Financial Exchange Consolidation and Antitrust: Is There a Need for More Intervention?

BY ALEXANDER P. OKULIAR

FINANCIAL EXCHANGES ARE THE HEART of the modern economy. Trillions of dollars pump through them each year, promoting capital formation to sustain economic growth and distributing business risks and rewards across the economy.[1]

In the last two decades, technology and new regulatory policies have transformed exchanges from nonprofit venues with face-to-face trading into public companies with professional managers, demanding shareholders, and automated trading.[2] This new era of the corporate exchange has brought with it a vibrant mergers and acquisitions environment, as exchanges seek greater network effects and pursue greater economies of scale and scope.[3] The national exchanges have absorbed the regional exchanges, and the three primary futures exchanges have combined into one of the world's largest exchange groups.[4] In just the last year, upstart futures powerhouse IntercontinentalExchange, Inc. (ICE) bought NYSE Euronext; and the combined BATS/Direct Edge is now the nation's second largest stock exchange operator.[5]

The Antitrust Division of the Department of Justice has remained largely silent during this wave of consolidation, publicly analyzing only a handful of more than a dozen deals and moving to block only one exchange merger in the last decade.[6] Some have questioned whether the agency is doing enough; others argue it is doing too much. On most levels, a light touch arguably has been appropriate for this sector because exchanges exhibit a unique blend of network effects, scale and scope economies, disruptive technologies, and complex regulatory environments. In addition, financial exchanges have a long history of self-regulation. Justice William O. Douglas, while Chairman of the Securities and Exchange Commission (SEC), remarked that it was best to let "the exchanges take the leadership with Government playing a residual role. Government would keep the shotgun, so to speak, behind the door, loaded, well oiled, cleaned, ready for use but with the hope it would never have to be used."[7]

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This self-regulatory philosophy, combined with the broad, non-competition investor protection mandates of the SEC and Commodity Futures Trading Commission (CFTC), the platform economics of exchanges, and the increasing reliance on technology, has yielded a unique competitive terrain in the exchange industry. As a consequence, the DOJ has had less latitude to act here because competition concerns often are subordinated to non-competition goals and market concentration and self-regulation pose certain specific benefits sought by regulators. But recent incidents like the May 2010 flash crash, the problematic Facebook initial public offering (IPO), and other technical issues have raised questions about possible structural flaws in the existing competitive and regulatory landscape.[8] These incidents also implicate the proper role for the DOJ in enforcing and advocating for vigorous competition in these markets.

Factors Shaping Modern Financial Exchange Markets

Several factors have influenced the competitive dynamics of modern financial markets and the DOJ's public analysis of exchange-related mergers.[9] Perhaps the most important of these are: (1) the economics of exchanges; (2) the different regulatory approaches to trading and clearing that have been adopted by the SEC in stock and options markets and the CFTC in the commodities and futures markets; and (3) technological innovations in trading.

Economics of Financial Exchanges. Financial exchanges operate as two-sided platforms that match buyers and sellers of "negotiable items with a high degree of standardization."[10] As with other platforms, trading centers exhibit strong network effects—their intrinsic value to each trader grows with the total number of traders participating in the market.[11] Economists refer to this effect on financial exchanges as the "order flow externality" or "liquidity effect."[12] Traders simply note that "liquidity attracts liquidity."[13] Exchanges also benefit from economies of scale and scope, meaning that the larger they are the more efficient they become for trading and for such ancillary services as listings, order matching and routing, execution, and the aggregation and provision of market data.[14]

The economic dynamics of exchanges can have both positive and negative effects on competition. As the DOJ has said, one advantage is that the "more traders that trade on a particular exchange, the less costly it is to trade on that exchange, as search costs are reduced and increased competition for trades reduces prices."[15] But an observed downside is that "trading in any particular financial instrument [tends] to become concentrated on a single exchange."[16] Thus, size promotes intra-exchange trading competition between orders, but it can reduce inter-exchange order flow competition between exchanges. The concentration of trading in a single market can result in lower quality services and higher barriers to entry.[17]

In addition, inter-exchange competition can have a downside. It can harm non-competition goals of investor protection and market integrity by fragmenting trading of a particular financial instrument across too many competing exchanges, thereby increasing trading costs and slowing efficient price discovery. As the SEC has observed, "When many trading centers compete for order flow in the same stock, however, such competition can lead to the fragmentation of order flow in that stock. Fragmentation can inhibit the interaction of investor orders and thereby impair certain efficiencies and the best execution of investors' orders."[18] The SEC and CFTC have spent decades looking for the right mix of competition and regulation to maintain fair and orderly markets and each has arrived at very different solutions to this problem.[19]

The SEC Approach: The National Market System. The SEC became concerned in the 1970s that the nation's exchanges were not innovating quickly enough to keep pace with the economy. First, from a technical standpoint, the exchanges were trembling under the weight of increased trading. Between 1962 and 1972, volume on the NYSE quadrupled from 4 to 16 million shares per day. This surge in trading led to a "paperwork crisis" in the late 1960s that overwhelmed the paper-based execution system, causing brokerage houses to delay or lose billions of dollars in transactions and forcing many of them to collapse.[20] In addition to these technical problems, the SEC believed the exchanges were too clubby, arguably hurting the integrity of the markets, particularly as the dollar volume of institutional trading grew. At one point, the SEC observed that large investors were cultivating relationships with certain brokers outside New York to avoid the fixed commissions at NYSE, potentially resulting in better prices for these large funds at the expense of individual investors. As SEC Staff noted, "These relationships raised the specter of a fragmented market structure in which multiple markets offering limited access traded the same securities without publicly disseminating quote and trade information."[21]

In 1975, Congress amended the Securities Exchange Act[22] to foster "a national market system composed of multiple competing markets that are linked through technology."[23] This system includes both registered stock exchanges and informal electronic trading platforms, including alternative trading systems and "dark pools," which match large buy and sell orders based on stock exchange prices but without publicly disseminating quote information about the trades to prevent distorting the market price.[24]

To create the national market system envisioned by Congress, the SEC has implemented dozens of changes, most recently with the adoption of Regulation NMS in 2005.[25] Most stock exchanges and alternative trading systems are now electronically interlinked and essentially operate as one large trading center. A person can buy a stock in one market and sell it in another market at prices that must be transmitted and honored in all trading venues.[26] In creating the current regulatory framework, the SEC has re-regulated trading to mitigate the liquidity effect and lower barriers to entry while at the same time using technology to allow economies of scale and scope to develop across virtually linked exchanges.[27]

In policing exchange activity, the SEC also has eliminated or restricted competition in certain services it believes are necessary to pursue its broader public interest mandate to protect investors and maintain the integrity of markets. For example, after the paperwork crisis in the 1960s, the SEC and others worked together to register a single non-profit entity, the National Securities Clearing Corporation, to clear and settle stock trades for the entire industry, ending competition in this space.[28] The SEC subsequently established a similar policy making the Options Clearing Corporation an analogous regulated utility to clear all options trades.[29]

The SEC similarly has limited competition in stock and options listings, market surveillance for fraud, reporting of consolidated quotation data, and regulation of brokers, dealers, and listed companies. The agency has reserved these franchises for organizations it approves, such as registered national securities exchanges or, as the SEC calls them, "primary markets."[30] Thus, only a few entities, like the New York Stock Exchange, can list stocks and create rules for listed companies, including requirements for revenues, capitalization, corporate disclosures, and governance.[31]

The SEC Staff has observed that these ancillary price discovery and regulatory functions generate "externalities" that benefit the national market system as a whole.[32] Registered exchanges like NYSE are able to offset the costs associated with these additional regulatory and price discovery burdens by generating revenue through ancillary services that cannot be provided by other market participants: "Their membership dues and fees, consolidated tape revenue, and listing fees are sources of income, not available to all other market centers, that provide for regulatory services and compensate the primary markets for furnishing price discovery and regulatory services."[33]

Recent research indicates that empowering certain exchanges to be self-regulatory organizations (SROs) with authority to provide ancillary services, while allowing them to be corporate profit maximizers, can have unintended consequences on competition.[34] For example, in certain services, like fraud surveillance, which offer less obvious (but important) benefits to the traders using the market, SROs may have a financial incentive to cut back on oversight costs to allow for lower prices to traders and other participants. Alternatively, this empowerment may cause them to redirect exchange resources to the most profitable services and to push for better returns on those services by raising prices. Thus it is that in services like market data and listings, which are critical for traders and brokers to conduct business, some observers have begun to voice concerns that SROs enjoy high regulatory barriers to entry and lack sufficient competition to keep prices low and quality of service high.[35]

The CFTC Approach: Consolidation of Trading and Clearing in Vertical Silos. The CFTC has taken a more laissez faire approach to regulating the commodities and futures markets.[36] Unlike with the SEC, Congress did not order the CFTC to create a national market system.[37] While the recent financial crisis is changing things, these commodities and futures markets still do not exhibit the same level of electronic linkage, transparency, and price protection that are standard in stock and options trading.[38] Additionally, the CFTC has never imposed uniform central clearing for these financial markets. The lack of central clearing has allowed futures exchanges to own clearing and settlement functions and create vertically integrated businesses referred to in the industry as "vertical silos."[39]

As a result, a trader buying a financial futures contract on one exchange typically cannot sell that contract on another exchange, nor can it offset the loss on a trade occurring on one exchange against a gain on another exchange through a central clearing account. These vertical silos have amplified the liquidity effect associated with exchanges and have severely limited entry by rivals.[40] The CFTC also imposes self-regulatory responsibilities on its exchanges, which can further enhance their ability to insulate themselves competitively in such a vertically integrated environment.[41] Thus, when compared to stock and options markets, the commodities and futures markets in the United States tend to exhibit robust intra-exchange competition but less competition among exchanges.

Technological Innovation in Trading. The paperwork crisis also pushed Wall Street and the SEC to rely heavily on computers to resolve the growing computational and recordkeeping issues arising from increased market activity.[42] This widespread adoption of technology has fundamentally altered the exchange business. Traders once transacted business face-to-face or over the phone and then literally executed their trades on paper in a back office—the average stock trade once required 33 separate documents.[43] Exchange operators now rely on software to process trades, clear accounts, and offset positions for stocks or options on one exchange with trades on another. Traders use powerful computer algorithms to scan multiple venues simultaneously and to execute trades around in the globe in microseconds—faster than the blink of a human eye.[44]

While there have been large efficiency gains in trading because of technology, an increase in technical incidents has exposed potential problems with the current regulatory and enforcement environment. For instance, Standard & Poor's (S&P) issued a report warning of possible downgrades to financial exchanges because "technical glitches" that could reveal the exchanges' "vulnerability to high operational risk."[45] The report cited 23 separate technical problems since March 2012 that shut down exchanges, including a BATS system malfunction that resulted in BATS halting its own IPO; a technical malfunction on NASDAQ that delayed Facebook's IPO and caused $500 million in trading losses; matching engine outages on NYSE that caused trading to halt; and a connectivity issue at NASDAQ that stopped trade and quote data dissemination and halted trading of NASDAQ-listed securities at all trading venues.[46] S&P attributes these problems in part to the increased reliance on technology to compensate for fragmentation of trading across numerous venues as competition in trading intensifies, particularly with the rise the last several years of alternative trading systems catering to low latency, high-frequency trading. Stock trading venues are the most vulnerable to these operational problems, according to S&P; but the risks also increasingly extend to all trading venues and to their members.[47]

The DOJ's Analysis of Recent Financial Exchange Mergers

The DOJ has an extensive history of enforcement with financial exchanges, dating back to its investigations of collusive activity at the NYSE in the 1970s and continuing into more contemporary times.[48] The agency's track record in reviewing transactions in this sector, however, is less extensive and aggressive than its work policing collusive activity. This lighter touch appears to reflect the agency's nuanced understanding of the interplay between exchange economics, technology, and the differing regulatory policies of the SEC and CFTC.

Analyzing Mergers in SEC-Regulated Markets. As the DOJ has pointed out, in SEC-regulated exchanges, the national market system policies generally have overcome network effects, lowered barriers to entry, and spurred competition, primarily in trading.[49] The agency's activity in these markets appears to reflect its recognition that, broadly speaking, the trading businesses exhibit robust competition. The DOJ has chosen to focus its public analysis in recent investigations on competition in particular ancillary services, however narrow, that are needed to support the overall market system envisioned by the SEC.[50]

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NASDAQ/Instinet and NYSE/Archipelago (2005). In its first public statement on a reviewed deal, the DOJ examined the acquisitions by NYSE and NASDAQ of two fast-growing electronic trading platforms, Archipelago and Instinet, respectively.[51] At the time, the exchange business was not viewed to be terribly competitive. One observer said:

> The order flow externality gave [NYSE, Amex, and NASDAQ] market shares in excess of 80 percent [of trading in their listed securities] despite customer dissatisfaction with the generally low quality services they received and the high fees that they paid. Innovative and cheaper exchanges could not attract order flow away from these incumbents because their markets simply were not liquid.[52]

NASDAQ controlled about half of the trading in its listed stocks,[53] with Instinet holding roughly 25 percent.[54] As a physical exchange, NYSE was even more central to trading in its listed stocks, handling about 80 percent of trading in those stocks in 2005.[55] The two transactions would increase concentration and combine NASDAQ with a close electronic competitor.[56] On its face, this would seem to be a problematic set of deals. But the DOJ approved both of them after examining the implications for trading generally and for two externality services, listings and market data.

The agency pointed mainly to new SEC regulation and the imminent entry of several exchanges as justification for approval. As to the first reason, the SEC had just released Regulation NMS, which when fully implemented by 2006 promised to further lower barriers to entry in trading and market data by protecting against trade-through on physical exchanges and increasing interlinked access to market data across exchanges.[57]

In addition, the DOJ cited announcements by "several separate enterprises," including regional exchanges the Boston Stock Exchange and Philadelphia Stock Exchange, to enter in each of the three overlap services.[58] The agency observed that "the healthy functioning of [the SEC's] national market system is of vital importance to the economy" and promised to "monitor developments in the industry to ensure that the evolution of this dynamic and changing marketplace occurs without competitive constraints."[59]

NASDAQ/ICE/NYSE Euronext (2011). The DOJ next publicly analyzed an SEC-regulated exchange acquisition in 2011, when NASDAQ sought to intervene in NYSE's merger with the German exchange group, Deutsche Börse AG, and launched a competing hostile takeover for NYSE together with futures exchange, ICE. The DOJ again focused heavily on externality services in its analysis. This time, the agency concluded that a NASDAQ/NYSE deal would substantially reduce competition in corporate stock listings services, opening and closing stock auction services, off-exchange stock trade reporting services, and real-time proprietary equity data products.[60] It moved to block the deal and NASDAQ quickly abandoned its bid.[61]

In reviewing NASDAQ/NYSE, the DOJ publicly observed the importance of healthy competition in SEC-protected externality services to the stability of the national market system. In its statement on the deal, the DOJ noted that "listing stock exchanges act as 'gatekeepers' to public equity markets, allowing only certain companies that meet rigorous standards to list and attract investment capital from the public."[62] Since only registered national securities exchanges can offer corporate stock listing services—at the time essentially only NASDAQ and NYSE—the DOJ reasoned a merger between them would effectively be a merger to monopoly.

Similarly, the DOJ saw the deal as a threat to stock auction services that primary listing exchanges offer every day to assign price and match orders at the open and close of trading. These services began as exclusive franchises of primary listings exchanges and then remained largely with those exchanges because of network effects as the SEC re-regulated markets. As the DOJ explained it,

> A long line of orders builds up every night waiting to execute at the moment the market opens. These orders are based on information revealed overnight, which is not reflected in the market price at the close of the previous day. Similarly, at the end of each trading day, major market participants place large orders to balance their portfolios, potentially creating large imbalances in order flows and distorting prices.[63]

This price discovery function is essential to the American system of stock trading. As with listings, the DOJ believed a merger of NASDAQ and NYSE would yield a monopoly on a service essential to the functioning of the national market system. The agency saw similar issues in two other services, trade reporting and certain real-time proprietary equity data products.[64]

Deutsche Börse/NYSE Euronext (2011–2012). In examining the underlying deal that spurred NASDAQ to launch its abandoned hostile bid for NYSE, the DOJ again focused on the potential for harm in SEC-protected externality services in its analysis of the proposed merger of NYSE Euronext and the German stock exchange group, Deutsche Börse AG.[65] Both exchange groups controlled sprawling global businesses, but, importantly to the DOJ, Deutsche Börse owned a substantial interest in Direct Edge, the fourth-largest American stock exchange.[66]

The DOJ defined markets for displayed equities trading services, listing services for exchange-traded products, and real-time proprietary equity data, looking to each of these as distinct externality services. For instance, the DOJ explained that "displayed trading venues" serve a unique role as "the backbone of the American national market system."[67] They derive this importance from their role offering "continuous pre-trade publication of the best-prices quotations for buying and selling exchange-traded stocks in a national consolidated stream, the display of certain customer limit orders (offers to buy and sell stock at particular prices), and the provision of deep and reliable liquidity for a broad array of exchange-traded stocks."[68] Market participants, including dark pools and other platforms, "rely on displayed trading venues to provide meaningful price discovery for exchange-

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traded stocks and to act as exchanges of last resort, especially for thinly traded stocks, in times of market volatility or stress."[69] Only registered stock exchanges NYSE, NASDAQ, BATS Global Trading, and Direct Edge could satisfy this need for displayed equity trading services, leaving the dozens of alternative trading systems with undisplayed liquidity outside the DOJ's defined market, despite their impact on competition in trading more generally.[70]

The DOJ analyzed the listings and proprietary data markets similarly, meaning the combination of NYSE with a partial ownership interest in Direct Edge would reduce the competitors in each market from four to three without any offsetting efficiencies. The DOJ argued that barriers to entry were high in each of these markets because any potential entrants would have to overcome hurdles of reputation, scale, network effects, and the regulatory barriers imposed by the SEC to becoming a registered stock exchange capable of offering these services.[71] The agency restricted its geographic market analysis to the United States based mainly on the regulatory implications and practical difficulties of cross-border trading.[72]

The DOJ and the parties agreed to settle the matter with a sale of Deutsche Börse's partial interest in Direct Edge, but the deal fell apart after the European Commission moved to block based primarily on overlaps in European derivatives trading.[73]

Analyzing Mergers in CFTC-Regulated Markets. The DOJ's explanation of its transaction analysis in CFTC-regulated markets indicates some similarities to how it examines deals involving SEC-regulated markets: it follows a Guidelines approach and employs a light touch on enforcement activity. But the agency has pointed out a critical difference: unlike in SEC-regulated markets, the DOJ's minimalist enforcement agenda in the commodities and futures markets appears animated largely by the absence of significant head-to-head competition among these exchanges as a result of CFTC's regulations.

Thus, the agency approved CME's acquisition of crosstown rival Chicago Board of Trade (CBOT) in 2007, despite the fact that "the two exchanges account for most financial futures (and in particular, interest rate futures) traded on exchanges in the United States."[74] The DOJ decided the parties' "products are not close substitutes and seldom compete head to head, but rather provide market participants with the means to mitigate different risk."[75] The agency also seemed persuaded that CME and CBOT were, "absent the merger, unlikely to introduce new products that compete directly with the other's entrenched products, in part due to the difficulty of overcoming an incumbent exchange's liquidity advantage in an established futures contract."[76] The agency concluded that network effects had fully insulated the exchanges from one another's competition, except potentially at the point of new product introduction.

With respect to this innovation competition, the DOJ remarked that "[u]nder the current clearing framework, competition tends to be limited to that which occurs when a new contract, i.e., one addressing a market risk not addressed or not adequately addressed by existing products, is introduced."[77] Thus, "the introduction of a new contract by one futures exchange frequently prompts another exchange to offer a similar contract, and a battle to garner all the liquidity in the contract ensues. After one exchange wins most of the liquidity in the contract, the other exchange usually exits."[78]

But in looking at the CME/CBOT deal, the DOJ seemed most persuaded by the fact that futures contracts can be tied to almost any underlying asset in an economy—meaning the development of new contracts is "bound only by the imagination."[79] The agency noted that while competition between CME/CBOT had "at times, provided some incentive for them to develop and offer new products" the main drivers of innovation came from "the prospect of winning business from the over-the-counter market and the potential to offer products that the OTC community can use to hedge the risk associated with its activities."[80] It also concluded that entry into this aspect of competition was imminent.[81] While entry has occurred since the merger, including by NYSE Liffe, these new competitors do not seem to have imposed much discipline on CME, particularly in interest rate futures tied to U.S. Treasury securities.[82]

Some criticized the DOJ for allowing what they perceived as a merger to monopoly.[83] The DOJ answered in part by advocating for change in the regulatory structure of futures trading. Responding to a request for comment, the agency explained that "there is reason to believe that this structure, interacting with the importance to traders of exchange liquidity, makes it more difficult for exchanges to introduce new financial futures products capable of providing sustained head-to-head competition against existing products."[84] Allowing common ownership of an exchange and clearinghouse "can have the effect of amplifying networks effects and making it more difficult for potential exchange competitors to enter the market."[85] And, in a pointed comparison with the SEC's approach to regulation, the DOJ stated:

> [T]he Department believes that the control exercised by futures exchanges over clearing services . . . has made it difficult for exchanges to enter and compete in the trading of financial futures contracts. . . . In contrast with futures

exchanges, equity and options exchanges do not control open interest, fungibility, or margin offsets in the clearing process. This lack of control appears to have facilitated head-to-head competition between exchanges for equities and options, resulting in low execution fees, narrow spreads, and high trading volume.[86]

While there has been much discussion of modifying the structure of these markets, and changes are underway to require exchange trading and/or clearing of certain over-the-counter swaps, the vertical silo structure still persists in American listed futures trading.[87] And, perhaps as a result, the DOJ has not moved to block or modify any of the recent deals in futures trading, including CME's $11 billion acquisition of NYMEX in 2008 and $126-million purchase of the Kansas City Board of Trade in 2012, or ICE's $11 billion acquisition of NYSE, including the NYSE Liffe futures exchange, in 2013.

Conclusion

Former FTC Chairman Timothy Muris once observed: "Competition presses producers to offer the most attractive array of price and quality options" and "drives [them] to fulfill promises concerning price, quality, and other terms of sale."[88] This observation illuminates the key role the DOJ can play in ensuring exchanges continue to fulfill their promises to the many customers in these complex and dynamic markets, including those promises needed to sustain the broader exchange system.

To date, the DOJ's approach, combined with the SEC's regulatory policies, appears to have generated a lot of success in the stock and options markets. Competition in trading is vigorous and entry in stock trading is up sharply, particularly from technology-driven alternative trading systems, with more than 200 now in operation.[89] Average transaction costs are down and technological innovation has improved, as demonstrated by the faster execution speeds and rapid dissemination of market information.[90] Similarly, 12 options exchanges with 7 different parent owners now compete for record order flow.[91]

The picture is more mixed in the CFTC-regulated markets. Volume and notional value of order flow are up considerably, suggesting vigorous intra-exchange competition. But, despite the DOJ's advocacy, futures trading in the United States is now largely controlled by two major vertically integrated exchange operators, CME and ICE, with analysts and industry observers commonly referring to these markets as monopolies.[92]

Lurking in the background are the growing concerns about technical exchange viability in the prevailing economic and regulatory environment. Although regulatory tools are an avenue to mitigating these problems (and the SEC is weighing proposed regulations now), continued DOJ advocacy and enforcement offer valuable complements to promoting non-price competition and combating these increasing operational issues at exchanges, keeping the heart of American capital formation beating smoothly. ■

[1] Concept Release on Equity Market Structure, Exchange Act Release No. 34-61358, 75 Fed. Reg. 3593, 3597 (proposed Jan. 21, 2010) (describing market structure for equities trading) [hereinafter Equity Market Concept Release]; *see also* Securities Exchange Act of 1934, 15 U.S.C. § 78k-1(a)(1)(A) (2013) [hereinafter Exchange Act]; Silver v. New York Stock Exch., 373 U.S. 341, 349–50 (1963) (explaining the central role of exchanges to the economy).

[2] David Schneider, *The Microsecond Market*, IEEE Spectrum (Apr. 30, 2012 7:03 PM), http://spectrum.ieee.org/computing/networks/the-microsecond-market (describing the new trading environment). The iconic New York Stock Exchange building at 11 Wall Street is now mainly a television studio, tourist attraction, and administrative center—the real action takes place in suburban New Jersey, at the company's 400,000 square foot data center, where 1.6 billion shares of stock worth $70 billion change hands daily. *See id.* at 1.

[3] Ioannis Kokkoris & Rodrigo Olivares-Caminal, *Some Issues on Cross-Border Stock Exchange Mergers*, 29 U. Pa. J. Int'l L. 455, 459 (2007) (noting that one study showed 60 new exchanges and citing to Matthew J. Clayton et al., *On the Formation and Structure of International Exchanges* 1 (Tinbergen Inst., Discussion Paper No. TI 99-079/2, 1999)); *see* Equity Market Concept Release, *supra* note 1, at 3599 (identifying the approximate number of alternative trading systems); Roberta S. Karmel, *Turning Seats into Shares: Causes and Implications of Demutualization of Stock and Futures Exchanges*, 53 Hastings L.J. 367, 370–73 (2002) (explaining the development of electronic communications networks and other alternative trading systems).

[4] *See Factbox: A History of Global Exchange Merger Activity*, Reuters, May 16, 2011, http://www.reuters.com/article/2011/05/16/us-factbox-exchanges-idUSTRE74F4RJ20110516 (listing major recent deals); Bryan Gant & S. Lynn Diamond, *European Union Blocks Merger of NYSE Euronext and Deutsche Börse AG*, The Exchange, Insurance and Financial Services Developments, Fall 2012, at 19, 21 n.8 (compiling recent exchange transactions).

[5] *See* Editorial, *ICE Buys NYSE-Euronext, The End of the Street*, The Economist (Nov. 16, 2013), *available at* http://www.economist.com/news/finance-and-economics/21589913-improbable-takeover-highlights-uncertain-future-share-trading-end; Steve Rosen, *Merger of Bats Global Markets, Direct Edge Passes Antitrust Review*, Kansas City Star (Oct. 23, 2013), *available at* http://www.kansascity.com/2013/10/23/4571178/bats-global-markets-received-justice.html; Heidi Moore, *New York Stock Exchange Sale Means More Than the Death of Wall Street*, The Guardian (Dec. 20, 2012, 1:14 PM), http://www.theguardian.com/business/2012/dec/20/stock-markets-new-york.

[6] *Competition and Consolidation in Financial Markets: Hearing Before the Subcomm. on Intellectual Property, Competition, and the Internet of the H. Comm. on the Judiciary*, 112th Cong. 8–9 (2011) *available at* http://judiciary.house.gov/_files/hearings/printers/112th/112-24_65489.PDF (testimony of Prof. Lawrence E. Harris, Univ. of S. Cal. Marshall School of Business) [hereinafter Harris Testimony].

[7] William O. Douglas, Democracy and Finance 82 (Allen ed. 1940).

[8] *See, e.g.*, Jenny Strasburg, Jean Eaglesham & Scott Patterson, *Regulators Target Exchanges as They Ready Record Fine*, Wall St. J., May 17, 2013, http://online.wsj.com/news/articles/SB10001424127887323398204578487262573755412; *see also* Staffs, Sec. & Exch. Comm'n & Commodity Futures Trading Comm'n, Findings Regarding the Market Events of May 6, 2010 (Sept. 30, 2010) [hereinafter Flash Crash Report], *available at* http://www.sec.gov/news/studies/2010/marketevents-report.pdf.

[9] *See generally* U.S. Dep't of Justice & Fed. Trade Comm'n, Horizontal Merger Guidelines (2010), *available at* http://www.justice.gov/atr/public/guidelines/hmg-2010.pdf.

10 Andreas M. Fleckner & Klaus J. Hopt, *Stock Exchange Law: Concept, History, Challenges*, 7 Va. L. & Bus. Rev. 513, 525 (2013) (citations omitted) (discussing benefits of standardized exchanges); *see* United States, *Note on Competition and Financial Markets*, at 6, OECD Comp. Comm., Doc. JT03258951, DAF/COMP/WD/(2009)11 (Jan. 30, 2009) [hereinafter U.S. Note on Financial Markets], *available at* http://www.justice.gov/atr/public/international/270439.pdf.

11 Harris Testimony, *supra* note 6, at 8–9.

12 *Id.*; *see also* Fleckner & Hopt, *supra* note 10, at 524 (citations omitted) (explaining history of commercial exchanges); Exchange Act, 15 U.S.C. § 78c (a)(1) (defining an exchange).

13 Harris Testimony, *supra* note 6, at 9.

14 Jedrezej Mazur, Economic Analysis of Stock Exchange Consolidation 17 (Master Thesis at Goethe University, Jan. 15, 2012), *available at* http://www.professionsfinancieres.com/docs/2013090946_2_vn_m_economic-analysis-of-stock-exchange-consolidation.pdf.

15 U.S. Note on Financial Markets, *supra* note 10, at 6; *see also* Nicholas Economides, *Network Economics with Application to Finance*, 2 Fin. Mkts. & Instruments 89, 93 (1993) (explaining the self-reinforcing nature of network effects).

16 U.S. Note on Financial Markets, *supra* note 10, at 6.

17 Equity Market Concept Release, *supra* note 1, at 3957.

18 *See id.* at 3598.

19 Neal L. Wolkoff & Jason B. Werner, *The History of Regulation of Clearing in the Securities and Futures Markets, and Its Impact on Competition*, 30 Rev. Banking & Fin. L. 313, 373–76 (2010) (offering detailed history of the development of centralized clearing for stock and options trading).

20 *Id.* at 317–18; *see also* Division of Market Regulation, Sec. & Exch. Comm'n, Market 2000: An Examination of Current Equity Market Developments II-6–7 (Jan. 1994) [hereinafter SEC Market 2000 Report], *available at* http://www.sec.gov/divisions/marketreg/market2000.pdf.

21 SEC Market 2000 Report, *supra* note 20, at 4.

22 *See* Exchange Act, § 11A, 15 U.S.C. § 78k.

23 Equity Market Concept Release, *supra* note 1, at 3597; *see also* Exchange Act, § 11A(a)(1)(D), 15 U.S.C. § 78k-1(a)(1)(D); Proposed Amendments to Rule 610 of Regulation NMS, Exchange Act Release No. 34-61902, 75 Fed. Reg. 20,737, 20,738 (proposed Apr. 20, 2010) (discussing different pricing and business models of options exchanges).

24 *See* Equity Market Concept Release, *supra* note 1, at 3598–601; *see also What We Do*, Liquidnet, http://www.liquidnet.com/#/what-we-do/ (last visited Sept. 2, 2013) (describing business as an alternative trading platform matching block trades).

25 *See* Equity Market Concept Release, *supra* note 1, at 3596–606 (discussing rule changes and regulations); *see also* Karmel, *supra* note 3, at 370–400 (discussing same).

26 *See* Equity Market Concept Release, *supra* note 1, at 3596–606.

27 The SEC has said, "Since Congress mandated the establishment of an NMS in 1975, the Commission frequently has resisted suggestions that it adopt an approach focusing on a single form of competition that, while perhaps easier to administer, would forfeit the distinct, but equally vital, benefits associated with competition among markets and competition among orders." Regulation NMS Release, Exchange Act Release No. 34-51808 (June 9, 2005), 70 Fed. Reg. 37,496, 37,499 (June 29, 2005) [hereinafter Regulation NMS Release], *available at* https://www.sec.gov/rules/final/34-51808fr.pdf.

28 Wolkoff & Werner, *supra* note 19, at 321–43 (discussing the centralization of clearing); *see also About DTCC*, The Depository Trust & Clearing Corp., http://www.dtcc.com/about/subs/nscc.php (last visited Sept. 2, 2013) (noting that NSCC still performs this function today as part of DTCC, a not-for-profit run by several exchanges and broker-dealers).

29 *See What is OCC?*, Options Clearing Corp., http://www.optionsclearing.com/about/corporate-information/what-is-occ.jsp (last visited Sept. 2, 2013) (explaining the OCC operates under both the SEC and CFTC and clears options and certain futures contracts).

30 Equity Market Concept Release, *supra* note 1, at 3596–602.

31 *See* Press Release, U.S. Dep't of Justice, NASDAQ OMX Group Inc. and IntercontinentalExchange Inc. Abandon Their Proposed Acquisition of NYSE Euronext After Justice Department Threatens Lawsuit 2 (May 16, 2011) [hereinafter DOJ NASDAQ/NYSE Release], *available at* http://www.justice.gov/opa/pr/2011/May/11-at-622.html; *see also* SEC Market 2000 Report, *supra* note 20, at III-3, 4 (explaining the need for primary markets that help ensure the stability of the entire system); Kokkoris & Olivares-Caminal, *supra* note 3, at 484–85 (noting the "provision of listing services incorporates other services and denotes certain characteristics of the securities: liquidity, the monitoring of exchange trading, while serving as a signal to inform investors that the listed securities have met certain standards").

32 SEC Staff has said that the price discovery on these exchanges is an important externality that benefits the alternative trading systems: "The first externality derives from the price discovery function performed by primary markets for individual stocks. Price discovery involves the determination of the price of a security through the interaction of supply and demand. In contrast, passive or derivative pricing uses prices discovered in other markets as the basis for trading. Most trading that occurs off the primary market can be considered passive to some extent, in that parties rely on the primary market prices in setting the price for individual stocks." Sec Market 2000 Report, *supra* note 20, at III-2 (internal citations omitted).

33 *Id.* at III-3 (internal citations omitted).

34 *See, e.g.*, Ceclia Caglio & Andrea Pescatori, *Competition Among Exchanges and Enforcement Policy*, (Int'l Monetary Fund, Working Paper No. 13/37, Feb. 2013), *available at* http://www.imf.org/external/pubs/ft/wp/2013/wp1337.pdf.

35 *See, e.g.*, Strasburg et al., *supra* note 8; Elliott Holley, *Competitors Blast Lack of Competition Among Exchanges*, Banking Technology (Feb. 14, 2013), *available at* http://www.bankingtech.com/66792/competitors-blast-lack-of-competition-among-exchanges/.

36 Commodity Futures Trading Commission Act of 1974, Pub. L. No. 93-463, 88 Stat. 1389, 7 U.S.C. §§ 1, 2(a)(1)(A), 5(g) (1974) (vesting the CFTC with "exclusive jurisdiction" over "transactions involving contracts of sale of a commodity for future delivery" and requiring that the agency act in the "public interest."). The CFTC Act also made extensive modifications to the Commodities Exchange Act of 1936, including redefining "commodity" to include "all other goods and articles . . . and all services, rights, and interest in which contracts for future delivery are presently or in the future dealt in." *Id.* § 2(a)(1)(A).

37 Wolkoff & Werner, *supra* note 19, at 355 (discussing different develop of futures markets).

38 *See id.* at 373–76 (comparing development of futures and securities markets).

39 *See id.* at 327–31, 339–46 (discussing development of clearing and vertical silos).

40 Comments, U.S. Dep't of Justice Before the Dep't of the Treasury, Regulatory Structure Associated with Financial Institutions 1 (Jan. 31, 2008) [hereinafter DOJ Treasury Comments], *available at* http://www.justice.gov/atr/public/comments/229911.htm.; *see also* U.S. Note on Financial Markets, *supra* note 10, at 6 (discussing effects of vertical silos on exchange trading).

41 *See, e.g.*, 17 C.F.R. § 38 et seq. (2013) (setting out responsibilities of designated contract markets).

42 Stephen Mihm, *How Computers Took over Trading*, Bloomberg (Aug. 22, 2013), http://www.bloomberg.com/news/2013-08-22/how-computers-took-over-trading.html.

43 Larry E. Bergmann, Speech at the International Securities Settlement Conference: The U.S. View of the Role of Regulation in Market Efficiency (Feb. 10, 2004), *available at* http://www.sec.gov/news/speech/spch021004leb.htm; Wolkoff & Werner, *supra* note 19, at 317 (citing same).

44 *Compare* Adam Cohen-Nowak, *Study Expands on What Happens in the Blink of an Eye*, Student Life (Wash. U.) (Jan. 28, 2013), *available at* http://www.studlife.com/news/medical-news/2013/01/28/study-expands-on-

what-happens-in-the-blink-of-an-eye/ (noting that the blink of an eye takes on average 300 to 400 milliseconds), *with* Equity Market Concept Release, *supra* note 1, at 3598 n.25 (indicating time to accept, process, and acknowledge or fill order on NASDAQ as 294 microseconds and at BATS Exchange at 320 microseconds).

[45] Standard & Poor's Financial Services LLC, Exchanges' Technical Glitches Reveal Growing Operational Risk—and Could Trigger Downgrades (Sept. 19, 2013), *available at* http://www.standardandpoors.com/ratings/articles/en/us/?articleType=HTML&assetID=1245357558044.

[46] *Id.* tbl. 1.

[47] *Id.*

[48] *See* DOJ Treasury Comments, *supra* note 40, at 2–3 (discussing DOJ experience in these markets); see also United States v. Am. Stock Exch., LLP, Civ. No. 00-2174 (D.D.C. filed Sept. 11, 2000).

[49] U.S. Note on Financial Markets, *supra* note 10, at 6 (discussing market conditions).

[50] SEC Market 2000 Report, *supra* note 20, at III-3, 4.

[51] Press Release, U.S. Dep't of Justice, Statement on the Closing of Its Two Stock Exchange Investigations (Nov. 16, 2005) [hereinafter DOJ Exchange Mergers Statement], *available at* http://www.justice.gov/atr/public/press_releases/2005/213062.htm.

[52] Harris Testimony, *supra* note 6, at 9.

[53] *See* Market Share Statistics, https://www.nasdaqtrader.com/Trader.aspx?id=MarketShare (last visited Sept. 2, 2013) (containing data showing NASDAQ matched 50.7 percent of trades in its listed securities in February 2005).

[54] Press Release, Instinet Group, Instinet Group to Be Acquired by NASDAQ (Apr. 22, 2005), *available at* http://www.sec.gov/Archives/edgar/data/1132327/000119312505083865/dex991.htm.

[55] Equity Market Concept Release, *supra* note 1, at 3595; Moore, *supra* note 5, at 1.

[56] DOJ Exchange Mergers Statement, *supra* note 51, at 1.

[57] Regulation NMS Release, *supra* note 27, at 37,499.

[58] *See* DOJ Exchange Mergers Statement, *supra* note 51, at 1.

[59] *Id.*

[60] DOJ NASDAQ/NYSE Release, *supra* note 31, at 1.

[61] *Id.*

[62] *Id.* at 2.

[63] *Id.*

[64] *Id.*; *see also* Equity Market Concept Release, *supra* note 1, at 3596–602 (discussing ancillary services).

[65] *See* Complaint, United States v. Deutsche Börse AG & NYSE Euronext, No. 1:11-cv-02280 (D.D.C. Dec. 22, 2011), *available at* http://www.justice.gov/atr/cases/f278500/278545.pdf.

[66] *Id.* at 3–4.

[67] *Id.* at 6.

[68] *Id.*

[69] *Id.*

[70] *Id.* at 5 (observing that "these services are offered mainly by national stock exchanges registered under Section 6 of the Securities Exchange Act of 1934, 15 U.S.C. § 78f, and also by electronic communications networks ('ECNs') regulated by Regulation ATS, 17 C.F.R. § 242.300 *et seq.*").

[71] *Id.* at 14.

[72] *Id.* at 7, 8 & 9.

[73] Press Release, U.S. Dep't of Justice, Justice Department Dismisses Lawsuit Against Deutsche Börse and NYSE Euronext (Feb. 9, 2012), *available at* http://www.justice.gov/atr/public/press_releases/2012/280066.htm; *see also* Press Release, European Commission, Mergers: Commission Blocks Proposed Merger Between Deutsche Börse and NYSE Euronext (Feb. 1, 2012), *available at* http://europa.eu/rapid/press-release_IP-12-94_en.htm.

[74] Press Release, U.S. Dep't of Justice, Statement on Its Decision to Close Its Investigation of Chicago Mercantile Exchange Holdings Inc.'s Acquisition of CBOT Holdings Inc. (June 11, 2007) [hereinafter DOJ CME/CBOT Statement], *available at* http://www.justice.gov/atr/public/press_releases/2007/223853.htm; *see generally* Erika S. Olson, Zero-Sum Game: The Rise of the World's Largest Derivatives Exchange (2010) (discussing history of CME and CBOT).

[75] DOJ CME/CBOT Statement, *supra* note 74, at 1.

[76] *Id.*

[77] DOJ Treasury Comments, *supra* note 40, at 10.

[78] *Id.*

[79] Olson, *supra* note 74, at 20 (describing the development of futures contracts by economists at the CBOT).

[80] DOJ CME/CBOT Statement, *supra* note 74, at 1.

[81] *Id.* at 2.

[82] Lynne Marek, *CME Responding to Challenge by NYSE Liffe on Interest Rate Futures Trading*, Crain's Chicago Bus., Mar. 14, 2011, *available at* http://www.chicagobusiness.com/article/20110312/ISSUE01/303129982; Lynne Marek, *How Rising Interest Rates Brighten CME's Future*, Crain's Chicago Bus., July 1, 2013, *available at* http://www.chicagobusiness.com/article/20130629/ISSUE01/306299985/how-rising-interest-rates-brighten-cmes-future.

[83] Doug Cameron, *CME-CBOT Deal Gets Antitrust Approval*, Fin. Times, June 12, 2007, http://www.ft.com/cms/s/0/364ad4f0-185a-11dc-b736-000b5df10621.html#axzz2reigprWl (noting that the futures industry had criticized the deal as had major investment banks); Ben James, *DOJ Greenlights CME/CBOT Merger*, Law360 (June 11, 2007), http://www.law360.com/articles/26605/doj-greenlights-cme-cbot-merger (noting concerns of the Futures Industry Association about the deal).

[84] DOJ Treasury Comments, *supra* note 40, at 6 (discussing DOJ experience in these markets).

[85] U.S. Note on Financial Markets, *supra* note 10, at 6.

[86] DOJ Treasury Comments, *supra* note 40, at 1.

[87] *Id.* The Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010, Pub. L. 111– 203, 124 Stat. 1376 (2010), calls for increased clearing of swaps and other contracts now under the CFTC's jurisdiction. While its impact remains uncertain, it potentially could yield expanded clearing of significant additional categories of swaps and futures. *See Dodd-Frank Act Proposals*, CFTC, http://www.cftc.gov/lawregulation/doddfrankact/index.htm (last visited Sept. 2, 2013); Clearing Requirement Determination Under Section 2(h) of the CEA; Final Rule, Commodity Futures Trading Comm'n, 77 Fed. Reg. 74,284 (Dec. 13, 2012) (announcing final rule to implement Dodd-Frank provisions requiring clearing of certain swaps through derivatives clearing organizations registered with the CFTC).

[88] Timothy J. Muris, The Interface of Competition and Consumer Protection, Fordham Corp. L. Inst. Twenty-Ninth Annual Conference on International Antitrust Law and Policy 3–4 (Oct. 31, 2002).

[89] Equity Market Concept Release, *supra* note 1, at 3595.

[90] *Id.*

[91] U.S. Options Exchange Volume, BATS Options Exchange, http://www.batsoptions.com/market_summary/ (last visited Sept. 2, 2013). *See* DOJ Treasury Comment, *supra* note 40, at 18 (noting ISE entry and reduction in fees); MIAX Options, About, http://www.miaxoptions.com/about (last visited Sept. 2, 2013) (indicating entry in December 2012); *OCC Announces Cleared Contract Volume Increased 6% in July as Securities Leading Activity Rose 53%*, Options Clearing Corp. (Aug. 1, 2013), http://www.optionsclearing.com/about/press/ releases/2013/08_ 01.jsp (noting over 300 million cleared contracts).

[92] *See, e.g.*, Stephen Ho, *CME Group: A Monopolistic Toll Booth with Regulatory Tailwinds*, Seeking Alpha (Apr. 22, 2013), http://seekingalpha.com/article/1357841-cme-group-a-monopolistic-toll-booth-with-regulatory-tailwinds.