation.

Academic debate in securities regulation has long sought an effective method to incorporate incentives for innovation in a regulatory framework primarily focused on investor protection. Scholars who have examined the optimal level of regulatory intervention in the equity trading markets appear divided: while some argue that specific characteristics of the equity trading industry, such as network dynamics or entrenched interest groups, justify a special role for regulation, others point to the risk of regulatory capture and criticize the current regulatory framework as overly restrictive of competition. Reform proposals for the securities industry focus instead on the allocation of regulatory authority in the global marketplace. These reformers argue that the absence of a centrally mandated regime for securities regulation will generate competition leading to greater innovation. By drawing a comparison between the U.S. and the E.U. experiences, this article shows that the E.U.'s deregulatory approach in market structure regulation has nurtured competitive forces that led European market participants towards greater innovation. Thus, it lends empirical support to the argument for deregulation. In addition, this paper contributes to the debate on where authority should be allocated by presenting the equity trading case in this context, and questions the soundness of the U.S. policy that assigns the role of market innovator to a federal agency.

Following this introduction, Part I presents how market structure regulation is related to current debates on the impact of regulation on innovation across diverse fields and explains in more detail why a comparison between the U.S. and Europe makes sense. Part II traces the introduction of the National Market System by the SEC, identifies the establishment of centrally mandated inter-market linkages and the price priority principle as the main themes underlying the SEC policy and discusses their shortcomings. Part III examines the European market regime in the 1980s and the regulatory constraints it imposed on competition among exchanges. Part IV presents the resultant fierce competition among European exchanges, and their convergence on a common trading model and a common organizational structure. Part V presents developments in the U.S. in the same period and highlights the resistance of major market players to reform and innovation. Part VI analyzes the 2005 SEC Regulation NMS, which moves SEC policy towards further intervention by strengthening the price priority principle, and explains how pressure from the SEC pushed the NYSE to introduce reforms in its trading model much later than European exchanges. Part VII shows the Directive on Markets in Financial Instruments to reaffirm Europe's confidence in letting competitive forces shape market structure. Part VIII summarizes the lessons drawn from this comparative discussion as to the effects of regulation on innovation and their impact on current academic debates. Part IX offers a conclusion.

Part I. Comparative Analysis of U.S. and E.U. Market Structure Regime and Current Academic Debates

I.a. Current Academic Debates on Regulation, Competition and Innovation in the Equity Markets

As the introduction of securities regulation in the 1930s was rooted in the experiences of the Great Depression, providing adequate protection to investors has been the underlying rationale of the U.S. regulatory framework and the main goal of the SEC. The academic community has extensively debated whether greater regulatory intervention or deregulatory policies promote investors' interests more effectively. To assess the successes and failures of each policy, scholars have often focused on innovation as a mechanism that improves market quality and as a leading indicator of market efficiency.

However, academics are divided on whether the character of the securities industry warrants greater or lower levels of regulatory intervention. According to a first group of scholars, the network dynamics in the securities industry reinforce the advantages of the large and established market players, prevent market competition and require regulatory intervention to impose innovation.[1] For a second group of scholars, regulatory intervention to protect investors and promote innovation is necessary because entrenched interest groups threatened by innovation would otherwise block it.[2] In contrast, a third group of scholars argues against heavy regulation, for fear that established interest groups will capture the regulator and stifle innovative initiatives that harm their interests. This third group relies on the strength of special interest groups to explain the perceived failure of the SEC to bring innovation to the stock exchange industry and implement a Congressional mandate that they interpret as pro-competitive and deregulatory.[3] For this last group, the emergence of competitors to established exchanges should direct regulators towards lowering levels of intervention in the market, so as to strengthen competitive forces that will generate innovation and protect investors.[4] They criticize the current regulatory framework for secondary trading in the U.S. as overly restrictive.[5]

The debate on reform proposals mirrors the debate concerning theories of regulation in the securities market. Faced with the increasing internationalization of equity markets, scholars have focused on the allocation of regulatory authority in the

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[1] *See* Robert B. Ahdieh, *Law's Signal: A Cueing Theory of Law in Market Transition*, 77 S. CAL. L. REV. 215 (2004).

[2] Professor Seligman notes that ". . . the SEC's role in facilitating the creation of a National Market System was pivotal." Joel Seligman, *The Future of the National Market System*, 10 J. CORP. L. 79, 82 (1984). *See also* Morris Mendelson & Junius W. Peake, *Intermediaries' or Investors': Whose Market Is It Anyway?*, 19 J. CORP. L. 443 (1994); Dale Arthur Oesterle, Donald Arthur Winslow & Seth C. Anderson, *The New York Stock Exchange and Its Out Moded Specialist System: Can the Exchange Innovate to Survive?*, 17 J. CORP. L. 223, 226 (1992). For a discussion of the role of exchange specialists on the NYSE floor, see *infra* text accompanying notes 13-14.

[3] *See e.g.* Jonathan R. Macey and David D. Haddock, *Shirking at the SEC: The Failure of the National Market System*, 1985 ILL. L. REV. 315 (1985).

[4] *See* Corrine Bronfman, Kenneth Lehn & Robert A. Schwartz, *The SEC's Market 2000 Report*, 19 J. CORP. L. 523, 526-7 (1994). *See also* Paul Mahoney, *The Stock Exchange as a Regulator*, 83 VA. L. REV. 1453, 1457 (1997).

[5] For example, Professor Laura Beny criticizes the current regulatory framework for its heavy reliance on the concept of an exchange as a natural monopoly, and its consequent overly interventionist and restrictive nature, and proposes increasing deregulation. *See* Laura Nyantung Beny, *U.S. Secondary Stock Markets: A Survey of Current Regulatory and Structural Issues and a Reform Proposal to Enhance Competition*, 2002 COLUM. BUS. L. REV. 399 (2002).

global market.[6] For some, the absence of a centrally mandated regime for securities regulation will unleash competitive pressures to innovate. For example, building on what she views as the success of competitive federalism in U.S. corporate law, Professor Roberta Romano wants to allow foreign issuers to list in the U.S. while complying only with disclosure requirements and other listing rules of their country of incorporation.[7] Other scholars want to give greater freedom to issuers. For example, Professors Stephen Choi and Andrew Guzman have proposed a portable reciprocity regime, which would allow issuers to freely choose a jurisdiction whose laws would govern the offering and offer securities in a foreign jurisdiction on a mutual recognition basis.[8] These proposals have sparked a heated academic debate questioning the merits of regulatory competition in the international securities markets.[9]

The comparison between two waves of U.S. and European regulation on market structure, assessed against their effects on the underlying markets, provides new insights for these academic debates. The lack of any substantive restraints to competition in the E.U. regulation allows us to observe whether a deregulatory policy can indeed bring innovation to the market, as its academic supporters argue, or whether it results in a market dominated by interest groups that resist innovation in order to protect themselves.[10] In the same fashion, European equity trading markets provide a real-life setting for examining the impact of decentralization of regulatory authority. Although there is no single European securities regulator, securities offerings, on which academic reformers have focused to date, are subject to a harmonized set of rules in Europe. In contrast, the equity trading markets have not been subject to harmonized rules and any reforms introduced by the Directive do not mandate specific market structure rules beyond transparency requirements. Thus, market competitors and national authorities had significant flexibility in shaping their systems and their rules. This E.U. approach can be usefully contrasted with the results of previous waves of U.S. regulation.

I.b. Why Compare the U.S. and the E.U. Equity Trading Markets?

In the last three decades, the U.S. and the European stock exchange industry have experienced similar pressures resulting from a series of developments in the global financial markets. In particular, technological advances have allowed the introduction of automatic trading systems characterized by lower costs per trade, higher speed of execution (and today, immediacy of execution), and a greater ability to absorb an ever increasing demand for trading services. In addition, barriers to entry the trading business have been lowered, as electronic trading venues are less costly to set up and do not

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[6] For a review of these proposals, and their connections with analogous debates occurring in the fields of corporate and banking law, see Howell E. Jackson, *Centralization, Competition and Privatization in Financial Regulation*, 2 THEORETICAL ENQUIRIES L. 2 (2001).

[7] *See* Roberta Romano, *Empowering Investors: A Market Approach to Securities Regulation*, 107 YALE L.J. 2359, 2419 (1998).

[8] *See* Stephen J. Choi & Andrew T. Guzman, *Portable Reciprocity: Rethinking the International Reach of Securities Regulation*, 71 S. CAL. L. REV. 903, 922 (1998).

[9] *See* Jackson, *supra* note 6, at 13-14.

[10] However, the possibility that a different regulatory regime from the one built by the SEC might bring greater innovation to the U.S. markets remains open.

require physical presence of members in a central location. As a result, a number of proprietary trading systems emerged seeking to take away market share from traditional exchanges. Moreover, electronic networks of communication provide much more efficient methods of dissemination of trading data and other information to financial intermediaries and investors. Additionally, market shifts have also had a large impact on the stock exchange industry. In particular, the increased share of market capitalization held by institutional investors and their rising participation in trading activity put pressures on the traditional trading system of exchanges that was modeled on retail trading. Institutional investors are interested in a trading environment where they can trade large orders directly with one another, to reduce the market impact of such orders and ensure anonymity and high speed of execution. Moreover, as trading fees and commissions represent a significant expense for investors with substantial trading activity, institutional investors pressed for lowering these charges. In parallel, new technological capabilities have led to a rise in the demand for cross-border trading, thus contributing to the overall increase in trading activity. Financial intermediaries, on the other hand, have also expanded internationally, have obtained memberships in multiple exchanges and trading venues, and have grown both through a larger network of clients and through increased consolidation in the investment banking business. As a result, they are now the receiving point for a large number of investors' orders, which allows them to internalize orders more efficiently. Overall, these developments, which are characteristic of the modern era of global financial integration, were equally felt in the U.S. and Europe, but prompted different regulatory responses.

Due to these trends, differences between the U.S. and Europe in the structure of the underlying U.S. and European markets grew gradually less important. In the U.S., the NMS included (until recently) only NYSE-listed stocks. Therefore, it covered a market characterized by the dominance of a major exchange, regional exchanges and Alternative Trading Systems ("ATS") provided most of the competition, rather than dealers internalizing orders. In European countries, exchanges trade primarily in separate sets of stocks, mostly originating in each exchange's local jurisdiction. Investment firms that internalize orders systematically and a few exchanges that issuers prefer for cross-border listings, such as the London Stock Exchange ("LSE") are the main source of competition for local exchanges, rather than ATSs.

However, in both Europe and the U.S., competitive pressures on exchanges were of the same nature: regardless of their form (i.e., ATSs or dealers), competitors focused on offering services mainly to institutional investors. Moreover, in both Europe and the U.S., pressures on stock exchanges often resulted from client demands, such as the growing demand for cross-border trading or for lower transactions costs. The combination of new competitors and new client demands multiplies pressures on exchanges, as client pressures are sharpest when clients have the realistic option of defecting to a competitor.[11] However, regulation that creates barriers to order flow migration can stop such processes, as an exchange with greater liquidity becomes dominant and need not compete in other respects.

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[11] *See* ALBERT O. HIRSCHMAN, EXIT, VOICE, AND LOYALTY: RESPONSES TO DECLINE IN FIRMS, ORGANIZATIONS, AND STATES (1970) (discussing the circumstances under which dissatisfaction will lead to voicing protest within an organization, as opposed to exit from an organization).

Moreover, in both jurisdictions, the exchange landscape is increasingly characterized by a few key exchanges. Increased consolidation among exchanges in Europe, with exchanges such as Euronext spanning a number of different European jurisdictions, has resulted in a reduction in both the number of separate sets of stocks being traded in Europe and in the number of competitors in the European exchange industry. On the other hand, the growing importance of Nasdaq-listed stocks and their inclusion in the scope of the National Market System is making the U.S. market resemble Europe a lot more; two major exchanges are in competition with each other, and each one is capturing the largest part of order flow in each of two separate sets of NMS stocks. For all these reasons, comparing regulation of European and U.S. markets is appropriate.

Although differences in the U.S. and E.U. equity trading markets have decreased over time, differences in the institutional framework for their oversight remain pronounced. Regulatory authority in the U.S. is concentrated in a single specialized administrative agency, the SEC, which is responsible for formulating policy goals, drafting legislation and carrying out enforcement. In Europe, legislation at the E.U. level is largely the result of a negotiation process among different states, steered by the EC Commission and finally framed with the participation of the European parliament. Even under the Lamfalussy process, which provides for uniform implementing regulation across the E.U., differences in the interpretation of the Directive and its implementing regulation by national authorities are expected to arise. Under existing European institutional arrangements, a high degree of political commitment among member states would be required to undertake an intensive and costly regulatory initiative such as NMS and its infrastructure.[12] However, the emphasis of this paper is not on the causes of market structure regulations, but rather on its effects. Regardless of the reasons that have prompted European legislation, and in particular the ISD and the Directive, towards a more deregulatory approach, this deregulatory policy has been pursued in Europe for sufficient time to produce discernible outcomes. This paper discusses these outcomes in comparison with the results of U.S. policy in the same field and uses conclusions drawn from this comparison to assess the effectiveness of recently adopted reforms in both jurisdictions.

Part II. The U.S. National Market System

II.a. U.S. Stock Markets in the Mid-1970s

Before 1975, market participants determined the structure of the U.S. equities markets; no specific regulatory framework existed.[13] A series of potentially anti-competitive practices adopted by U.S. exchanges, mainly the NYSE, brought market structure issues at the forefront of the regulatory agenda. This section presents the main

[12] In general, negotiation processes often involve compromises with interest groups in different jurisdictions, and these compromises can lead to a sub-optimal outcome. On the other hand, member state concerns about sovereignty make them particularly likely to agree on limited supra-national regulation, which often rhymes better with deregulatory approach that leaves ample room for national variation. However, in certain cases a deregulatory approach may be more efficient than a heavily regulated regime.

[13] *See* Norman S. Poser, *Restructuring the Stock Markets: A Critical Look at the SEC's National Market System*, 56 N.Y.U. L. REV. 883, 897 (1981).

market participants and the developments that led to the introduction of the first wave of reforms.

The NYSE was then, and remains today, the largest stock exchange in the U.S. by market capitalization. Yet human interaction still drives the NYSE trading process; brokers trade directly with each other or with specialists on the floor of the exchange, which only members can access. A floor broker wishing to trade in a particular stock will go to the post of a specialist assigned to that stock, where she will either seek other brokers and negotiate a trade with them, or leave the order for execution with the specialist. Specialists form a separate category of dealers who are required to intervene and trade against the prevailing trend in case of excessive demand or supply so as to enhance the liquidity of the exchange floor.[14] In return for this service, specialists are granted the exclusive privilege to act as market-makers (including the right to post a bid and ask quote and profit from the spread) on the floor of the NYSE. Specialists, who may deal in their own account or as agents for brokers, charge brokers a fee for their services, thus reducing the overall profits of a broker from a particular order.[15]

Large corporations were predominantly listed on the NYSE. By 1975, all other U.S. exchanges were mostly trading in stocks listed on the NYSE, after having acquired an "unlisted trading privilege" by the SEC. Thus, all exchanges shared a common list of stocks and they competed for order flow. Fragmentation of order flow among a number of exchanges, however, reduces the number of orders that interact, diminishing liquidity and raising concerns as to whether all orders can be executed at the best available price across all markets.[16] In addition, fragmentation leads to higher volatility, as it creates additional imbalances in the interaction of orders, some of which may point in opposite directions.[17] Therefore, minimizing the effects of a fragmented market while preserving competition among marketplaces poses significant challenges to policy-makers.

In the 1970s, the NYSE dominated stock trading in NYSE-listed stock. Over 80% of order flow was directed to the NYSE, providing this exchange with increased liquidity and a more dynamic bidding and asking process, which in turn resulted in better prices than those available in other exchanges. As a result, the NYSE led the price discovery process and competition with regional exchanges occurred on other parameters of order execution, such as transaction costs. The NYSE took advantage of its privileged position by engaging in a number of practices that put pressure on investors, if they were not openly abusive. For example, the NYSE commissions were calculated on the basis of a fixed amount per share, which harmed institutional investors trading in larger blocks. Overall, the dominance of the NYSE could was clear and problematic.

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[14] Specialists are under an obligation to trade so as to maintain "fair and orderly markets," Securities Exchange Act of 1934 §11(b), 15 U.S.C.A. § 78k(b) (2000).

[15] *See* Nasser Arshadi, *NYSE, Nasdaq, and Alternative Trading Systems: An Evaluation of the SEC's Proposal Toward a National Market System*, 7 FIN. MARKETS INSTITUTIONS & INSTRUMENTS 1, 3 (1998).

[16] *See* Charles M. C. Lee, *Market Integration and Price Execution for NYSE-listed Securities*, 48 J. FIN. 1008 (1993).

[17] *See* Ananth Madhavan, *Market Microstructure: A Survey*, 3 J. FIN. MKT. 205, 249 (2000). *See also* Iftekhar Hasan & Heiko Schmiedel, *Do Networks in the Stock Exchange Industry Pay Off? European Evidence* 11 (Bank Fin., Working Paper No. 2/2003, 2003) *available at* http://ssrn.com/abstract=432582.

II.b. The 1975 Amendments and the Establishment of the National Market System by the SEC

Silver v. NYSE signaled the need to intervene in the equity trading market. The Supreme Court made clear that certain exchange practices regarding commission charges and member selection could come under the scrutiny of the anti-trust legislation, unless it was clear that exchanges operated under the oversight of the SEC.[18] Following *Silver*, Congress amended the 1934 Securities and Exchange Act and authorized the SEC to eliminate anticompetitive stock exchange rules and practices and to establish a "National Market System," i.e. a regulatory framework that would encompass the various U.S. trading venues. This mandate did not prescribe a specific market structure for the SEC to implement, but provided the agency with ample policy-making power in this area, limited only by the following objectives: economically efficient execution of transactions; fair competition between brokers, dealers, and among markets; availability to brokers, dealers and investors of information with regard to quotations and transactions; practicability of best execution; and opportunity for investors' orders to be executed without the participation of a dealer.[19]

Two principles motivated the Congressional mandate: all trading venues should be given a chance to compete with the NYSE, and all investors should be given a chance to execute their order against the best quote on the market. What does competition with the NYSE consist in, and what is the best quote for each investor? These questions were left to be answered by the SEC, which undertook the role of creating the NMS.

The SEC's response was straightforward. If information on trades and quotes became available to all market participants at the same time, and each order could be transmitted to the market offering the higher (or lower) price, the fragmentation effects would be lessened and investors would be well protected. If all markets could compete on the basis of best price, i.e. if all markets could receive information on the price discovery process of the NYSE and compete with it directly, then NYSE dominance would be curbed. In short, market transparency was thought to address both the complications posed by the fragmentation v. competition dilemma, and the need to limit NYSE dominance.[20] This solution is clearly attractive in its simplicity, but places considerable emphasis on a single dimension of competition among marketplaces: price. The SEC's focus on price as the major source of competition among exchanges remains the most characteristic element of the U.S. market structure regulatory framework.

In implementing the National Market System, the SEC did not rush to strike down any anticompetitive effects caused or practices established by stock exchange rules,[21] arguing that the market would be mature for complete deregulation only when an information system linking all trading venues was fully established.[22] Thus, the SEC turned its attention to exercising pressure on market participants to cooperate so as to establish the infrastructure necessary for the National Market System, which was not

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[18] Silver v. New York Stock Exchange, 373 U.S. 341 (1963).
[19] Securities Exchange Act of 1934 § 11A, 15 U.S.C.A. § 78k-1 (2000).
[20] *See* Onnig H. Dombalagian, *Demythologizing the Stock Exchange: Reconciling Self-Regulation and the National Market System*, 39 U. RICH. L. REV. 1069, 1084 (2005).
[21] *See* Macey & Haddock, *supra* note 3, at 316.
[22] *Id.*

complete until the late 1970s.[23] The first NMS infrastructure linkage established was the Consolidated Tape, a system of reporting to all market participants prices on already effected trades. Resisting the SEC's initial suggestion for a system administered by a neutral body, NYSE and Amex proposed a plan that would be administered by a joint subsidiary of the two exchanges, SIAC, which would allow them to retain their profits from disseminating this information.[24] However, NYSE and Amex had little incentives to establish a viable, easy to use infrastructure for their competitors, let alone modernize the infrastructure to adapt it to technological developments.[25] NMS infrastructure rules often disadvantaged regional exchanges and thus provoked a considerable amount of criticism.[26] Thus, granting control over the NMS infrastructure to NYSE was perhaps a decisive moment for the implementation of the SEC's policy.

The real test for the concept of exchanges competing on price came with the implementation of another NMS linkage, the Consolidated Quotation System (CQS). Initially, all exchanges and third market makers were required to publish in the CQS firm quotations for each security in which they made a market: the price quoted was binding for them, provided the orders received did not exceed the quoted order size. At first, regional exchanges and market-makers tried to publish quotes competing with the NYSE ones, but NYSE brokers were usually able to match them and exceed them, thus redirecting order flow back to the NYSE.[27] NYSE competitors were soon reduced to trying to monitor the NYSE price discovery process and offering to meet the NYSE quotes, by developing electronic systems that changed their published quotes automatically to mirror movements in the NYSE prices. With little space left for price competition under these circumstances, the SEC limited the requirement to publish a firm quote to the primary exchange only, while other market centers had the option, but were not required to do so anymore.

The objective of the two systems described above was to disseminate information, either post-trade (to notify investors of current price levels) or pre-trade (to let them know what the best price on offer at the time was). Thus, the missing component for the completion of the NMS was a system that allowed a participant in one market, who saw a better quote in another market to which he had no access, to transmit his order for execution against that better quote. This link was provided by the Intermarket Trading System (ITS). The ITS can be accessed by all securities exchanges, market-makers and

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[23] The Intermarket Trading System, which completed the NMS infrastructure, was finalized in 1978. *See* History of the New York Stock Exchange, http://www.nyse.com/about/history/timeline_1960_1979_index.html (last visited Feb. 18, 2006).

[24] *See* Seligman, *supra* note 2, at 87. The Securities Industry Automation Corporation (SIAC) is the operator of the Consolidated Tape and the Consolidated Quotation System. It is a subsidiary of the NYSE, which own 2/3 of its share capital, and Amex. Therefore, through SIAC, NYSE has a firm grip over the technological systems that bring the NMS into life. In a market structure where information linkages play a pivotal role, SIAC cannot be expected to operate as an objective third party.

[25] *See* Mendelson & Peake, *supra* note 2, at 447 (1994).

[26] *See* Seligman, *supra* note 2, at 89.

[27] *See* Michael Halling *et al.*, *Where is the Market? Evidence from Cross-Listings* (EFA 2004 Maastricht Meetings Paper No. 4399, 2004), *available at* http://ssrn.com/abstract=556105. *See also* Cheol S. Eun & Sanjiv Saberwhal, *Cross-Border Listings and Price Discovery: Evidence from U.S.-Listed Canadian Stocks*, 58 J. FIN. 549 (2003).

ATSs that trade in securities currently covered by the NMS.[28] Exchange members are required to avoid initiating a trade at a price other than the best quoted bid and offer (i.e. to "trade through" the National Best Bid Offer price (the NBBO)). In the event of a trade-through, the market whose order was traded-through may submit a complaint to the market that initiated the trade-through, and, if the market participant in question cannot claim an exception to the rule, the effects of the order must be reversed so that all parties involved are in the position they would have been if the trade had been executed at the then prevailing NBBO price.[29]

II.c. How Viable Was the SEC's Twofold Objective?

Interpreting competition among market venues as competition for offering the highest (or lowest) price to investors, as did the SEC, possesses an intuitive appeal. However, it is doubtful whether, given the circumstances then prevailing in the U.S. equity markets, building the U.S. market structure framework on the basis of price priority was a sound policy choice. Instead of spurring competition to the NYSE so as to limit its dominance, this policy underlined NYSE's ability to produce the best available price in the market, which resulted from NYSE's increased liquidity (i.e. increased market share) and guaranteed by the strength of its network.

A network is a system that connects individual consumers of services, in the sense that the service may be enjoyed only through participation in the network. In a typical network industry, the more people use a service, the more it makes sense for others to use it as well, in order to make contact with existing users. Therefore, networks develop a self-reinforcing mechanism.[30] As a result, consumers would be willing to trade off higher quality of services offered by a small competing network, in order to gain access to the facilities of a larger network and the business opportunities it presents,[31] despite lower quality of services offered by the larger network. In an industry with network characteristics, perfect competition between industry participants is hindered from leading to optimality of services offered when a participant reaches a critical mass.[32]

The economics literature has long established that the stock exchange industry possesses network characteristics. Stock exchange trading consists in matching a selling and a buying order at a set price, and therefore the opportunities of a trader to identify a matching order increase with the number of orders entered in the system.[33] In other words, the greatest the liquidity of a stock exchange, the more likely it is that the prices it

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[28] Proposed Rule: Regulation NMS, Exchange Act Release No. 34-49325, 69 Fed. Reg. 11,126, at 11,127 (proposed Feb. 26, 2004) [hereinafter *Proposing Release*].
[29] *See* Proposing Release, *supra* note 28, at 11,133 n.40.
[30] *See* Hasan & Schmiedel, *supra* note 17, at 11.
[31] *Id.* at 12.
[32] *See* Alberto Cybo-Ottone, Carmine Di Noia & Maurizio Murgia, *Recent Developments in the Structure of Securities Markets,* in 2000 BROOKINGS-WHARTON PAPERS ON FINANCIAL SERVICES 223, 245 (Robert E. Litan & Anthony Santomero eds., 2000).
[33] It is no coincidence that, in 2004, approximately 76.8% of the dollar value of the global equity trading has been concentrated in six exchanges: NYSE, Nasdaq, London, Euronext, Frankfurt and Tokyo. *See* World Federation of Exchanges, *Domestic Equity Market Capitalization*, FOCUS 34, *available at* http://www.fibv.com/publications/Focus105web1.pdf (last visited Feb. 18, 2006).

will offer to investors will be better than those of its competitors. At the time the NMS was introduced, the NYSE controlled 85.34% of the trading volume in NMS stocks. Thus, NYSE's market share posed enormous challenges for competitors wishing to attract order flow. Sure, quotes better than NYSE's would occasionally appear in other markets; but the NYSE remained the market that led the price discovery process.[34] As discussed above, eventually its competitors had no other choice but to remain tied to the NYSE price discovery process, and even this proved hard for some. In addition, network economics suggest that the arrival of a new entrant offering marginally lower transaction charges to undercut existing trading venues is not as threatening. Thus, the possibility of marginally lower transaction charges in another trading venue would probably not be sufficiently tempting to attract order flow from the NYSE. Overall, network theory suggests that competing with the NYSE in terms of price would be extremely hard for other trading venues.

It could be argued that, to some extent, the objective of the NMS infrastructure was to allow other trading venues to share some of the benefits of the network, and in particular its wide customer base. Moreover, the decision to direct orders to trading venues other than the NYSE was made easier for investors, who were reassured that, if a better price emerged in the NYSE between placement of the order with a broker and execution, they would be able to benefit from the NYSE price. However, in practice the NMS linkages did not work as smoothly. First, the ITS relied upon brokers and specialists to look to quotes posted in other markets and spot that there was a better quote available.[35] In addition, the process for transmitting orders to another market and obtaining a confirmation by that market was relatively time consuming, a problem that became gradually accentuated as technological developments reduced the speed of execution for automated markets. Finally, the enforcement mechanism of the current trade-through rule, which relies on a market-to-market complaint, proved to be inefficient.[36] Thus, the network effects in the stock exchange industry continued to work to the benefit of the NYSE.[37]

The difficulties to beat the NYSE price discovery process, as described above, have a number of consequences for assessing the soundness of the SEC policy in implementing the NMS. First, considerable time, effort and financing was invested in building an infrastructure whose impact on increasing the level of competition in the market could only be limited. Indeed, all studies show that the ITS was not used

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[34] In 2005, the NYSE provided the best quote in NYSE-listed stocks in 86.7% of all quotes for these stocks. The two major competitors to the NYSE were Archipelago Exchange, providing the best quote 7.8% of the time, and Nasdaq, providing this 4.6% of the time. *See* New York Stock Exchange, NYSE Market Quality – Best Price, http://www.nyse.com/marketinfo/mktquality/1095517494175.html (last visited Jan. 31, 2006).

[35] *See* Seligman, *supra* note 2, at 94.

[36] *See* Letter from Thomas N. McManus, Managing Director and Counsel, Morgan Stanley, to Jonathan G. Katz, Secretary, U.S. Securities and Exchange Commission (Feb. 7, 2005), *available at* http://www.sec.gov/rules/proposed/s71004.shtml (last visited Feb. 16, 2006).

[37] Ruben Lee points out that the network effects characterizing the stock exchange industry should direct regulators' concerns at the risk of a market participant acquiring monopoly powers through excessive consolidation of order flow, and not at market fragmentation. *See* Ruben Lee, *The Future of Securities Exchanges* 7 (Wharton Working Papers Series 02-14 2002), available at http://fic.wharton.upenn.edu/fic/papers/02/0214.pdf (last visited Jan. 31, 2006). Professor Robert Ahdieh claims that in this context, regulation should actively undertake a "cueing" function, so as to facilitate transition to the market structure of the future. *See* Ahdieh, *supra* note 1, at 215.

extensively,[38] and that a large part of the trades directed through the ITS were actually transmitted for execution to the floor of the NYSE, and not away from it. The price discovery process continued to be concentrated to the NYSE.

Apart from a waste of money and effort, however, the repercussions of the SEC's policy choices for the structure of the market run much deeper. By making price priority the sole basis of its market structure regulation, the SEC automatically excluded all other dimensions of investors' interests from any role in the regulatory framework it established. Indeed, there are cases where investors would opt for execution of an order at a suboptimal price so as to benefit from other characteristics of the trade. For example, institutional investors trading relatively illiquid stocks in large order sizes would like to avoid the "market impact" of their order on the stock price: release of a large order, which has to be broken down in smaller amounts so as to be fully executed, drives stock price down so that, by the time the last part of the order is executed, the stock price is much worse than it was in the beginning. Therefore, these investors prefer to trade directly between themselves, achieving a price that, although worse than the market price for the stock at the beginning of the transaction, is probably better than the average price per share they would achieve had they released their order in the market. Other investors prefer in a fast, electronic trading venue to the slower NYSE floor.

The fallacy of the SEC policy choices on a theoretical level is also illustrated by the insights of network theory. Its conclusions regarding the reinforcing character of networks are based on the assumption that the quality of services offered and the price asked by new entrants is roughly comparable to that of the network. In other words, competitors on new entrants will be able to attract order flow if they are able to offer services of a considerably higher quality and/or at considerably lower charges. Competitors could also attract order flow, and thus compete with an established network, by offering services that are considerably different than those of the network[39] and possess characteristics that are particularly attractive to certain customers. Overall, in order to generate some initial order flow that could constitute an inroad into the established network's liquidity, competitors need to turn to other dimensions of competing with the established network apart from price and rely on innovations that will allow them to either lower their charges or differentiate their services. By requiring investors to adhere to the trading venue offering them the best price even when they were primarily interested in differentiated services or lower charges, the SEC regulatory policy prevented competitors from taking full advantage of such innovations.

The decision of the SEC to focus on price priority and disregard other dimensions of competition among exchanges effectively reinforced the dominance of the NYSE. The strongest advantage of the NYSE was its ability to offer better price. The SEC policy turned the NYSE advantage to a statutory benchmark that all other trading venues were required to adhere to. The benefits this system conferred to the NYSE became more pronounced with time, as technological advances led to the proliferation of private, electronic trading systems that allowed direct interaction among institutional investors and much speedier execution.

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[38] In 2004, ITS trades amounted to approximately 2% of the aggregate trade volume in NYSE-listed stocks, and approximately 4.6% of the NYSE trading volume. *See* New York Stock Exchange – ITS activity 2000 – current, http://www.nysedata.com/nysedata/Default.aspx?tabid=115.

[39] For example, ATSs offered anonymity to investors.

Part III. The E.U. Investment Services Directive

III.a. E.U. Stock Markets in the Mid-1980s

In the mid-80s, each E.U. country had its own stock market. European issuers raised capital mainly from investors in their country of incorporation and thus listed their stocks on a local exchange. As a result, European exchanges did not share a common list of stocks, as was the case in the U.S. The major exception to national segregation of stock markets in Europe at the time came in the form of cross-border listings: some European issuers would seek to attract resources outside their local market by listing both in their national exchange and at another exchange in Europe, most often the London Stock Exchange (the "LSE").[40]

Apart from exchange floors, European equities were also traded directly between dealers. In 1986, the LSE introduced an electronic display facility where London dealers posted mandatory bid and ask quotes for a minimum order size, covering not only stocks already listed on the LSE, but also stocks listed on other European exchanges.[41] This system, known as SEAQ International, offered greater speed of execution and was better suited to absorb large orders from institutional clients. LSE succeeded initially in attracting considerable order flow, especially from large investors such as U.S. banks and investment funds, giving rise to hopes that London would become the first pan-European market. However, continental exchanges soon responded to the erosion in their order flow by overhauling their trading systems so as to offer comparable advantages.[42] It was not long before they managed to reverse the tide and "repatriate" order flow from London, whose SEAQ International market soon collapsed. These events set European exchanges on a course of fierce competition with one another, which would eventually transform equity trading in Europe. The Investment Services Directive was negotiated as the conflict between LSE and continental exchanges was drawing to a close.[43]

III.b. The Investment Services Directive

The Investment Services Directive (the "ISD")[44] was mostly focused on firms offering broker/dealer services (termed "investment firms" by the ISD). It is known for establishing a "single passport" regime for these firms, which allowed them to lawfully

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[40] Marco Pagano, Ailsa A. Röell & Joseph Zechner, *The Geography of Equity Listing: Why do European Companies List Abroad?*, 12 (CSEF Working Paper, 1999), *available at* http://www.dise.unisa.it/WP/wp28.pdf. In the nine European exchanges that were the subject of that study (Amsterdam, Brussels, Frankfurt, Milan, London, Madrid, Paris, Stockholm and Vienna), the total number of foreign listings increased only slightly from 732 in 1986 to 757 in 1991, and then declined to 625 by 1997.

[41] *Id.*

[42] *See infra* text accompanying notes 76-78.

[43] *See* Benn Steil, *The ISD and the Regulation of European Market Structure*, in EUROPEAN EQUITY TRADING 116, 116 (Benn Steil ed., 1996).

[44] Council Directive 93/22 O.J. (L 141), 27 (EEC) [hereinafter *ISD*].

operate in any E.U. member state without an additional licensing procedure, once they were fully licensed in one E.U. member state.[45] In order to ensure full integration of investment firms in the market of a host member-state, the ISD introduced the concept of the "regulated market," under which most European exchanges would be classified, and mandated that full and fair access to these markets be granted by the host state to investment firms. Regulated markets were also granted a "single passport" by the ISD, which allowed them to establish facilities granting access to their market in other member states without additional licensing procedures.[46] Therefore, stock exchange regulation under the ISD was primarily directed towards facilitating the creation of a European single market in financial services, rather than establishing a market structure design such as the U.S. NMS. Market structure considerations, however, became part of the ISD agenda in two important respects: consolidation of order flow in national markets and transparency requirements for licensing regulated markets.

The severe competition that continental exchanges, and in particular the Paris Bourse, had recently experienced from London's SEAQ International, led a group of member states, led by France, to propose the concentration rule.[47] Under this rule, E.U. member states would be allowed to pass domestic legislation requiring that all transactions in securities listed on an exchange located in that state must be effected within an exchange, without breaching E.U. law principles on freedom to provide services. The proponents of the concentration rule argued that consolidation of all orders in a single trading venue, which the concentration rule undoubtedly achieved, would lead to greater liquidity and a more efficient price discovery process.[48] In addition, consolidation of order flow would provide investors with confidence that they were receiving the best available price in the market.[49] To the extent that they aim to avoid order flow fragmentation, these arguments had much in common with the theoretical foundations for the NMS in the U.S.

While investors' best interests were the justification for the concentration rule, the rule also assisted the E.U. member states who supported it to gain back order flow that had migrated to London.[50] After heated negotiations, the final ISD rule included a provision that gave investors, especially professional ones, the right to opt out of the concentration rule, subject to express authorization by the member state that had enacted such a rule for its national markets.[51] In addition, the rule applied only to investors habitually resident within that member state.[52] France, Belgium, and six other E.U. member states have enacted legislation that prohibits the sale of listed securities outside their exchanges.[53] To the extent that the concentration rule was actually implemented, it strengthened the segregation of European markets along national boundaries. However,

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[45] ISD, *supra* note 44, art. 14(1).
[46] *Id.*, art. 15(4).
[47] Charles Goldfinger, *ISD II Debate About the Trading Venue Diversity: The Tree and the Forest*, 13 (Eur. Capital Mkt. Inst. Working Paper 2003), *available at* http://www.ecmi.es/readmore/goldfinger.htm.
[48] *See* Steil, *supra* note 43, at 116.
[49] *See* Guido Ferrarini, *The European Regulation of Stock Exchanges: New Perspectives*, 36 COMMON MKT. L. REV. 569, 584-585 (1999).
[50] *Id.*
[51] ISD, *supra* note 44, art. 14(4).
[52] ISD, *supra* note 44, art. 14(3).
[53] *See* Goldfinger, *supra* note 47, at 13.

as the final ISD rule was significantly watered down in comparison to the initial proposals,[54] its effect on European markets remains doubtful.

Market microstructure considerations also framed the ISD's requirements on authorizing the establishment of regulated markets. As regulated markets were to be granted a "single passport" to establish access facilities throughout the E.U., they should comply with a minimum set of requirements acceptable to all member states, including transparency of the underlying markets, i.e. display of pre- and post-trade information. However, dealer-driven markets, where incoming clients' orders, buy or sell, are executed against an intermediary, the dealer, who posts quotes on which he/she is willing to trade and holds an inventory of that stock, operate at different levels of transparency than order-driven markets, where clients' orders are executed directly against one another. In less transparent markets, dealers have the incentive and the opportunity to price more aggressively at the early rounds of the session to obtain information on prices, thus keeping transaction costs down,[55] while in more transparent markets the inventory level of each dealer's holdings in a certain stock is apparent to all, thus reducing their aggressiveness in quotes.[56] Instead, in order-driven markets prices are set by investors' orders, and thus pre- and post-trade data are the main indication of price levels in the exchange. Therefore, any transparency requirements would in effect disadvantage dealer markets in relation to order-driven markets.

As the LSE was, at the time, mainly a dealer-driven market, while continental exchanges were order-driven, a controversy over transparency requirements erupted. Continental member states insisted on immediate post-trade data disclosure, which, if endorsed, would effectively deprive the LSE from the "regulated market" status and the single passport.[57] Eventually, a mid-way solution was reached, where certain transparency requirements were imposed, but national regulators retained significant leeway to interpret and apply these requirements.[58] The LSE was required to introduce certain reforms to its post-trade data disclosure timeframe, so as to secure the "regulated market" status, but trading on the exchange was not disrupted.

Thus, the regulatory regime for market structure in Europe, in the wake of the implementation of the ISD, looked very different from the U.S. regime. The order flow fragmentation considerations proposed in the context of the concentration rule debate were not elevated to a central feature of the European market structure system, not even with regard to shares listed in multiple exchanges. The quote and trade data disclosure controversy was limited to the type of information exchanges release and focused on the role of transparency in competition among exchanges, not in the investors' decision making process.

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[54] *See* Guido Ferrarini, *Exchange Governance and Regulation: An Overview*, in EUROPEAN SECURITIES MARKETS: THE INVESTMENT SERVICES DIRECTIVE AND BEYOND 245, 261 (Guido Ferrarini, ed., 1998).

[55] *See* Ananth Madhavan, *Consolidation, Fragmentation, and the Disclosure of Trading Information,* 8 REV. FIN. STUD. 579 (1995).

[56] Professor Madhavan's arguments were empirically confirmed by Professors Bloomfield and O'Hara, who conducted a computer simulation that included informed traders, noise traders who buy and sell arbitrary numbers of shares in each round and two human active traders who must raise or invest a predetermined amount before trading closes. *See* Robert Bloomfield & Maureen O'Hara, *Market Transparency: Who wins and who loses?*, 12 REV. FIN. STUD. 5 (1999).

[57] *See* Ferrarini, *supra* note 49, at 580.

[58] ISD, *supra* note 44, art. 21(2). *See also* Ferrarini, *supra* note 49, at 581.

The most interesting aspect of the European regime, however, does not relate to the terms of regulation that was eventually adopted, but to the market structure aspects that remained *outside* the ambit of regulation. Rules on orders' price priority, the centerpiece of the U.S. market structure regime, were totally absent from its European equivalent, thus enabling European exchanges to later introduce reforms in their trading models that allowed different prices for the order-driven and dealer-driven segments of their market, as explained below.[59] Similarly, while order flow fragmentation considerations were discussed with regard to the international level, fragmentation within the confines of the exchanges, towards which European markets eventually evolved, were not ruled out even for the proponents of the concentration rule. Indeed, exchanges in countries supporting the concentration rule, such as France, provided for a separate segment of the market for executing large orders. The method of dissemination of information to investors, to which the U.S. invested significant effort and resources, was not included in the debate on data disclosure. These omissions are yet more impressive if considered in the context of the push towards financial markets integration that drove E.U. legislation at the time: one would expect that the more links between markets are established, the more integration will be fostered.

A number of explanations for the divergence between the U.S. and the E.U. exist: the needs and level of maturity of European markets in the early 1990s may have been different, or the E.U. Commission may have lacked the power or the political backing to undertake such an initiative. Regardless of the rationale behind this divergence, the fact remains that, as competition among European exchanges was mounting, market structure issues remained largely outside the scope of regulatory initiatives at the E.U. level. Although member states were thus left with the authority to regulate market structure, it is unlikely that they would show any interest in regulating competition among exchanges, as in most of them the local equity trading market evolved mainly around a single exchange. Therefore, under the ISD regime, market structure aspects in Europe remained to a significant degree unregulated. Thus, market participants in the exchange industry were effectively granted wide flexibility to define the terms of their operation. As competition among exchanges was steering them through a decade that would transform completely stock trading, the flexibility of the European regulatory regime proved extremely valuable.

Part IV. Developments in the E.U. After the Investment Services Directive

This section maps the developments in the European stock exchange market, starting at the time the ISD was negotiated and ending with the introduction of the Directive. The first part examines the various types of competition among exchanges, while the second part discusses how European stock exchanges sought to reform themselves in order to respond to competitiveness concerns.

[59] *See infra* text accompanying notes [92]-[100].

IV.a. What Are European Market Participants Competing for?

For the largest part of their centuries-long history, stock exchanges have been providers of liquidity: they had been offering to investors the ability trade their shares immediately. Thus, competition among exchanges was, primarily, competition for trading and order flow. In the last two decades, a number of new methods to attract order flow have been developed, mainly due to technological advances and the ensuing globalization of finance. As a result, competition among exchanges is now conducted on new parameters, although attracting order flow remains its focus.

In the 1980s, European issuers already listed in their home country who sought additional means of raising capital often saw listing in another exchange as a channel to access the global financial markets, to boost their profile and increase their international recognition. As a result of cross-listings, some stocks were now concurrently trading in several European exchanges, which were thus set to compete directly among themselves for order flow. At this type of competition, the LSE emerged as a clear winner. As of December 31, 2003, 381 foreign companies were listed on the LSE (out of a total of 2,692 companies), corresponding to half of the aggregate equity turnover of the exchange. European issuers represented 58% of the international equity turnover (corresponding to approximately 28% of the aggregate LSE turnover).[60] The numbers of issuers obtaining cross-listings in other European exchanges was limited. In 2003, Deutsche Börse had achieved an aggregate domestic equity turnover of €2,104 billion; however its foreign equity turnover amounts to just €173 billion.[61] Euronext also maintains its focus on the markets of the countries that formed it (France, Belgium, the Netherlands, and Portugal). As of December 31, 2003, 345 foreign companies were listed on Euronext (out of a total of 1,392);[62] however the aggregate equity turnover of the 30 most active foreign companies amounted to just €12,250 million, compared to €936,930 million for the 30 most active domestic companies. These data include companies outside the E.U. Where cross-listings exist, prices on the exchange of the primary and secondary listing are perfectly arbitraged,[63] leaving limited scope for disadvantaging investors that place the best quote in one of the two markets.

As the data above show, the extent of cross-listing in Europe has remained rather limited, in comparison with the extent NYSE-listed stocks are traded in other exchanges in the U.S. Although the interest in cross-listing peaked in the early 1990s, by 1997 the number of issuers seeking to cross-list was already falling.[64] As direct competition for

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[60] *See* London Stock Exchange, Exchange: The Magazine of the London Stock Exchange (Dec. 31, 2003), 27, *available at* http://www.londonstockexchange.com/NR/rdonlyres/48D3D4B0-05A5-4F88-A9C9-CBEDDF970B09/0/2728.pdf (last visited Feb. 16, 2006). The aggregate equity turnover of the LSE for the year ending December 31st 2003 remained equally divided between the domestic and the international market (£1,877 billion and £1,759 billion respectively).

[61] *See* Deutsche Börse Group, Factbook 2003, 15, *available at* http://www3.deutsche-boerse.com/INTERNET/IP/ip_stats.nsf/(KIR+Factbook+Kassamarkt+E)/BD587F972E5DF758C1256E850045DAEB/$FILE/Factbook_2003_e.pdf (last visited Feb. 16, 2006).

[62] *See* Euronext, Factbook 2003, 22, *available at* http://www.euronext.com/file/view/0,4245,1626_53424_165799057,00.pdf.

[63] *See* Pagano, Roëll & Zechner, *supra* note 40, at 12.

[64] *Id. See also supra* note 41.

trading in the same stock is limited to cross-listed stocks,[65] levels of direct competition for order flow among European exchanges are low. Moreover, even the existing cross-listings have rarely succeeded in attracting sufficient order flow in the host exchange so as to create an active secondary market there,[66] and therefore trading activity remained with the exchange of the primary listing. Given that the two markets are perfectly arbitraged, and thus trading in both markets takes place at the same time, this finding sheds some light on the role of price priority in attracting order flow away from the primary exchange.

While demand for cross-listings was weakening in the mid-1990s, demand for cross-border trading was rising. The adoption of Rule 144A / Regulation S in the U.S. in the early 1990s, in combination with the increasing participation of institutional investors, led to the emergence of a new style of European offering that spanned a number of different jurisdictions on the basis of private placement exemptions from prospectus issuance requirements. With disclosure documents drafted using American prototypes, European issuers managed to address simultaneously institutional investors located in all major European financial centers as well as across the Atlantic, achieving desired liquidity levels without the need to cross-list in another market. This type of offering was often combined with an initial public offering and listing on the issuer's local exchange or proceeded once the issuer was already listed on a local exchange.[67] The demand for cross-border trading was also strengthened by general factors relating to the European market at the time, such as the introduction of Euro, which eliminated foreign exchange risk within the Eurozone, and the increasing popularity of stock ownership as a method of financing, as evidenced by the rise in share ownership in many countries.[68]

This development had a series of significant consequences for competition among exchanges. First, the investors participating in the day-to-day trading in European exchanges were more sophisticated, were willing to trade in larger blocks of stock and were interested in maintaining low costs,[69] thus pressing for exchanges that had larger liquidity and lower costs of trading.[70] Moreover, institutional investors were interested in trading anonymously, so as to reduce the market impact of their orders, thus seeking less transparent markets.[71] In addition to changes in the investors' profile, the brokers' profile

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[65] A practice similar to the granting of "unlisted privileges" would be difficult to reconcile with current E.U. law on securities offerings, under which listing on a regulated market would be considered a public offer, and the initiative for a public offer must be undertaken by the issuer, and not the exchange. However, where national authorities have opted to license non-regulated markets, such as ATSs, this hurdle may be easily overcome.

[66] *See* Halling, Pagano, Randl & Zechner, *supra* note 27, at 2.

[67] *See* Marianne Demarchi & Thierry Foucault, Equity Trading Systems in Europe: A Survey of Recent Changes 82 (Annales d'Economie et de Statistique n° 60, 2000) *available at* http://www.adres.polytechnique.fr/ANCIENS/n60/05.pdf. According to their data, the majority of European stock markets capitalization was held by institutional investors.

[68] *See* James McAndrews & Chris Stefanidis, *The Consolidation of European Stock Exchanges*, 8 CURRENT ISSUES ECON. FIN. 6, 2 (2002).

[69] *See* Marco Pagano, *The Changing Microstructure of European Equity Markets*, in EUROPEAN SECURITIES MARKETS: THE INVESTMENT SERVICES DIRECTIVE AND BEYOND 177, 203 (Guido Ferrarini, ed., 1998).

[70] *See* Nick Stuchfield, *Is Exchange Liquidity Contestable?*, in THE HANDBOOK OF WORLD STOCK, DERIVATIVE AND COMMODITY EXCHANGES 4 (2004).

[71] *See* Alisa Röell, *Competition among European Exchanges*, in EUROPEAN SECURITIES MARKETS: THE INVESTMENT SERVICES DIRECTIVE AND BEYOND 213, 215 (Guido Ferrarini, ed., 1998).

was also changing: in order to avoid the costs of hiring local brokers, the large investment firms that conducted these offerings obtained membership in all major European exchanges.[72] On the other hand, retail brokers remained focused on their domestic markets. Overall, increasingly larger investors and brokers had more negotiating power towards exchanges.[73] Moreover, as the structure of the offering did not always contemplate a listing, more emphasis was now placed on the characteristics of secondary trading at the exchange where the issuer was listed.

In order to absorb increased demand for cross-border trading, exchanges sought first to expand their network of brokers outside their home jurisdiction, by establishing electronic terminals in foreign countries that were connected directly with the exchange facilities. For example, at the end of 2004 Deutsche Börse maintained 283 remote access trading screens around Europe, of which only 144 were located in Germany.[74] Increased demand for cross-border trading added a new type of competition among exchanges that were now seeking to attract more foreign brokers. Pursuing a merger and/or alliance strategy was also a viable choice for exchanges seeking to expand beyond their jurisdiction: it would allow members of one exchange to trade in shares of other exchanges, thus reducing the need for financial intermediaries to employ additional broker dealers, in case they were not themselves members of that exchange.[75]

Perhaps the most important development resulting from the increased demand in cross-border trading has been the emergence of new types of competitors for order flow, i.e. trading venues that are not exchanges themselves. This will be further discussed below under ().

IV.b. Competition Among Exchanges Led to A More Efficient Trading System

The development of SEAQ International triggered a chain of substantial changes in the trading model of European exchanges. The London Stock Exchange had successfully utilized modern technology by introducing trading facilities capable of attracting order flow to London. To respond, continental exchanges followed LSE's lead in incorporating technological advances in their trading methods and gradually moved to electronic trading systems.[76] This path also led to greater convergence among the trading models of European exchanges.

In 1986, the Paris Bourse (now Euronext Paris) was the first exchange to introduce a wholly electronic trading system, CAC, based on a central limit order book model, under which the exchange holds a book where all orders are entered and then

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[72] *See* Stuchfield, *supra* note 70, at 4.

[73] *See* Susanne Kalss, *Different Stock Exchange Interest Groups*, in CAPITAL MARKETS IN THE AGE OF THE EURO 193, 207 (Guido Ferrarini, Klaus J. Hopt & Eddy Wymeersch, eds., 2002).

[74] *See* Deutsche Börse Group, Annual Report 2004, 25 *available at* http://deutsche-boerse.com/dbag/dispatch/en/binary/gdb_navigation/investor_relations/30_Reports_and_Figures/30_Anual_Reports/10_Annual_Report_2004/Content_Files/10_complete_version/GB_komplett_2004.pdf (last visited Jan. 12, 2006).

[75] *See* Maria Kasch-Haroutounian & Erik Theissen, *Competition Between Exchanges: Euronext versus Xetra*, 4 (EFMA Helsinki Meetings 2003), *available at* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=407781 (last visited Feb. 16, 2006).

[76] *See* Pagano, *supra* note 69, at 181.

matched with one another.[77] For liquid stocks, i.e. stocks for which there are sufficient incoming sell and buy orders, trading is continuous, with the exception of call auctions at the beginning and the ending of the session. For these stocks, matching is achieved on the basis of strict price and time priority. For less liquid shares, continuous trading on the basis of price and time priority is achieved with the support of designated exchange members trading on their own account (i.e. as dealers), so as to absorb sell-side or buy-side imbalances and provide additional liquidity. Alternatively, trading for these stocks takes place only at call auctions. There are some exceptions to these principles, most notably block trades, i.e. very large orders, that are executed outside the book, and trades where the same broker represents both buyer and seller.[78] By 1995, the Paris Bourse had introduced a series of technical upgrades to its trading model, renamed the NSC.[79]

In 1991, the Frankfurt Stock Exchange introduced IBIS, an electronic trading system connecting brokers and operating in parallel to the exchange floor for orders exceeding a certain size.[80] Thus, IBIS combined elements of both a dealer-driven system and an order-driven system. In 1997, IBIS was replaced by Xetra, an electronic order-driven trading model for all orders, providing for automatic order matching and continuous trading, in addition to call auctions at the beginning and the closing, as well as twice during the session. Large orders can be executed outside the system by way of block trades, without being subject to any reporting requirements to Xetra.[81] With regard to less liquid stocks, Xetra has also utilized specialized exchange members, the "designated sponsors," to provide liquidity enhancement. Although the similarities between Xetra and NSC are numerous, some differences between the two markets also remain. The degree of specialized liquidity providers' intervention in Xetra is greater than in NSC, as the aggregate number of designated sponsors is bigger, the number of stocks supported by designated sponsors is greater than in NSC and their regulation is tighter.[82] Moreover, Xetra competes with the floor-based system of the Frankfurt Stock Exchange, as well as seven small regional exchanges.[83] In 2002, 85% of the aggregate equity trading volume in Germany was routed to Xetra.

The success of continental exchanges led the LSE, where the dealership structure had always been the traditionally prevailing model, into a heated debate among its constituencies on the desirability of an electronic central-limit-order-book model. Finally, in October 1997, the LSE introduced, in parallel to its dealer- and quote-driven system, an electronic limit order book system,[84] the Stock Exchange Trading System (SETS). SETS covers the most liquid part of the LSE market, blue-chip trading.[85] Later, electronic central-limit-order-book trading was also expanded to stocks supported by specialized

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[77] *See* LAWRENCE HARRIS, TRADING AND EXCHANGES: MARKET MICROSTRUCTURE FOR PRACTITIONERS 109 (2003).

[78] *See* Didier Davydoff, Jean-François Gajewski, Carole Gresse & Laurent Grillet-Aubert, *Trading Cost Analysis: A Comparison of Euronext Paris and the London Stock Exchange*, 8 (2003), *available at* www.oee.fr/pdf/oeefree_pdf/361_12.pdf, at 9 (last visited Feb. 16, 2006).

[79] *See* Demarchi & Foucault, *supra* note 67, at 13.

[80] *Id.* at 11.

[81] *See* Kasch-Haroutounian & Theissen, *supra* note 75, at 5.

[82] *Id.*

[83] *Id.*

[84] *See* Davydoff *et al.*, *supra* note 78, at 4.

[85] Blue chips traded in SETS include all FTSE 100 stocks and UK FTSE Eurotop 300 stocks, plus those with traded options.

liquidity providers. Overall, while the introduction of SETS moved the LSE towards an order-driven market, significant dealership elements still remain.

Thus, over the course of a decade, European exchanges experienced a technological revolution that overhauled their traditional trading systems.[86] The most apparent achievement of this revolution was a sharp decline in transaction costs. In addition to reducing the work that a broker must perform to execute a trade to entering an order in a computer terminal, an electronic system practically eliminates the marginal cost of adding an extra trade to the market.[87] As a result, the overall efficiency of the financial system is increased. Electronic trading systems may now allow stock exchanges to accommodate much larger trading volumes than would have been possible in the past. Apart from revolutionizing the method of trading, new technologies allow quote and trade data to be communicated to brokers and investors quickly and efficiently. Moreover, exchanges that have adopted electronic systems of trading can more easily cooperate among themselves, and thus achieve critical mass that will allow them to enjoy network externalities.[88] Finally, access to stock exchanges and trading venues can now be provided on line, without the need for physical presence of the broker on the floor. Therefore, the importance of geographic location of the trader and the exchange has been greatly diminished,[89] and perhaps the only natural limitations that remain in this respect relate to time zone differences. Connectivity to the exchange floor was particularly useful to European investment firms, permitted under the ISD "single passport" to establish activities around the E.U. without undergoing any additional licensing process.

In parallel to automating their systems, European exchanges also converged to a common trading model, characterized by central limit order book trading for their most liquid stocks (the largest part of their order flow), call auctions for the opening and closing of the trading session, and a dealership segment supporting less liquid stocks.[90] The economics literature suggests that these models, characterized as "hybrid markets,"[91] combine the benefits of both central limit order book systems and dealer systems, while also addressing some of the problems of each system. Traditionally, dealer systems were devised to tackle order imbalances, where supply on the sell-side is not sufficient to absorb demand on the buy-side or vice versa.[92] In a limit order book system, order imbalances are more likely to arise, as liquidity is constrained by the volume of orders already available in the market. Hybrid markets provide for methods to infuse additional liquidity in a limit order book system, by triggering a dealer-driven system for large trades[93] or illiquid stocks. This additional liquidity is particularly important to

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[86] Professor Norman Poser claims that European exchanges do not resemble traditional exchanges at all. *See* Norman S. Poser, *The Stock Exchanges of the United States and Europe: Automation, Globalization, and Consolidation*, 22 U. PA. J. INT'L ECON. L. 497, 501 (2001).

[87] *See* Lee, *supra* note 37, at 1.

[88] *See* RUBEN LEE, WHAT IS AN EXCHANGE? THE AUTOMATION, MANAGEMENT, AND REGULATION OF FINANCIAL MARKETS 63 (1998).

[89] *See* Ian Domowitz & Benn Steil, *Automation, Trading Costs, and the Structure of the Securities Industry* 16 (1999), *available at* fmg.lse.ac.uk/upload_file/29_domowitz.pdf at 16. *See also* Röell, *supra* note [70], at 213 (stating that ". . . an electronic exchange could be located on an ice-breaker on the North Pole.").

[90] *See* Röell, *supra* note 71, at 219.

[91] *See* Harris, *supra* note 77, at 96.

[92] *See* Sylvain Friederich & Richard Payne, *Dealer Liquidity in an Auction Market: Evidence from the London Stock Exchange*, 2 (August 30, 2002), *available at* http://ssrn.com/abstract=348080.

[93] *See* Pagano, Röell & Zechner, *supra* note 40, at 3.

institutional investors, who often wish to trade in large blocks and who are concerned that releasing a large order into the market will drive the price down.[94] Another advantage of dealer-driven systems lies in their ability to limit the negative consequences of information asymmetries for uninformed traders. While in order-driven systems an inappropriately high (or low) quote posted by an uninformed investor is likely to be executed as soon as a matching order is found, in dealer-driven systems prices are set by quotes posted by dealers, who, as the recipients of many orders on both the buy- and the sell-side, have inherently more information about price levels.[95] In hybrid markets, the dealership segment covers illiquid stocks where information asymmetries are greater, while the limit-order-book is utilized for liquid stocks, where information is quickly incorporated into price.[96] This advantage of hybrid markets is particularly important to small investors, who are likely to be less well informed.[97] Moreover, lower trading costs,[98] the main advantage of order-driven markets over dealer-driven markets, is maintained in hybrid markets, at least for the largest part of the order flow directed to the central limit order book.

Overall, the incorporation of technological advances in the day-to-day operation of European exchanges, mandated by fierce competition among them, not only achieved a decline of transaction costs and an increase in efficiency, but also led to convergence, from a structural point of view, to a common improved trading model.

IV.c. Competition Among Exchanges Led to A More Efficient Organizational Structure

Increased competition among exchanges created a new environment for organizations that had traditionally operated in a semi-monopolistic way within their national borders. The membership structure most exchanges had traditionally adopted was designed to protect the interests of their members in a guild-like fashion,[99] rather than respond to the needs of an international competitive environment. Moreover, the introduction and then constant upgrading of electronic trading systems required a significant investment of capital. Thus, European exchanges undertook to transform themselves into for-profit corporations, whose flexible decision-making process would be more responsive to their modern needs,[100] and sought to raise capital from the equity markets, often by obtaining themselves a listing in their own markets.[101] By the end of

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[94] *See* Robert Schwartz, *Integration, fragmentation, and the quality of the markets*, in EUROPEAN EQUITY TRADING 64 (Benn Steil ed., 1996). The negative consequences of placing a large order in a CLOB are known as the "market impact" of the order.
[95] *See* Madhavan, *supra* note 17, at 250.
[96] *See* Friederich & Payne *supra* note 92, at 1.
[97] *See* Pankaj Jain, *Institutional Design and Liquidity in Stock Exchanges Around the World*, 6 (2002), *available at* www.people.memphis.edu/~pjain/worldstockexchanges.pdf .
[98] Market microstructure research has established that order-driven markets are characterized by lower trading costs than dealer-driven markets. *See* Roger D. Huang & Hans R. Stoll, *Dealer versus Auction Markets: A Paired Comparison of Execution Costs on NASDAQ and the NYSE*, J. FIN. ECON. 41, 313 (1996). *See also* Pagano, *supra* note 69, at 193-194.
[99] *See* Kalss, *supra* note 77, at 202.
[100] *Id.* at 211.
[101] *See* Andreas M. Fleckner, *Stock Exchanges at Crossroads*, 74 FORDHAM L. REV. (forthcoming 2006).

2000, Euronext, LSE and Deutsche Börse had completed their transformation to the corporate form. The ability to raise capital allowed exchanges to finance their projects to offer more efficient trading mechanisms, thus fostering growth in the financial services sector. Moreover, the move away from a membership structure to a corporate structure allowed management to disentangle itself from the interests of the members' community and take into account the interests of other constituents, such as investors and shareholders.[102]

An additional advantage the corporate form conferred on exchanges was that it cleared the way for a merger and acquisition strategy. As discussed above, a merger between two exchanges would allow brokers to trade in each exchange's stocks directly, thus eliminating a layer of financial intermediation and its associated costs.[103] Moreover, expanding their critical mass is a way for exchanges to strengthen their network through the increase of liquidity it entails. Finally, mergers in the exchange industry could take advantage of certain economies of scale, such as sharing costs for the development of a trading platform and maintenance of electronic trading systems.[104] The most successful form of cooperation for European exchanges has been to maintain separate exchange-operating entities in each jurisdiction, which are the holders of the "regulated market" license, and to achieve consolidation at the trading platform level and at the holding company level.

Until today, the most impressive attempt to bring together a number of different exchanges is Euronext, which resulted out of a merger between the Paris Bourse and the exchanges in Amsterdam and Brussels, to which the Lisbon exchange was added in 2002. The London-based derivatives exchange LIFFE has joined the Euronext group in 2002.[105] The Nordic Exchanges Alliance (Norex) is another important grouping, currently including the stock exchanges of Sweden, Denmark, Norway, Iceland, Finland, Estonia and Latvia,[106] led by the OMX holding company. Both Euronext and Norex follow the strategy of maintaining separate national licenses and sharing a common trading platform.

IV.d. Competition Among Exchanges, Alternative Trading Systems and Investment Firms

As cross-border trading volume was increased, a number of enterprises outside the exchange sought to gain part of the order flow. Alternative trading systems ("ATS") are proprietary, automated, screen-based trading systems that offer subscribers a variety of trading environments or facilities that may not be available in the organized markets. In the disaggregated, largely national, securities markets of Europe, ATSs hoped to capitalize on the ISD single passports and become the missing link that would consolidate trading interests in major European stocks in a single trading venue.

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[102] *See* Reena Aggarwal, *Demutualization and Corporate Governance of Stock Exchanges* 9 (2002), available at http://ssrn.com/abstract=327360. *See also* Fleckner, *supra* note 101.
[103] *See* McAndrews & Stefanidis, *supra* note 68, at 1.
[104] *See* Fleckner, *supra* note 101.
[105] *See* Kasch-Haroutounian & Theissen, *supra* note 75, at 1.
[106] *See* Press Release, Nordic Exchanges Alliance, The Nordic and Baltic Countries Become One Securities Market, *available at* http://www.norex.com/print_press_releases.asp?id=69.

Addressed primarily to institutional investors, ATSs guaranteed anonymity and promised to accommodate large orders. While a number of ATSs have been established in Europe during the 1990s,[107] they have been largely unsuccessful. Contrary to the U.S., where ATSs offered to investors the advantages associated with electronic trading, ATSs in Europe had to compete with electronic-trading exchanges.[108] Often, brokers were used to working with the trading screen and operating system established by local exchanges and it was hard for ATSs to penetrate this chain.[109] Moreover, some brokers had taken advantage of the automation of exchange services to allow privileged access to the exchange to their large clients.[110] Although this practice raised concerns as to its compatibility with local laws and exchange access rules, it provided these clients with direct interaction with a much larger investors' base than an ATS could have possibly provided. In addition, exchanges offered an integrated clearing and settlement service, which was not offered by ATSs. [111] For all these reasons, the impact ATSs had on competition for order flow at the European level was not, eventually, significant.

More direct competition to exchanges came from one of their constituencies, the large brokerage houses and investment banks. Investment and brokerage houses that bought and sold stocks outside the exchanges, for their own profit and for the benefit of their clients, was not a new phenomenon, as such a market existed for many decades, mainly centered in London. However, their importance was reinforced for a number of reasons. The ISD "single passport" for financial services[112] allowed brokerage houses that sought multinational presence to establish operations in various E.U. member states, sometimes also acquiring access to local exchanges. Also authorized to act as dealers (i.e. to obtain a proprietary position in stocks of their choice) under the ISD,[113] these brokerage houses formed a network separate from exchanges and spread around Europe. As demand for cross-border trading was increasing, dealers became more active in continental shares, as permitted by the concentration rule.[114] In particular, these firms have been increasingly engaging in the execution business, i.e. they have sought to accommodate internally, by trading against their own holdings, large orders of clients demanding immediate execution which, if directed to an exchange, would probably have to be fragmented in smaller bulks to avoid driving the stock price down (or up).[115] Clearly, the larger the network of these firms becomes, the greater their ability to accommodate clients' orders, as they may even receive matching orders from separate clients. By providing immediacy of execution, these firms, known as "internalizers," are effectively providing liquidity and are thus in direct competition with exchanges. [How large is the dealer market in Europe?]

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[107] Tradepoint (now Virt-x) is the best known European ATS. It was established in London to compete with the London Stock Exchange and other major exchanges with regard to blue chip trading. Tradepoint was licensed as an exchange.
[108] *See* Poser, *supra* note 86, at 508.
[109] *See* Stuchfield, *supra* note 70, at 4.
[110] *See* Marco Pagano & Benn Steil, *The Evolution of European Equity Trading*, in THE EUROPEAN EQUITY TRADING MARKETS 16, 48 (Benn Steil ed., 1996).
[111] *See* Stuchfield, *supra* note 70, at 4.
[112] *See supra* text accompanying notes 44-46.
[113] ISD *supra* note 44, art. 1 in conjunction with annex A.
[114] *See* Pagano & Steil, *supra* note 110, at 47.
[115] *Id.* at 46.

IV.e. Levels of Competition, Market integration and Order Flow Fragmentation

From the mid-1980s to the mid-1990s, European exchanges moved from protection of semi-monopolies by national borders to direct competition with other exchanges, and then also to competition with other trading venues. At the same time, the national character of each separate market has not evaporated, as each exchange lists mainly stocks of issuers originating within its local jurisdiction (with the exception of LSE, which comprises a significant international market) and is served by the local brokerage community (with the exception of large houses that have established a European-wide presence). As a result, multiple levels of competition currently operate within the European market. First, exchanges continue to compete directly among themselves. This type of competition, as evidenced in the mid-1980s, has triggered significant changes in the exchange trading model. Today, direct competition among exchanges is more evident in their merger and alliance strategy, which manifests a quest to acquire critical mass before their other competitors. Moreover, exchanges compete with financial intermediaries, who are now able to internalize order flow. Finally, there is also competition of financial intermediaries through the exchange. Growth and success of an exchange continues to benefit its members, not as owners, but as holders of the exclusive rights of access to that marketplace. For brokerage houses that have not expanded their presence and their client network internationally, their future course is dependent on the future of the exchange, or on how their group of exchange members collectively fares against the group of members of another exchange. These three distinct levels of competition that take place in the European exchange industry form the forces that bring the various European markets closer to integration.

At the same time, these various levels of competition in European markets lead to an increasing fragmentation of order flow. Traditionally, commentators claimed that fragmentation has not been a major concern for European markets, which were centered on the dominant exchange in each jurisdiction.[116] At present, however, order flow in European exchanges is fragmented between the central limit order book of the exchange, the dealership segment of the exchange (prices in which do not correspond to prices in the limit order book), the dealers operating outside the exchange internalizing orders, and any activity on ATSs or secondary listing exchanges, where relevant.

Part V. Developments in the U.S. Following the Implementation of the National Market System

V.a. The Development of Nasdaq

The over-the-counter market operates outside organized exchanges. Here, stocks are traded directly between dealers posting their quotes and building their positions for their own account, initially without any facility for centralizing order flow and matching

[116] *See* McAndrews & Stefanidis, *supra* note 68, at 1.

orders. Nasdaq, an electronic trading system designed to serve the needs of that market begun its operation in 1971. It consists in a network of trading screens located around the U.S.[117] that was developed under the auspices of the National Association of Securities Dealers ("NASD"). Unlike regional exchanges, which have mainly focused on trading in NYSE-listed stocks, Nasdaq trades in a separate set of stocks not listed on the NYSE, which gradually grew to amount to approximately 4,000 firms today. Many of these stocks are highly liquid and would qualify for exchange-listing, but opted for trading on Nasdaq,[118] thus triggering fierce competition with the NYSE for listings.[119] As Nasdaq-traded stocks were not included in the NMS,[120] the emergence of Nasdaq as a competitor to the NYSE took place outside the NMS framework and its limitations. In addition, Nasdaq also trades in shares listed on the NYSE and thus is the main trading venue for broker-dealers who seek to internalize order flow in NYSE-listed shares.[121]

Academics have much debated the efficiency of trading on Nasdaq.[122] Furthermore, the SEC's regulatory actions, often motivated by academic research, have also aimed to increase efficiency, by increasing transparency and establishing order priority rules in this dealer-driven market.[123] In 2002, Nasdaq expanded its electronic communications system to include a trading platform, SuperMontage, which incorporates a facility for centralization and matching of orders. SuperMontage allows market makers and ATSs to post and display multiple quotes and orders at a single or multiple price levels and to opt for automatic execution, thus having their order directed to any market participant matching their quote.[124] Although the market participant placing the quote is identified in the trading screen, SuperMontage provides market makers the option of avoiding identification by designating a "non-attributable" order,[125] a feature of great use for investors who wish to maintain their anonymity while trading in large blocks.

V.b. The Development of the ATSs

As early as 1969, the first fully electronic trading system had begun its operations and thus competed with exchanges.[126] Alternative trading systems ("ATS") are

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[117] *See* LOUIS LOSS & JOEL SELIGMAN, FUNDAMENTALS OF SECURITIES REGULATION 754 (2004).

[118] *See* Mark Klock, *The SEC's New Regulation ATS: Placing the Myth of Market Fragmentation Ahead of Economic Theory and Evidence*, 51 FLA. L. REV. 753, 758 (1999).

[119] *See* James D. Cox, *Brands v. Generics: Self-Regulation by Competitors*, 2000 COLUM. BUS. L. REV. 15, 16 (2000).

[120] A limited number of firms maintain a listing in both Nasdaq and the NYSE.

[121] *See* Dombalagian, *supra* note 20, at 1088.

[122] *See* William G. Christie & Paul H. Schultz, *Why Do Nasdaq Market Makers Avoid Odd-Eighth Quotes*?, 49 J. FIN. 1813 (1994).

[123] As a full discussion of the developments in the Nasdaq market is outside the scope of this paper, I focus on the characteristics of the Nasdaq trading system as it stands today, prior to its inclusion in the NMS.

[124] *See* Nasdaq, Summary of SuperMontage 2, *available at* http://www.nasdaqtrader.com/trader/hottopics/supermontage/smfuncdescription.pdf (last visited Feb. 16, 2006).

[125] *Id.* at 5. With the recent enhancement of the full anonymity feature, participants can work orders anonymously from order display through execution and clearing.

[126] *See* Ian Demowitz, *An Exchange is a Many-Splendored Thing: The Classification and Regulation of Automated Trading Systems*, in THE INDUSTRIAL ORGANIZATION AND REGULATION OF THE SECURITIES INDUSTRY 93 (Andrew W. Lo, ed., 1996).

automated screen-based trading systems that offer subscribers a variety of trading environments or facilities that may not be available in the organized markets. They were initially developed to counter-balance exchanges in the era of fixed commissions,[127] and have since been customized to serve specialized customers, such as institutional investors and financial intermediaries and to provide "niche" services in equities, corporate debt securities, municipal and government instruments, or options.[128] Although alternative trading systems were already active at the time of the 1975 amendments, their role has become more prominent in the last 15 years. For example, while in 1999 they had attracted almost 4% of orders in NYSE-listed securities and 20% of the order flow in Nasdaq stocks,[129] in 2001 their market share on Nasdaq stocks had grown to 30%.[130]

The explanations for the success of ATSs range from efficiency justifications to notorious customer inducement practices. Institutional investors prefer ATSs because they often allow them direct participation in trading without an additional level of brokerage services. Moreover, as ATSs attract orders from professional investors wishing to trade in large blocks, the likelihood of matching a large order is greater and thus the market impact costs from releasing a large trade in the retail market are avoided.[131] On the other hand, payment for order flow practices, which consists in the trading venue paying a fee to the broker for orders directed to its marketplace, has also been the focus of many explanations for the success of ATSs.[132] Overall, ATSs have made their presence increasingly felt in the U.S. markets.

V.c. Developments in the NYSE

The growth of Nasdaq and the increasing number of ATSs were only some of the factors that could, potentially, increase the competition NYSE faced. Additionally, the rising demand for cross-border trading and the growing participation of institutional investors resulted in increased trading activity, which represented a major challenge for any exchange operating a manually driven market on a trading floor. Not only is the capacity of the trading floor (and the brokers running it) subject to physical limitations, but also the cost of executing any additional trade is incremental, while for electronic trading systems physical limitations and costs of executing additional trades are not significant.[133] In addition, constantly evolving technology allowed operators of proprietary trading systems and electronic-run exchanges to offer even faster, cheaper and more efficient services to investors. As discussed above, these same developments

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[127] *See* Arshadi, *supra* note 15, at 5.

[128] *See* Richard G. Ketcum & Beth E. Weimer, *Market 2000 and The Nasdaq Stock Market,* 19 IOWA J. CORP. L. 559, 572 (1994).

[129] *See* Jonathan R. Macey & Maureen O'Hara, *Regulating Exchanges and Alternative Trading Systems: A Law and Economics Perspective*, 28 J. LEGAL STUD. 17, 19 (1999).

[130] *See* Annette L. Nazareth, *Symposium Securities Law for the Next Millennium: A Forward-Looking Statement: Remarks*, 75 ST. JOHN'S L. REV. 15, 19 (2001).

[131] *See* Macey & O'Hara, *Regulating Exchanges and Alternative Trading Systems: A Law and Economics Perspective*, 28 J. LEGAL STUD. 17, 46 (1999).

[132] *See* Allen Ferrell, *A Proposal for Solving the Payment for Order Flow Problem*, 74 S. CAL. L. REV. 1027, 1029 (2001).

[133] *See* Lee, *supra* note 37, at 1.

generated fierce competition among European marketplaces, triggering a series of reforms in the structure of European equity markets and the organizational form of European exchanges.

Contrary to the European experience, characterized by waves of dramatic reallocation of market share among competing trading venues, the outlook of the U.S. market for this period is almost stable. Throughout the years, NYSE's market share in order flow for NYSE-listed shares had remained effectively unmoved, gravitating between 75% and 80%.[134] Thus, while ATSs were relatively successful in capturing order flow from Nasdaq, they were not equally successful with the NYSE. The significant amount of liquidity already aggregated at the NYSE continued to attract order flow in the exchange, while its competitors turned on investors that were facing particular costs, such as market impact costs, and were interested in features such as greater anonymity and immediacy of execution, which the NYSE floor could not cater for as well. However, to the extent that these additional features, in combination with the lower liquidity of the other trading venues, resulted in a price inferior to the NYSE price, the NMS regulatory framework sought to redirect order flow to the marketplace offering the best quote, typically the NYSE. [Indeed, the overwhelming majority of trades that actually utilized the ITS was directed to, rather than out of, the NYSE] Thus, regulation provided an additional shield around the NYSE, allowing it to maintain its dominant position.

In the thirty years from the 1975 Amendments to Regulation NMS, the changes in the NYSE system were not fundamental. In general, the NYSE remained faithful to its open outcry trading system, where orders are aggregated on the exchange floor. The NYSE did utilize technological advances in order to support its members' day-to-day conduct of business on the floor and accommodate an ever increasing demand for trading activity, such as electronic order routing systems that allow members to communicate more efficiently with floor brokers and specialists.[135] For example, SuperDot, an electronic order-routing system used by NYSE member firms to send market and limit orders directly to the trading post where the security is traded, was introduced in 1984 and is now used for 99% of the NYSE order flow.[136] While these systems facilitate order handling and, to some extent, affect brokers' trading strategies,[137] they did not alter the character of the exchange as a system driven by human interaction. The only reform the NYSE undertook during that period that resulted in moving trading activity away from the floor of the exchange and towards an electronic trading system, was the introduction in 2001 of NYSE Direct+, an electronic trading system for the automatic execution of small orders (up to 1,099 shares).[138] Automatic execution through NYSE Direct+ is

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[134] *NYSE Market Share Slips for Consecutive Sixth Month*, REUTERS, Jan. 9, 2006, *available at* http://www.msnbc.msn.com/id/10774041/from/RL.3/ (last visited January 19, 2006). Actually, the NYSE market share in trades in NYSE-listed shares for December 2005 is 73.25%, the lowest it has been in 29 years.

[135] These systems include the Broker Booth Support System and NYSE e-broker. Some of these systems utilize technologies such as handheld terminals, fiber optics and cellular communications. *See* New York Stock Exchange, *Strategic Tools for Order Management*, http://www.nyse.com/pdfs/BBSS.pdf (last visited Feb. 16, 2006).

[136] *See* New York Stock Exchange, *Order Execution – SuperDot*, http://www.nyse.com/productservices/ordexec/1095202040263.html (last visited Feb. 16, 2006).

[137] *See* Harris, *supra* note 77, at 103.

[138] *See* New York Stock Exchange, *Order Execution – Direct+*, http://www.nyse.com/productservices/ordexec/1095201681815.html (last visited Feb. 16, 2006).

optional, and is available only at the best bid and offer. At the moment, NYSE Direct+ has attracted almost 11% of the aggregate order flow of the exchange.[139] In summary, any reforms introduced between 1975 and 2005 sought to respond to outside developments while also maintaining human intervention as the driving force for the overwhelming majority of the exchange's trades.

This degree of reliance on human interaction on the exchange floor is even more impressive if contrasted with other important exchanges in the world. Of the five largest exchanges, the NYSE is the only one in which manual trading still captures such a large part of the aggregate market share.[140] The role of the floor community in handling NYSE order flow reflects, arguably, its role in the management of the exchange. Up to the Regulation NMS Proposal, the NYSE remained a membership organization controlled by the brokers, its members, who at the same time constituted its main source of income due to trading fees.[141] Exchanges that have remained, until today, faithful to the membership structure, have also managed to resist adapting their trading mechanism to technological evolution, and most notably remote membership.[142]

V.d. Thirty Years since the Introduction of the NMS in the U.S.

While general developments in the U.S. securities markets in the last thirty years may have been numerous, the overall outlook of U.S. market structure does not look all that different from what it looked like at the adoption of the 1975 Amendments. Throughout these years the NYSE has enjoyed almost undisputed dominance and has continued to attract overwhelming liquidity, despite increasing competition from a series of trading venues such as ATSs or Nasdaq. In particular throughout the 1990s, when European exchanges were introducing sweeping reforms in their trading methodology and ownership structure, the NYSE adhered to a trading model rooted in a long-bygone era. The NYSE was able to resist to changes for longer than other exchanges because of its continued dominance, due partly to the amount of liquidity it had already aggregated, and partly to the regulatory framework under which it operated. By requiring all trading venues to adhere to the best price available in the market for a certain stock, which in most cases would be the NYSE price, the NMS effectively diverted more liquidity onto the NYSE floor, even when such liquidity would have otherwise migrated to another trading venue. Thus, by failing to take into account the dynamics produced by network effects in the stock exchange industry, the SEC limited competition among trading venues and reinforced the dominance of the exchange.

Part VI. Reform in the U.S.: Regulation NMS

The SEC trumpeted its proposal for Regulation NMS as the most important reform in the U.S. market structure regulatory framework since the establishment of the

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[139] *Id*.
[140] *See supra* text accompanying notes 76 – 89.
[141] *See* Lee, *supra* note 37, at 9.
[142] *See* Cybo-Ottone, Di Noia & Murgia, *supra* note 32, at 248.

NMS in 1975.[143] Motivated by developments such as the growth of the Nasdaq market, the rising market share of ATSs, and innovative trading technologies,[144] the reforms are intended to counter order flow fragmentation, promote equal regulation of market centers and greater order interaction, and increase displayed depth of trading interest.[145] The trade-through rule has been the most controversial aspect of the reforms introduced by Regulation NMS.[146] A hearing and two rounds of comments by market participants[147] on this rule prompted the SEC to re-propose the regulation.[148] The discussion below outlines the scope and the rationale of the trade-through rule focusing mostly on its final version, reveals problems in the justification of the rule offered by the SEC, and discusses the consequences of the SEC's policy choices for the U.S. equity trading market.

VI.a. The Scope of the Trade-Through Rule

The trade-through rule demonstrates the importance of price for the priority of execution of orders in the new U.S. market structure regime. The rule requires trading venues to establish procedures and policies reasonably designed to prevent the purchase or sale of an "NMS stock" at a price that is inferior to a price displayed in another market.[149] The category of "NMS stocks" is expanded by the proposal to cover stocks listed on Nasdaq, because many marketplaces besides the Nasdaq order execution facility now trade in Nasdaq stock, thus raising order fragmentation concerns. The requirement to establish anti-trade-through procedures applies, apart from exchanges and securities associations, to any type of trading venue, including ATSs, exchanges or OTC market-makers, as well as to any broker or dealer executing orders internally. The rule applies equally to all firms intending to internalize order flow, even if internalization is not performed in a systematic way and no quotes on that stock have been published. Moreover, orders of all sizes are included in the scope of the rule. Finally, the protection of the rule is not limited to the single best quote available across the NMS, but extends to the best quotes posted by each of the nine self-regulatory organizations (SROs) and

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[143] *See* Proposing Release, *supra* note 28, at 11,127.
[144] *Id*.
[145] *Id.* In addition, SEC intends to assist in updating antiquated rules and mechanisms, thus responding to criticisms about the technology used in the ITS.
[146] Regulation NMS has four main prongs: the trade-through proposal, which focuses on protection of price priority among markets; the market access proposal, which aims to ensure equal access to market centers for all market participants; the sub-penny quoting proposal, which prohibits quoting is sub-penny increments; and the market data proposal, which proposes a new plan for the allocation of data fees among market centers that provide information on trading in the NMS. In addition, the Proposed Regulation NMS introduces some changes to the overall NMS regulatory framework that aim to enhance clarity and definitional uniformity in the rules.
[147] The SEC requested additional comments by market participants following the hearing it held. *See* Regulation NMS, Proposed Rule; Extension of Comment Period and Supplemental Request for Comment, Exchange Act Release No. 49749, 69 Fed. Reg. 30142 (May 26, 2004).
[148] Regulation NMS; Proposed Rule, Exchange Act Release No. 50870, 69 Fed. Reg. 77,424 (proposed December 16, 2004) [hereinafter *Re-proposing Release*]. This paper will focus on the final form of the rule, although occasional references to previous versions will be made to highlight aspects of the rule.
[149] Proposing Release, *supra* note 28, at 11,129.

Nasdaq.[150] Thus, according to the trade-through rule, once a trading venue posts the best bid or best offer quote on a stock, any order for that stock must be first routed to that trading venue for execution, at least up to the order size of the quote. However, the prohibition of trade-throughs is not absolute, in the sense that the SEC will not sanction a trade at a price other than the best bid or offer, once persuaded that all the necessary precautions were in place and the required level of diligence was exercised.[151]

The main objective of the trade-through rule is to eliminate cases where, because trades originate from or are routed to separate trading venues, orders at the best price remain unexecuted while orders at worse prices are being executed. In the SEC's view, such phenomena harm the interests of all investors, whether they place market orders (i.e. orders to execute the trade at the prevailing market price) or limit orders (i.e. orders to execute the trade once a threshold price is reached). When market orders are executed at a price other than the best price, investors' confidence in the integrity of the U.S. capital markets is damaged.[152] Moreover, when limit orders at the best price remain unexecuted, the price discovery process is hindered and investors' incentives to participate in that process by posting their limit orders are reduced. Stronger protection of limit orders will lead to more aggressive quoting by investors and market makers, resulting in increasing the liquidity of the U.S. capital markets.[153] Therefore, order flow fragmentation hinders the efficiency of the price discovery process and the best execution of investors' orders.[154] [Liquidity providers (i.e. uninformed traders) may also pick market orders, while liquidity takers may also place limit orders.[155] Therefore, the premise that protection of limit orders necessarily enhances liquidity is false.]

VI.b. The Weaknesses of the Trade-Through Rule

In order to counter order flow fragmentation, the SEC's trade-through rule requires, in effect, execution of investors' orders at the best price available in the market at that moment. In the SEC's view, adequate investors' protection can only be achieved through a principle that the SEC characterizes as "fundamental": price priority.[156] However, by effectively mandating the price of execution of all trades in all markets at a given point in time, the trade-through rule eliminates competition among trading venues that post different quotes for the same stock. Explicitly recognizing the tensions that greater order interaction would produce for competition among trading venues,[157] the

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[150] Regulation NMS; Final Rule, Exchange Act Release No. 51808, 69 Fed. Reg. 37,496, at 37,502 (June 29, 2005) [hereinafter *Final Release*]. An apparent shortcoming of that policy is that the best quote of one these marketplaces is protected by the rule, although it may be inferior to a quote in another trading venue in another marketplace which is not protected because it is not the best in that marketplace. *See* Letter from Ari Burstein, Associate Counsel, Investment Company Institute, to Jonathan G. Katz (Jan. 26, 2005) *available at* http://www.sec.gov/rules/proposed/s71004.shtml.

[151] Proposing Release, *supra* note 28, at 11,136.

[152] *Id.*, at 11,132.

[153] The SEC, in its Re-Proposing Release, actually describes the cycle of liquidity, and explains how liquidity generates more liquidity. Re-proposing Release, *supra* note 148, at 77,434.

[154] Proposing Release, *supra* note 28, at 11,133.

[155] *See* Bloomfield & O'Hara, *supra* note 56.

[156] Proposing Release, *supra* note 28, at 11,133.

[157] *Id.* at 11,128.

SEC characterizes the trade-through rule as a balancing act between greater competition among orders and greater competition among trading venues. However, it is doubtful whether the degree of order interaction without a trade-through rule is low, or whether there is considerable scope for competition among trading venues once competition on price is ruled out. The "meet or beat the quote" effect of the trade-through rule, which the SEC sees as order interaction, is in fact a signaling mechanism, aimed at alerting investors to the best opportunity available at the market at the time. Thus, it is clear that adequate and timely disclosure could produce equivalent results.[158] As to the remaining scope of competition among trading venues after the implementation of the price priority principle, the SEC points to other characteristics of trading venues, such as speed of execution or trading infrastructure. Nevertheless, the extent to which these characteristics can make a difference in an environment already dominated by the NYSE is questionable. As the attractiveness of the increased liquidity of the NYSE can only be curbed, according to network theory, with a combination of undercutting NYSE prices and developing superior quality trading infrastructure, the emergence of a credible competitor to the NYSE is unlikely. To the extent that the NYSE will continue to attract greater liquidity, its market will continue to generate the largest percentage of best bid/offer quotes. The trade-through rule transforms the liquidity advantage of the NYSE into the benchmark for order execution in the NMS. Instead of boosting competition among trading venues, the SEC policy openly favors the dominant exchange.

Although initially the SEC had decided to provide investors with the ability to opt out of the trade-through rule, the final rule proposal did not include this option. In an attempt to accommodate the needs of professional investors for larger trades the SEC proposed a series of alternatives,[159] recognizing however that they cannot produce an equivalent outcome to an opt-out. The SEC defends its policy by arguing that investors with a long-term perspective will not be put off by small differences in trade execution, emphasizing also the benefits of inter-market price protection offered by the trade-through rule for long-term investors. However, the SEC fails to mention the costs of this strategy, such as costs arising from the effect of large orders routed on the retail market on prices, which will be equally borne by all investors. The current U.S. trading environment will effectively oblige large traders to operate by retail market prices and techniques, thus blending two segments of the market that had so far preferred to operate on separate terms. Even trading models of individual exchanges premised on strict price/time priority principles, such as Euronext, provide for a separation between the two segments of the market in terms of price. By limiting trading choices for investors wishing to execute large trades and directing order routing to venues primarily designed for retail order execution, the SEC's policy limits further competition among trading venues that offer different features and are addressed to varying types of investors.

The initial trade-through proposal sent shock waves throughout the financial services industry, resulting in more than 700 letters of comment to the SEC.[160] The main argument of opponents of the trade-through rule was, essentially, that the operation of

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[158] The SEC points to two "structural" weaknesses that, in its view, prevent disclosure from operating efficiently in this case. *See infra* text accompanying notes 160-161.

[159] One of these techniques is the "intersweep" order, which allows execution against the best quotes available at all markets at the time.

[160] Re-proposing Release, *supra* note 148, at 77,430.

market forces is sufficient to lead traders to the best execution for an order, provided that quotes are transparent and access to trading is not restricted by anti-competitive measures from market centers. The SEC's reluctance to rely fully on market forces for the purposes of trading system design is based on its concern for the conflicts inherent in the agency relationship between financial intermediaries and investors and the potential for "free-riding" on displayed prices by other markets. However, it is not clear whether these concerns are well-founded, or whether the trade-through rule represents the most effective method of addressing them. In particular, the SEC fears that financial intermediaries route orders to venues that better serve their interests, while investors are not aware of the inferior execution they receive and the resulting conflicts of interest. Still, the SEC notes that approximately 50% of the trade-throughs actually occurring are block trades, i.e. trades by sophisticated investors, who are likely aware they are receiving execution at a price other than the best price prevailing in the market at the time of the trade. In any case, the conflict of interest to which the SEC points could be easily resolved through increased disclosure, rather than through trading system reform. Moreover, the SEC claims that, by internalizing orders at prices inferior to prices already available elsewhere in the market, dealers trade in knowledge of the future direction of prices in the market, thus reducing the risk they are assuming. While dealers are thus "free-riding" on the price discovery process that limit orders in auction-driven markets (such as the NYSE) have contributed in building, the investors that placed these orders still see them unexecuted.[161] However, the trade-through rule requires dealers to either execute an incoming order against the best bid or offer on the market, or internalize the order by matching it; if the price is matched, the dealer continues to benefit from knowledge of the orders in another market, while the investors in that market must still wait for execution. To achieve its objective of protecting investors who place limit orders and eliminate "free-riding," the SEC should have instituted time priority also (i.e. it should have required that, at the best price, the order placed first is also executed first). Therefore, the SEC's portrayal of the trade-through rule as a solution to structural weaknesses of the exchange industry does not hold to scrutiny.

Furthermore, the extent to which the SEC can achieve full consolidation of order flow in a market as diverse as the U.S. market, either through the price priority principle or through any set of regulatory measures targeted at the order execution level, is also doubtful. As the comments on Regulation NMS revealed, manual and automated markets competing for trading in the same stock could not be brought to cooperate so as to direct trades to the best quote available in either of the two, because of the different speed of execution each market offers. Thus, the SEC had to endorse the suggestion of respondents to the Proposing Release to limit trade-through rule protection to automated quotes only, as the delays associated with manual quotes were thought incompatible with modern technology.[162] Thus, quotes originating at the floor of the NYSE, currently the largest trading venue in the U.S., will not be protected. Although the amount of order volume that will continue to be routed to the NYSE floor following the implementation of the hybrid model remains uncertain for the moment, it will probably constitute a significant gap in the NMS' effort to consolidate all order flow in the U.S.. Even if all U.S. markets turned automated, however, there will still be considerable trading in U.S.

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[161] Re-proposing Release, *supra* note 148, at 77,434.
[162] *Id.*

stocks in trading venues outside the U.S. jurisdiction, such as in European exchanges, which will not be brought to participate in the NMS and blend with the U.S. order flow. Thus, the SEC's objective of consolidating all order flow on NMS stocks is practically unattainable.

VI.c. Long-Term Policy Considerations Regarding the Trade-Through Rule

While the precise effects of the trade-through rule, as described above, have been much debated during the lengthy consultation process that preceded its adoption, the wider policy consequences of a stricter price priority principle for the U.S. equity markets have not been equally discussed. By insisting on consolidation of order flow through a set of rules at the order execution stage and on the basis of price priority, the SEC takes a further step down the same policy it has followed since the inception of the NMS. It is a policy focused on a narrow perception of investors' interests as limited to receiving the slightly higher execution price available in another trading venue, and on an overestimate of the ability of other trading venues to provide real competition to the dominant exchange. The SEC appears convinced that any dealer or trading venue has the choice to compete with the NYSE pricing process by simply posting a better quote. As long as there is nothing in the regulatory framework to eliminate that option, this framework cannot be characterized as overly interventionist. Thus, the SEC chooses to ignore that, even in a neutral regulatory environment, competing with the NYSE's price discovery process is already hard due to its increased liquidity. Unless other trading venues increase the efficiency of their trading services so that, for investors, the benefits of moving away from the major provider of liquidity outweigh the costs, the likelihood of other markets producing consistently better quotes than the NYSE is extremely limited. The only other available option for NYSE competitors is to focus on the needs of particular categories of investors, which will prefer to use their services despite their inability to offer better quotes than the NYSE. However, the SEC-imposed principle of price priority requires other trading venues to at least match the NYSE price discovery process. Competing with the NYSE is simply made harder.

Developments in the U.S. equity markets in the thirty years since the inception of the NMS illustrate the effects of the SEC policy. This policy has so far reinforced the dominance of the NYSE in the U.S. market, allowing it to withstand pressures for change in its trading system longer than any other large exchange. In general, the technological reforms introduced by the NYSE during that period aimed primarily at aiding its floor community to handle an increasingly larger order flow, rather than following the example of other exchanges that moved to a new more efficient trading model. Moreover, this policy has led to an antiquated and largely inefficient NMS infrastructure. Thus, while some orders may have achieved a better price than they would have otherwise achieved at that particular moment – even if price was not the main consideration of investors placing them – the long term interest of the investment community for a more efficient, innovative and dynamic trading mechanism was frustrated.

However, just as the Regulation NMS proposal was being debated, the NYSE announced initiatives to establish an electronic trading system and to transform into a publicly-owned for-profit corporation, through a merger with Archipelago Holdings, an

ATS operator. The following part looks at these reforms and discusses how they are designed to include the NYSE in the new price priority protection regime introduced by Regulation NMS.

VI.d. Regulation NMS and the NYSE Reforms

The Proposing Release did not contemplate a distinction between quotes originating in automated markets and quotes originating in manual markets, thus extending trade-through protection equally to all markets.[163] Implementing that proposal would require automated markets, whose greater advantage was speed of execution, to wait for manually driven markets, such as the NYSE floor, in order to confirm the best bid/offer or respond to ITS messages for order routing. The SEC proposal, supported by the NYSE, was met with almost unanimous resistance from the investment community.[164] It was clear that the SEC would face great challenges if it decided to move forward with a proposal protecting quotes on prices reached through a slower process at the NYSE floor against quotes allowing for immediate execution in electronic trading systems. The alternative, the adoption of the price priority principle for electronic trading alone, would deprive the NYSE of protection under the NMS and sharpen competition. Therefore, the NYSE announced in the NMS hearings held by the SEC its intention to design and operate a hybrid market that would combine electronic and floor trading. Building upon existing NYSE infrastructure for the Direct+ electronic limit order book, the NYSE proposal envisages the abolition of the current order size limitation of 1,099 shares, and introduces automatic execution for market and marketable limit orders up to the availability of the book, while the remaining part of the order will be routed for an auction at the specialist's post on the exchange floor.[165] Thus, the proposal aspires to maintain a role both for floor brokers, who will be responsible for any part of an order remaining unexecuted following automated matching, and specialists, who will have the right to supplement liquidity and engage in market-making both through the electronic limit-order book and through residual orders directed to them.[166] Almost exactly a year following the NMS hearing, NYSE announced its merger with Archipelago Holdings, a group operating an electronic trading system, which would transform the world's largest exchange into a for-profit corporation.[167] At the same time, the implementation of Regulation NMS, technically in effect since August 2005, has been informally delayed by the SEC to allow marketplaces, including the NYSE, time to incorporate in their trading systems the procedures required by the trade-through rule.

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[163] In the Proposing Release, the trade-through rule covered all quotes produced in an "order execution facility," which included manually run markets.

[164] In the Re-proposing Release, the SEC points out that "[n]early all commenters believed that only automated quotations should receive protection against trade-throughs." *See* Re-proposing Release, *supra* note 148, at 77,434.

[165] *See* New York Stock Exchange, NYSE Hybrid Market Initiative – Summary, http://www.nyse.com/pdfs/hybridmarketsummary.pdf (last visited April 12, 2005).

[166] *Id.* at 3.

[167] *See* Joint News Release by the New York Stock Exchange and Archipelago, *New York Stock Exchange and Archipelago Exchange Agree to Merge* (April 20, 2005).

The change of scope in Regulation NMS, which limited the trade-through protection to automated quotes and thus disqualified the NYSE floor from price priority protection, played a part in accelerating reforms at the NYSE. At the same time, the NYSE has been experiencing a drop it its market share, which has slipped in the last six months to almost 73%, underlining the case for reforms. Although the SEC may take pride in encouraging the modernization of the trading system in the largest exchange in the world, the fact that regulatory intervention was necessary for a major market player to upgrade its level of services demonstrates the degree to which U.S. regulation has curbed the operation of competitive forces in the stock exchange industry. Despite a series of factors which have been mounting pressure on the trading and operational models of exchanges, ranging from technological developments to increased institutional investor participation in the market,[168] the NYSE had managed to resist any demands for change in its trading model, for at least as long as the previous market structure regime lasted. Moreover, the implementation of the hybrid market proposal is hoped to assist the NYSE in maintaining the leading position it currently holds in trading on NYSE-listed stocks. If it proves successful, as it is very likely, the U.S. market will continue to be dominated by an exchange concentrating the lion's share in NMS order flow. Under Regulation NMS, the advantages conferred to the dominant player by its greater liquidity will be much increased, as the new trade-through rule imposes stricter adherence to price priority. Therefore, the lack of flexibility of the U.S. market structure regime in responding to competitive pressures is perpetuated.

Part VII. Reform in the E.U.: The Markets in Financial Instruments Directive

VII.a. A New Approach to Securities Regulation in the E.U.

It is not surprising that, following a decade of relentless changes in the stock exchange industry in Europe, the European Commission undertook the initiative, in the context of its Financial Services Action Plan, to replace the ISD. In its motivations for a new directive in its proposal, the E.U. Commission cited increasing competition among exchanges, confusion relating to allocation of regulatory powers among national authorities (such as in the case of cross-border mergers between exchanges) and an outdated investor protection regime.[169] In addition, the E.U. lacked a harmonized regime for new types of trading venues such as alternative trading systems. As these concerns imply, market structure considerations have a central role in shaping the regulatory policy of the new directive, in comparison to their limited weight in the context of the ISD. This change of focus marks a new era for European securities regulation, which no longer seeks simply to facilitate market access for firms and investors across the E.U., but also to boost cross border activity by creating a framework in which firms and investors can

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[168] *See Commission Proposal for a Directive of the European Parliament and of the Council on Investment Services and Regulated Markets, Amending Council Directives 85/611/EEC and 93/6/EEC and European Parliament and Council Directive 2000/12/EC*, at 10, COM (2002) 625 final (Oct. 19, 2002) [hereinafter *Commission Proposal*].

[169] *Id.* at 23.

have greater confidence.[170] This new philosophy was also associated with a reform in the regulation-producing technique through the adoption of the so-called "Lamfalussy process," under which the role of directives is to provide directions of general policy, which will then implemented in secondary legislation by other E.U. bodies.[171]

VII.b. The Markets in Financial Instruments Directive[172]

Following the emergence of new competitors to European exchanges, and the reform of their trading models to incorporate dealer-driven trades (such as block trades), the risks associated with fragmentation of order flow became pressing for European investors. In addition, the abolition of the concentration rule by the Directive could drive more trades out of the exchanges, leading to further fragmentation of the order flow.[173] The Directive's strategy for countering order flow fragmentation concerns is primarily to increase transparency of markets (i.e. information available to investors), as well as to reform best execution requirements for investors' orders by brokers.[174] This part looks at the provisions of the Directive and then discusses similarities and differences with the U.S. National Market System.

VII.c. Transparency Framework

The Directive imposes separate transparency requirements for each type of trading venue. Apart from regulated markets the Directive recognizes two additional broad categories of trading venues: multilateral trading facilities ("MTFs") and systematic internalizers. MTFs, the Directive's equivalent to alternative trading systems under U.S. regulation,[175] may be licensed either as investment firms or as regulated

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[170] *See* Niam Moloney, *New Frontiers in EC Capital Markets Law: From Market Construction to Market Regulation*, 40 COMMON MKT. L .REV. 809, 824 (2003).

[171] This body is the Committee of European Securities Regulators (CESR). As a result of the requirements of the Lamfalussy process, the provisions of the Directive will sound less detailed than those of Regulation NMS in the U.S., as the SEC formulates and implements regulatory policy on a single level. However, the comparability of the two regulatory instruments is not affected, as they both incorporate the principles of regulatory policy in the market structure area.

[172] Directive 2004/39/EC of the European Parliament and of the Council of 21 April 2004 on Markets in Financial Instruments Amending Council Directives 85/611/EEC and 93/6/EEC and Directive 2000/12/EC of the European Parliament and of the Council and Repealing Council Directive 93/22/EC, O.J. (L 145), 1.

[173] *See* Goldfinger, *supra* note 47, at 14. The alignment of supporters behind the two conflicting views on consolidation of order flow is not surprising. French banks, who do not have particular expertise in dealership markets and who wanted to preserve their market share in Euronext-listed stock through a requirement to channel all trades through the exchange, argued in favor of consolidation. London dealers, who saw in the abolition of the concentration rule an opportunity to expand in markets they were previously prohibited from entering, supported the Commission's proposal.

[174] Commission Proposal, *supra* note 168, at 14-15.

[175] The Directive defines MTFs as systems that "bring together multiple third-party buying and selling interests in financial instruments in a way that they result in a contract." Directive, *supra* note 172, art. 4(1)(15).

markets[176] and can thus operate throughout the E.U. once licensed in their home member state. Systematic internalizers, on the other hand, are those investment firms that execute clients' orders outside an exchange on an organized, frequent and systematic basis[177] either by crossing the order against the firm's own position in that stock, or by crossing it against the order of another client. For each of these categories of institutions, the Directive establishes pre- and post-trade disclosure requirements.

At the pre-trade stage, regulated markets and MTFs must disclose, on a continuous basis during normal trading hours, current bid and offer prices and the depth of trading interests (i.e. the size of orders) at those prices as available in their systems.[178] The Directive contemplates that the extent of compliance with this obligation by exchanges may vary in accordance with market type (especially for markets with dealership elements), order size and method of execution (i.e. when trades are executed outside a limit order book).[179] Although the details of the disclosure obligations are left to be set by secondary legislation, it is clear that the quotes published by regulated markets are firm, and that the best bid/offer quote in the system will be included in any case. Moreover, systematic internalizers must publish a quote for stocks on which they execute orders internally,[180] on the basis of which they are obligated to trade for orders up to the average order size for that stock. As with MTFs, internalizers' quotes should be made public on a regular and continuous basis during normal trading hours, and may be freely updated. The flexibility accorded by the Directive to systematic internalizers in terms of execution price is evident in the exemptions it provides from the firm quote obligation. The Directive explicitly allows trading at prices better than the investment firm's quote or different than the prevailing market price for orders from professional clients or very large orders analyzed in a series of smaller trades for execution.[181] In addition, the Directive does not require investment firms to trade with any investor willing to accept their quote, despite the public character of the quotes. On the contrary, systematic internalizers are free to limit access to trade in their quotes only to investors of their choice, on the basis of criteria such as investor credit status or counterparty risk.[182] The difference in approach with the U.S. system, whose major concern is to ensure that all investors have access to the best price in any trading venue, is striking.

The post-trade transparency regime is also characterized by a significant degree of flexibility. While exchanges and MTFs are generally required to make public the price, volume and time of transactions executed through their facilities as close to real-time as possible, national regulators may allow for deferred publication of transaction information in case of very large orders.[183] This exemption underlines the fact that the

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[176] In this respect, the Directive follows the same path that the SEC followed through Regulation ATS, 17 C.F.R. § 242.300 (2005).
[177] Directive, *supra* note 172, art. 4(1)(7).
[178] *Id.* at art. 44(1).
[179] *Id.* at art. 44(4). The Directive leaves the range of bid and offer quotes and, most importantly, the depth of interest that will be made public to be determined by the level 2 measures for which the Commission is authorized.
[180] Their obligation to publish a quote covers all stocks admitted to trading in a regulated market in which they internalize trades on a frequent and organized basis and for which there is a liquid market. Directive, *supra* note 172, art. 27(1).
[181] *Id.* at art. 27(3).
[182] *Id.* at art. 27(5).
[183] *Id.* at art. 45(1).

trading systems of European exchanges provide different terms for the execution of large orders. For systematic internalizers, who are also required to make public the volume and price of the transactions they conclude and the time at which they were concluded, the timeframe set by the Directive for publication of transaction data is flexible, demanding publication only as reasonably close to real-time as possible.[184]

While setting out the content of transparency requirements for trading venues constitutes one of the major aspects of the new European regime, the Directive does not seek to regulate the process through which the information to be made publicly known will become available to investors. Although establishment of a system for dissemination of pre- and post-trade data was discussed during the drafting stage of the Directive, it was ultimately decided not to create one, as most exchanges have established their own information dissemination systems.[185] In addition, there are already a number of private suppliers of trade data in the market, who provide investors with immediate access to prices in various exchanges and trading venues.[186] Thus, the Directive is limited in imposing a general obligation on member states to monitor that the dissemination of information takes place on reasonable commercial terms. In addition, the Directive seeks to facilitate systematic internalizers in performing their publication obligations by authorizing them to enter into agreements with exchanges to utilize the exchange reporting systems for publication purposes.[187] The expectation that the enhanced transparency requirements of the Directive will be served by a "market-led" solution[188] is contrasts with the SEC's effort to build special infrastructure for this purpose, but developments in the market since 1975 justify the Directive's approach.

The transparency provisions of the Directive were one of the most controversial negotiation topics prior to the Directive's adoption, due to their potential to affect competition among trading venues. A high degree of transparency is beneficial for a central-limit-order-book market, where the investors setting the prices with their incoming orders need as accurate pricing information as possible. On the contrary, the dealers (i.e. systematic internalizers) setting prices by posting their quotes and executing orders against their own holdings of stocks would be disadvantaged if their stock ownership levels were disclosed. Member states who felt that their exchanges were threatened by the expansion of trading through order internalization, pressed for higher transparency requirements, especially at the pre-trade level. The final content of the pre-trade transparency requirements was formulated at the European Parliament, where a series of amendments towards greater flexibility were introduced.[189]

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[184] *Id.* at Art. 28(1).

[185] *See* Clive Wolman, *Public Policy, Regulation and Market Data Provision: Developments in the U.S. and Europe*, in THE HANDBOOK OF WORLD STOCK, DERIVATIVE AND COMMODITY EXCHANGES 34 (2004).

[186] *See* Hal. S. Scott, *Regulation of the Relationship between European Union Stock Exchanges: Lessons from the United States*, in EUROPEAN SECURITIES MARKETS: THE INVESTMENT SERVICES DIRECTIVE AND BEYOND 283, 289 (Guido Ferrarini, ed., 1998). Professor Scott mentions a number of initiatives European exchanges undertook in the past to create systems similar to either the ITS or the consolidated tape of the NMS, but they abandoned due to lack of interest because information was already provided by private suppliers, such as Reuters or Bloomberg.

[187] Directive, *supra* note 172, at art. 28(3)(a)(i).

[188] Committee of European Securities Regulators, First Consultation Paper on 1st Set of Mandates, 86 (Ref: CESR/04-261b, June 2004).

[189] The draft directive proposal circulated to industry participants for review did not include any pre-trade transparency requirements. Before the release of the final Commission Proposal however, the matter

The E.U. Commission's proposal explicitly refers to price differentiation between trades in the same securities executed simultaneously in different markets as the main risk that the new directive seeks to counter.[190] In this respect, the Directive shares common policy goals with Regulation NMS. For the drafters of the Directive, the regulatory response to order flow fragmentation comes through a new transparency regime that will encompass all trading venues[191] and thus provide investors with the information they need to make sound trading choices. Increased transparency will allow investors to take advantage of the provisions facilitating access to various trading venues, already established under the ISD and refined in the Directive. Again, transparency for investors and access to the various trading venues are the rationales of the National Market System as well. At this point, however, the Directive's regulatory intervention in market structure stops; the Directive does not take the extra step to prohibit concluding trades at prices other than the best available price. Moreover, the Directive does not envisage a specific infrastructure for the purposes of disseminating information to investors or for the interaction of orders placed at different trading venues, such as the NMS infrastructure.

VII.d. Best Execution Framework

The contractual relationship between a broker and his clients is characterized by the obligation to achieve the best possible execution of a client's orders. A violation of best execution requirements would give rise to a private claim by the client against the broker and, in many jurisdictions, an administrative sanctioning process against the broker by regulators. Price of execution is one of the main parameters on the basis of which a broker's compliance with the best execution requirements is assessed. Therefore, although best execution requirements are founded in the internal relationship between a broker and his client, their operation seeks to reassure that the broker will adhere to the market forces leading to the choice of the best execution alternative over all other available options. As the main concern arising out of order flow fragmentation consists in the added difficulties for achieving best execution of an order in a fragmented market, a legal obligation of the broker to that direction reinforces the broker's incentives to seek actively for the best alternative.

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attracted high profile attention when the then President of the Commission, Romano Prodi, intervened in the debate stating that he was expecting the proposal to provide for a regime of pre-trade transparency. *See* Rebecca Palser, *Investment Services Directive given Go-ahead by European Commission,* WORLD MARKETS ANALYSIS, Nov. 20, 2002. At the discussion of the Commission Proposal in the Council the United Kingdom, backed only by Ireland, Sweden, Luxembourg and Finland, failed to achieve a redrafting of the pre-trade transparency requirements, although industry studies suggested that such requirements could increase banks' costs by $537 million per year in the E.U. *See* Daniel Dombey, *UK Holds Out on Investment Services Proposal European Union, Directive,* FIN. TIMES, Nov. 28, 2003, at 8. Finally, amendments were introduced by the European Parliament, through the steering of Teresa Villiers, a UK conservative MEP, who characterized her efforts a "damage limitation exercise" and pointed out that the Parliament had no choice but to vote for the compromise proposed by the Presidency, as the Parliamentary term was drawing to a close. *See* European Report, *Investment Services: Villiers Prepares for Battle on Second Draft of ISD*, Jan. 10, 2004, *available at* LEXIS.

[190] Commission Proposal, *supra* note 168, at 10.

[191] *Id*.

In setting the content of the best execution requirement in a concrete manner at the European level, the Directive made an additional step away from market access facilitation provisions to substantive legislative initiatives.[192] The Directive's approach on assessing best execution of clients' orders by investment firms is to identify how the orders of a particular client could be executed in the most appropriate way, rather than to impose an inflexible measure of best execution of general applicability. In particular, the Directive requires investment firms to identify the characteristics of the trade that are important for that investor, and the trading venues that would best suit these characteristics. Moreover, the order execution policy of the firm must be explained and approved by the client before the firm carries out the client's orders. This part looks at the best execution regime of the Directive in more detail.

Price is not the single trade characteristic that investment firms must consider when routing investors' orders for execution. The Directive requires investment firms to "take all reasonable steps to obtain the best possible result for their clients taking into account price, costs, speed, likelihood of execution and settlement, size, nature or any other consideration relevant to the execution of the order."[193] The intention of the E.U. Commission was to avoid an "absolute best execution obligation"[194] by mandating investment firms and national regulators to take into account a number of characteristics of the trade other than execution price.[195] An "absolute best execution obligation" would render the Directive's policy choice for a multi-faceted market structure regime ineffective, as it would narrow substantially the broker's choices of order execution venues. The proposals for E.U.-wide secondary legislation on this provision[196] avoided suggesting particular weight for each of the trade characteristics mentioned above, on the basis of regulators' estimates of their relative importance, but sought to provide a clear and exhaustive list of criteria for weighing these factors,[197] including the characteristics of the firm's clients, their orders and the trading venues to which their orders can be directed.[198] The flexibility thus accorded to investment firms and regulators in the context of the best execution regime will allow taking into account factors such as implicit costs, which would include the impact large orders have on the stock price in some trading venues. These costs often drive professional investors trading in large blocks to request

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[192] Under the ISD, investor protection regulation on an E.U.-wide basis was limited to statements of general principle that individual member states could then formulate into specific measures. *See* ISD, *supra* note 44, at art. 11(1). Apart from a best execution obligation, the Directive's investor protection framework includes conduct of business rules, client order handling rules and rules on conflicts of interest. As the impact of these provisions on market microstructure issues is limited, this paper only analyzes best execution requirements.

[193] Directive, *supra* note 172, at art. 21(1).

[194] Commission Proposal, *supra* note 168, at 21.

[195] *Id.* at 27.

[196] Under the Lamfalussy process, the E.U. Commission is authorized to adopt secondary legislation implementing the Directive's provisions, upon the proposal of CESR. For a concise description of the Lamfalussy process, see Commission proposal, *supra* note 168, at 7.

[197] *Id.* at 20.

[198] *See* Committee of European Securities Regulators (CESR), Second Consultation Paper on Best Execution, 21 (Ref: CESR/05-164, March 2005). Although respondents to the CESR's first request for consultation took the view that the text of the Directive allows investment firms to define best execution themselves in accordance with their clients, CESR rejected this view and stated that there is a best outcome to which investment firms will be held accountable. *See* Committee for European Securities Regulators (CESR), First Consultation Paper on 1st set of mandates, 86 (Ref: CESR/04-261b, June 2004).

immediacy of execution from their investment firm. Overall, the objective of the Directive is to define more accurately what best execution consist in for each investor, while also providing a sufficiently clear yardstick to regulators to measure the investment firm's compliance with its obligations.

As the number of alternative trading venues provides investment firms with many choices for order execution, the Directive seeks to ensure that trading venues' terms of access are fair for all firms wishing to explore trading opportunities in their markets.[199] However, the Directive does not require that all investors' orders have access in all trading venues, either by establishing a system interconnecting trading venues (similar to the ITS in the U.S.), or by simply requiring investment firms wishing to trade in a certain stock to acquire access to all possible execution venues where that stock is traded. On the contrary, for an investment firm to comply with its best execution obligations towards its clients, it is sufficient to have access to trading venues whose features serve best the characteristics of the firm's trades, so that they consistently lead to the best result for its clients.[200] Therefore, investment firms targeted at specific categories of investors could provide access only to the trading venues that are most appropriate for these categories.[201]

As an understanding between investors and their brokers is essential for the operation of the Directive's scheme, the Directive introduces a formal requirement for investment firms to provide appropriate information to clients about their order execution policy and obtain their prior approval.[202] Given that best execution will be assessed on the basis of a number of different factors, investment firms must also be able to demonstrate to their clients at the post-trade stage that their orders have been executed in accordance with the firm's best execution policy. The current secondary legislation proposals for the implementation of this requirement suggest that brokers must provide information to clients about the execution venues to which the firm has direct access, the factors and criteria the firm uses to select execution venues, as well as any "inducements" to the firm in connection with the carrying out of clients' orders, such as payment for order flow.[203] Thus, the degree of control investors are expected to have on the selection of trading venues for execution of their orders under the Directive is substantial.

Tailoring best execution requirements to each investor's profile is the main objective of the Directive's regulatory framework, bringing it in stark contrast with Regulation NMS and the trade-through rule. Where Regulation NMS prohibits all trading at a price different than the best available price, the Directive explicitly permits such a trade and recognizes the possibility that it could represent an execution option preferable to some investors. Where Regulation NMS mandates the aggregation of all orders at a central system ensuring full interaction of investors' orders, the Directive allows investment firms to abstain from trading venues that do not serve their clients' interests. For Regulation NMS, an order's point of entry into the trading system should be irrelevant for achieving best execution, while for the Directive it is the subject of

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[199] Directive, *supra* note 172, at art. 33, 34, 42.

[200] CESR First Consultation Paper on 1st set of mandates, *supra* note 198, at 74.

[201] For example, a Portuguese investment firm focused on a domestic retail clientele would not violate its best execution obligations by limit the trading venues to which it has access to Euronext Lisbon.

[202] Directive, *supra* note 172, at art. 21(2)-(3). The approval of investors regarding the possibility of executing the order in an MTF must be express and specific. This statement could imply that the consent of investors as to the general best execution policy need not be express.

[203] CESR Second Consultation Paper on Best Execution, *supra* note 198, at 36.

negotiation between the brokers and their clients. Therefore, in terms of defining what constitutes best execution of a client's order, the divergence between the E.U. and the U.S. regime is great.

VII.e. The Directive's Rationale

The European market structure regime, following the implementation of the Directive, will look substantially different from the U.S. regime. Below, I argue that the Directive's approach was shaped by greater confidence in the potential of competitive forces to bring efficient outcomes in market structure, based on the experience of the past decade in Europe, and by a more accurate assessment of the level of integration of trading venues.

The Directive's policy to establish a market structure regime characterized in general by low levels of regulatory intervention, and in particular by the absence of any rules on allocating order flow among trading venues on the basis of execution price, is rooted in the history of competition among marketplaces in Europe in the last decade. The lack of a concrete market structure regime in Europe, either before or after the adoption of the ISD, allowed European exchanges to undertake significant reform efforts so as to offer higher quality services and thus maintain or increase their market share. The aggregate result of this effort was to increase the efficiency of European markets, by incorporating technological advances that increased speed and quality of execution, converging to a common trading model that is highly efficient, and introducing structural reforms in the governance of the exchanges that allow for more flexible management. In other words, competitive forces that were left to operate unconstrained by any strict regulatory framework led to a revolution in the exchange industry whose major beneficiaries were investors and investment firms.

A characteristic of the European regime in the last decade, in comparison to the U.S. regime, has been the lack of well-defined rules as to the effect of execution price on choice of trading venue. An established price priority principle would not have allowed competition among London's SEAQ-I and continental exchanges to take off, as London prices were consistently different than those in continental exchanges because of the premium charged by London dealers for immediacy of execution.[204] Moreover, strict price priority rules would not have allowed European exchanges to develop their trading models so as to offer to retail and professional investors separate segments of their market where different prices prevail for the same stock.[205] Finally, the case of cross-listed stocks, where it was shown difficult to create an active market at the exchange of the secondary listing because of the increased liquidity in the primary exchange, demonstrates the power of the price priority principle to shield market venues characterized by increased liquidity from competition.

Building on the lessons derived from the evolution of competition among European exchanges in the last decade, the Directive follows an approach that does not seek to minimize differences among trading venues, but to reinforce them. On the one hand, the investor protection regime seeks to ensure full cooperation between brokers and

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[204] *See* Pagano, *supra* note 69, at 197.
[205] *See supra* text accompanying notes 76-97.

investors as to choice of execution venues and to tailor best execution obligations on clients' needs so as to lead to the most effective choice of trading venue. On the other hand, increased transparency requirements seek to ensure that investors and their brokers will receive all relevant information before routing an order to a trading venue for execution. The decision to launch an order at a trading venue not offering the best price is not seen as abnormality, but as reliance on a characteristic of that trading venue other than actual price per stock – provided it does not constitute a violation of best execution obligations. Thus, investors and brokers are not viewed as passive actors who transmit orders in an all-encompassing trading system, but as active market participants seeking the most appropriate execution solutions for their orders. In general, the European regime is characterized by an effort to keep regulatory intervention in market structure aspects at a minimum, leaving to market forces the task of identifying the ideal solution for order execution.

In addition, the technical developments that have revolutionized the stock exchange industry in Europe have also enhanced the capability of market institutions to integrate order flow on the basis of information alone, without support from special, centrally mandated, technical infrastructure. As all exchanges now have introduced automated trading, they are able to offer easy access and remote membership to investment firms around Europe. Exchange mergers and alliances have also expanded the reach of investment firms that maintained membership in one of the exchanges involved. All these developments offer, in effect, to European investment firms the ability to obtain membership in more than one European markets, to follow developments in the European markets in which they are members and to route an order for execution in any of these markets. In practice, the developments in the European markets in the last decade have given rise to a network of technical connections between exchanges and investment firms that provides the same functions that the ITS seeks to provide in the U.S. but in a more efficient manner.

Part VIII. Lessons from a Comparative Look at U.S. and E.U. Market Structure

VIII.a. The Role of Competition in the Two Regimes and Its Effect on Innovation

Market structure regulation in Europe, especially under the ISD, imposed limited constraints on exchanges and other market participants. With the exception of the restrictions imposed by the concentration rule, to the extent implemented by member states, and the transparency requirements imposed by the ISD, investors and financial intermediaries were able to route their orders to the trading venue of their choice. In addition, the European framework removed any regulatory barriers for exchanges seeking to establish trading activities in other member-state jurisdictions, opening the way for the expansion of remote trading screens around the E.U. and thus facilitating access to major European exchanges. Thus, decisions as to where an order should be routed, and the considerations shaping these decisions, were entirely left to the discretion of individual investors and their traders. Given the flexibility of this regime, it is not surprising that fierce competition among European exchanges led to dramatic reallocations of order flow

several times during the last twenty years. In addition, the lack of concrete market structure regulation avoided favoring one exchange over others. The transparency requirements under the ISD, which had initially raised concerns of bias in favor of auction-driven markets, were eventually tailored to avoid major disturbances in local trading systems, and the reforms the LSE undertook to comply with them did not affect its competitive position. In general, European exchanges were able to and did engage in competition with one another, and with other trading venues, on all possible dimensions.

Under this regulatory framework, the competition generated among European exchanges by developments in technology and the increasing globalization of finance, as outlined above, led the European equity trading industry into its most radical transformation since stock exchanges were first created. Trading has become automated in all major European exchanges, which have converged in a common, and arguably efficient, trading model. To finance their investment in trading technology, European exchanges have become for-profit corporations and have often sought a listing in their markets. They have expanded their reach beyond their local jurisdiction by engaging in mergers and alliances, and they have diversified their businesses by establishing derivative trading facilities. As a result, European exchanges today appear particularly strong.

Parallel developments in the U.S. have not been as spectacular. NYSE's dominance in trading activity on NYSE-listed stocks posed significant challenges for potential competitors hoping that, by offering more efficient trading techniques, they would be able to undercut the attractiveness of NYSE's liquidity and price discovery process. The SEC's insistence on the price priority principle, which underlies the National Market System, favored NYSE's ability to offer better prices due to its improved liquidity and thus strengthened its advantage over its competitors. Thus, instead of creating opportunities for competitors to divert order flow from a largely inefficient exchange, the NMS erected barriers to order flow already migrating out of that exchange. As a result, despite the development of the Nasdaq market and the continuing evolution of ATS's trading systems, the NYSE was able to resist competitive pressures and maintain an archaic trading system. The change in the SEC's policy signaled by Regulation NMS, which will now protect automatic quotations only, prompted reforms at the NYSE that are hoped to help it catch up with its European competitors. However, Regulation NMS further reinforces the price priority principle, thus maintaining an additional advantage for the trading venue with the highest liquidity. Perhaps the next round of reforms in U.S. trading systems will also have to be triggered by an SEC action mandated by developments in other parts of the world.

VIII.b. Can a Deregulatory Approach to Market Structure Succeed?

NMS's strategy in achieving order flow integration consists in creating a network that connects competing trading venues (the NMS infrastructure) and setting the principles under which orders interact with each other (price priority). However, market developments in the last fifteen years suggest that market forces have provided substitutes for both these regulatory tools. These developments are more clearly

observable in the European markets, where they operated independently of a strict regulatory structure.

The major goal of a communication network amongst trading venues, such as that created by the NMS infrastructure, is to allow orders placed by a broker in the market where she is a member to be executed in the market offering the best execution, even if that broker is not a member there. European financial intermediaries, on the other hand, have obtained membership arrangements with the trading venues most relevant for execution of trades in stocks for which they typically receive orders for in various ways. In terms of geographical reach, exchanges now count investment firms from all around Europe amongst their members through their remote access facilities. Exchange mergers and alliances have also provided brokers with access to additional national markets and separate sets of stock. Benefiting from the ISD passport, investment firms have established operations in multiple member states. In fact, some brokers receive sufficiently large order flow to develop a profitable internalization business, thus providing themselves competition to exchanges and ATSs. If a broker is not a member to a trading venue, the Directive mandates that trading venue to grant ad hoc access in terms similar to those applicable its members. Moreover, private providers for information collect and supply trade data in a highly specialized manner.[206] Thus, a network connecting trading venues would be of limited use in a market where all necessary connections are already established, maintained and constantly being updated by their primary beneficiaries. Instead, the Directive's focus is on transparency, which will provide financial intermediaries with the information they need to route orders to the most appropriate trading venue. By relying on solutions already provided by market forces, the Directive avoids measures that favor certain trading venues to the detriment of others, while also minimizing the costs of regulation.

With regard to principles of order interaction, the decision to reinforce the price priority principle, as set out in the trade-through rule, has been the most controversial aspect of Regulation NMS. The SEC has gone into considerable efforts to ensure that investors will always receive the best price, even if this entails delays in the execution process or favoring some trading venues over others – even if investors themselves may be indifferent to whether they are getting the best price. In stark contrast, the E.U. regime views price priority as simply one parameter investors and their brokers may take into account when considering which trading venue better serves their execution strategy. Determining best price includes consideration of various factors, such as order size, trading costs, market impact, and other implicit costs such as lost opportunities to trade pending execution. Thus, the Directive mandates disclosure of the broker's order execution policy to investors and seeks to achieve an understanding between them as to the investor's objectives, so that brokers may then direct orders to the appropriate trading venue. While price will remain the most important aspect of best execution for the largest part of the investment community, investors that prefer a trading venue because they see an advantage other than price will also be free to pursue the execution strategy of their choice. Thus, by assigning order interaction decisions to investors and their brokers, the Directive allows a whole set of considerations to guide order interaction, thus responding to whole set of investors' needs, as opposed to just one, price.

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[206] In fact, the Directive requires member states to make sure that such data are available to the public on "a reasonable commercial basis." *See* Directive, *supra* note 172, art. 27, 28, 29, 30.

As a result, a deregulatory approach to market structure can succeed. With a communication network provided by market participants and a more nuanced approach to order interaction, a deregulatory approach effectively contributes to market structure all the elements that must stricter regulation mandates. At the same time, a deregulatory approach maintains flexibility for incorporating in the market structure design constantly emerging innovations that affect both communications techniques and decisions on order interaction.

VIII.c. Implications for Academic Debates on Competition and Innovation

Both scholars arguing for greater regulatory intervention in securities markets and proponents of a free-market approach have criticized the SEC's policies in establishing a National Market System. Lessons drawn from a comparison between the U.S. and the E.U. experience are significant for both sides of this debate for several reasons. First, empirical results can supplement arguments based on theory and ideology alone. Second, cross-jurisdictional comparisons illustrate how radically different solutions from those the SEC has considered might work in practice, and provide details on how market participants actually respond to incentives and when they innovate.

For supporters of a more pro-active role for regulation in the securities industry, the SEC's efforts to implement the National Market System did not go far enough. These commentators would favor an all-encompassing electronic system that would introduce a price/time priority rule, where, among quotes at the best price, the earliest one to arrive in the system would be executed first.[207] They do not view the SEC as the designer of this system, but rather as a coordinator among market participants[208] and as a regulator ready to force the industry to push ahead, if necessary.[209] They criticize the SEC for not undertaking this role actively, although the 1975 Amendments granted it such authority. However, contrasting this view on the potential of the SEC to instigate market innovation with the developments in the European industry during that same period highlights its weaknesses.[210] It is hard to imagine a public body pushing the industry through a transformation as radical as that of the European equity markets, which included trading model overhaul to automation of markets and even a new organizational structure. At best, the SEC could ask for reforms once it saw markets in other jurisdictions pushing ahead; however, one cannot expect the SEC to be thinking about how to surpass other markets. Moreover, the failure of SIAC to provide efficient infrastructure for the National Market System and the criticism it has received for favoring the NYSE prove the limits of an SEC-encouraged or coordinated initiatives undertaken by some market players on behalf of the whole market. On the other hand, competition among marketplaces instills in market participants the initiative to improve the quality of their services and respond more successfully to investors' needs, as discussed above. The lack of substantial progress in the trading methodology employed by the NMS marketplaces, and in

[207] *See* Seligman, *supra* note 2, at 133. *See also* Mendelson & Peake, *supra* note 2, at 443.
[208] *See* Seligman, *supra* note 2, at 134.
[209] *See* Mendelson & Peake, *supra* note 2, at 443.
[210] For an analysis of that "cueing" function of the SEC, see Ahdieh, *supra* note 1.

particular the NYSE, between 1975 and 2005 suggests that criticisms of the U.S. regime as overly restrictive of competition are well placed.[211]

Competition among trading venues in the European market structure regime bears many similarities to the type of competition envisaged in the reform proposals of Professors Romano, Choi and Guzman.[212] The Directive grants investors and financial intermediaries flexibility to choose a trading venue for their orders, taking into account the set of rules under which their orders will be executed. As the negotiations for the ISD and the Directive have shown, E.U. member states have aligned their interests with the interests of the major exchanges in their jurisdiction and have adjusted their national regimes to accommodate the reforms marketplaces instituted. Thus, by choosing an execution venue, investors choose the regime that will govern their transactions, just as Romano, Choi and Guzman propose for securities offerings. Choi and Guzman point in particular to the challenges for the extraterritorial application of U.S. laws, such as difficulties in enforcing U.S. rules in foreign jurisdictions, the risk of interfering with a foreign country's regulatory system and the inability to regulate effectively every transaction that somehow impacts American investors.[213] At the equity trading level, a National Market System aiming to consolidate all order flow on stocks trading on U.S. exchanges faces similar challenges, as many U.S. stocks trade in foreign exchanges, and vice versa.[214] Therefore, the hope to aggregate all order flow in a single market system is as ill-fated as the desire to regulate all securities offerings that somehow impact American investors. On the other hand, the deregulatory approach of the European market structure regime has allowed trading venues to develop their own order interaction rules that have sought to accommodate a wide range of investors. Moreover, the achievements of European exchanges, especially when contrasted to limited progress made by U.S. counterparts, are evidence of the success of regimes based on investor choice.[215]

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[211] *See* Beny, *supra* note 5.

[212] *See infra* text accompanying notes 7-8.

[213] *See* Choi & Guzman, *supra* note 8, at 916.

[214] In 2005, the aggregate equity turnover of U.S. companies in the LSE had exceeded £509.3 billion, corresponding to trades in 30.6 billion shares. *See* London Stock Exchange, Secondary Markets Factsheet (Dec. 2005), http://www.londonstockexchange.com/NR/rdonlyres/06FDC8A5-526D-4052-9AAC-7C22C087D61E/0/SecondaryMarketFactsheet0512.pdf (last visited Feb. 16, 2006). There are currently 80 U.S. companies traded on the LSE, all of which are listed on a U.S. exchange. *See* London Stock Exchange, http://www.londonstockexchange.com/en-gb/pricesnews/prices/International+companies/usa.htm (last visited Feb 16, 2006). In comparison, the total trading volume of NYSE for stocks of companies incorporated in the E.U. (including the EEA) for 2005 amounted to $381.5 billion, corresponding to 11.6 billion shares. *See* New York Stock Exchange, 2005 Non-U.S. Trading by Country, Region, http://www.nyse.com/pdfs/vbr05_jan1006.pdf (last visited Feb. 16, 2006).

[215] The success of European markets in establishing linkages among themselves, as well as with brokers located in foreign jurisdictions, and the parallel development of private providers that disseminate information quickly and efficiently, raises concerns about the overall necessity of an issuer choice regime, similar to that envisaged in the Romano, Choi & Guzman proposals. To the extent that investors can access secondary markets cheaply and efficiently through these links, regardless of their respective locations, the level of integration an issuer choice regime hopes to bring to the market may be achieved through secondary market integration. This question remains to be explored by further research.

Part IX. Conclusion

The comparison between the U.S. and European regulatory regimes on market structure, discussed alongside the effects of previous regulations on the underlying markets, illustrates the consequences regulatory policy choices have on innovation. In Europe, competition among exchanges has led the stock exchange industry towards a radical transformation that allowed it to take advantage of the innovative trading and communication techniques made possible by technological advances. In the U.S., such reforms were delayed by a decade and were introduced only after substantial pressure by the federal regulator. Regulatory policies favoring major market players inhibited innovation in the U.S., while a deregulatory policy that allowed competition to operate unrestrained fostered innovation in Europe. This analysis indicates that the SEC's decision to strengthen its adherence to the price priority principle, which confers an important advantage to the competitor with the greatest liquidity, will further endanger future innovation in the U.S. equity trading markets.

Finally, a parallel analysis of the U.S. and the European approaches to market structure regulation leads to a broader conceptualization of investor protection. Often in securities law the significant impact of technical issues on market behavior focus regulatory debates on implementation details rather than on the underlying policies. For example, the SEC's concerns underpinning Regulation NMS were concentrated on potential losses for an individual investor whose order was not executed, while another order in another marketplace was executed at an inferior price. Opponents of the SEC's plans often pointed to costs of a delay of some seconds necessary for verifying that no superior price orders were awaiting execution in other markets. Such arguments add value to regulatory debates; however, viewing regulation from the perspective of individual trades, they lose sight of the long-term implications of policy choices. For investor protection the wider repercussions of regulatory policy choices are equally important. In other words, regulations focusing solely on arguments about individual trades run the risk of missing the forest for the trees. Ultimately, U.S. investors would have been the greatest beneficiaries of increased innovation in the U.S. markets.