The Dis-integrating Securities Exchange and the Market’s Institutional Options

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Abstract

For over 400 years, the institution of the bourse served as a place to concentrate liquidity, information and governance. The private ordering of exchanges imposed transparency and vetting to reduce risks from counterparties and issuers while enhancing certainty for both contracting and the transfer of securities. In the 20th century, much of this activity was brought under the purview of public securities regulators. In the 1990s, technology allowed larger exchange members to establish proprietary trade matching venues, and laws were changed in the early 2000s to facilitate this. The 400 year old institution dis-integrated rapidly.

With the exception of high points of public interest following a financial collapse, the history of securities changes is one of self-ordering led by the most influential broker-dealers for their own benefit. Financial crises, like that which began in 1929, led to governments appropriating securities exchanges as hubs for the application of regulation. The benefits broker-dealers can extract from a given institutional framework have changed with the development of communication technology. For hundreds of years, a physical meeting was the only way to achieve multilateral, real-time communication. Then, new IT allowed broker-dealers virtual meetings. They could establish proprietary matching venues to capture portions of trading revenue. These alternative venues are unencumbered by the processes of listing securities and supervising issuers. This has allowed securities trading to escape much of the regulatory net cast over it since 1934.

This paper will examine the institutional options created by this developmental trajectory, which currently appears to be evolving into an information system with value-added hubs, controlled by the largest broker-dealers. One hypothetical consequence is that all activities of listing regulation will have to be transferred to a national regulator. Otherwise, a large market collapse seems a real possibility.

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I. INTRODUCTION

The economic phenomenon of ‘market’\(^1\) takes shape at the intersection of a number of institutional forms.\(^2\) The function of facilitating exchange occurs because markets are framed in varying degrees of physical, social and legal institutions.\(^3\) Each of these institutions undergoes some adjustment in relation to the type of merchandise exchanged. A market focusing on just vegetables, antiquities, frozen meat or negotiable instruments would have different institutional characteristics as required by holding and transfer of the specific commodity concerned. Negotiable instruments, or what in this paper will usually be referred to as ‘securities’,\(^4\) make few physical demands on a market (differently than does, say, frozen meat), but do have special social and legal requirements that stem from the representative nature of securities themselves. Securities have value because they evidence a right to something or against someone.\(^5\) Value thus depends not only on the authenticity of the instrument itself, but also on the ability to collect full value from a third party as declared by the right expressed in it, which can be defined as “credit risk”.\(^6\) Collection or credit risk cannot be assessed solely within the market, but must be calculated using market-exogenous information about the issuer or borrower,\(^7\) and this information can derive from disclosure or be assumed given legal requirements or reputation. Beyond any ability to ascertain an objective value, price will also be influenced by market sentiment regarding the mix of

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\(^1\) Coase provided one of the most generally accepted definitions in his summary of how economics views markets: “Markets are institutions that exist to facilitate exchange, that is, they exist in order to reduce the cost of carrying out exchange transactions.” Ronald H. Coase, The Firm, the Market, and the Law, p. 7 (University of Chicago Press, 1988). Also see, Geoffrey M. Hodgson, “Market”, in The New Palgrave Dictionary of Economics, (2nd ed. 2008), edited by S. Durlauf and L. Blume (“In the narrower sense, markets are organized exchange. Where they exist, markets help to structure, organize and legitimize numerous exchange transactions. Pricing and trading procedures within markets help to establish a consensus over prices, and communicate information regarding products, prices, quantities, potential buyers or possible sellers.”).


\(^3\) In his classic analysis of markets and the shift of transactions toward internal organizations, Williamson categorizes the determinative elements as “human attributes” and “transactional factors” because he brackets out technological factors, which are included in my analysis. See Oliver E. Williamson, “Markets and Hierarchies: Some Elementary Considerations,” The American Economic Review, 63: pp. 316 (1973).

\(^4\) “Negotiability” means that the rights certificated by and face value of an instrument are not affected by claims of third parties against the holder. see Egon Guttman, Modern Securities Transfers §1:5, 1-15 et seq. (3rd ed., updated to 2009).

\(^5\) The obligor can be a physical or legal person. The US Uniform Commercial Code defines “security” as “an obligation of an issuer or a share, participation, or other interest in an issuer or in property or an enterprise of an issuer.” §8-102(a)(15).

\(^6\) In this context, “credit risk” can be understood as “the potential that a … counterparty will fail to meet its obligations in accordance with agreed terms.” Basel Committee on Banking Supervision, “Principles for the Management of Credit Risk” (2000), available at http://www.bis.org/publ/bcbs75.pdf.

\(^7\) See Ibid, at 3-4.
information on the various factors constituting value. Since the value of securities in this way depends on a number of types of information and the manner in which each is valued in relation to the other, the interaction of the variables at play are likely more complex than, say, judging the quality of a wine or an antique clock. In addition, because securities have no intrinsic value as objects, the amplified quantum of speculation brings with it risk that demands a special sort of capital structure. These special characteristics of the securities market may be why history has seen the development of a rather specific social caste of broker-dealers, even if among this group significant inequality has always been present.

Callon posits the mediation of relationships through ‘calculation’ as the fundamental, social prerequisite for organized markets to exist. The next question that arises, is why traders would create a securities exchange to conduct their trades rather than relying on spontaneous and traditional networks, such as extended family and clan? Although the particular legal and social needs of securities trading could be met initially by a relatively tight caste of brokers known to each other and thus able to create sufficient reputational bonding within their own firms – and buttressing such trust with family ties and contract – enclosing this group within the walls of a securities exchange controlled by the same group of brokers offers these brokers obvious advantages. The closed, concentration of traders in an exchange creates greater liquidity in trading, and restriction of trading to a controlled environment allows a more secure conclusion of contracts and more robust transfer of property, while also facilitating the vetting of the legal and economic representations behind the securities sold and creating one of the most valuable attributes of the financial markets: monopoly power among members. Similarly to exchanges for trading in any commodity, exchange trading increases the likelihood a potential buyer or seller will find a counterparty for a trade, a feature referred to as “network externalities” and directly related to liquidity. Liquidity may

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9 In his historical examination of the Amsterdam Stock Exchange, Braudel remarks that “speculation … reached a degree of sophistication and abstraction which made it for many years a very special trading-centre … a place where … one could by means of various ingenious combinations speculate without having any money or shares at all…. small capital-holders … did not have the right to step inside the inner sanctum of the Exchange, which was confined to merchants and brokers.” Fernand Braudel, Civilization and Capitalism, 15th – 18th Century, Vol. 2, The Wheels of Commerce pp. 101-104 (University Cal. Press 1992) (hereinafter, Commerce).


be more important for trading in securities because securities trading by its nature is more speculative and thus trade volume is higher than trading found in other commodities at a wholesale exchange.\(^{13}\) With regard to transaction costs and structure, the concentration of activity into a specified time and place with defined contracting formalities reduces transaction costs and augments both operational efficiency and the efficiency of price discovery. From a social perspective, concentrating trading on an exchange allows the clear demarcation of a caste or sub-community with certain characteristics regarding creditworthiness and honest dealing, which has both legal and economic benefits. Once the members submit to the regulatory power of the assembly of exchange members, the products sold can also be controlled, and we see the first regulation of listed companies and securities.\(^{14}\) This selective demarcation within an exchange also enables members to create monopolies on both contracting and pre- and post-trade information, as well as to create a cartel on brokerage fees.\(^{15}\)

We can meaningfully compare the rules of conduct among merchants and physically concentrated securities exchanges because they present different examples of institutions, and the shift from one to the other both preserves the coveted network relationship and shifts the mechanisms through which institutional rules of behaviour are reinforced. When the variable of technology is included in the mix, the effects of this package of ordering tools can be well described with the following passage from North:

Institutions provide the basic structure by which human beings throughout history have created order and attempted to reduce uncertainty in exchange. Together with the technology employed, they determine transaction and transformation costs and hence the profitability and feasibility of engaging in economic activity. They connect the past with the present and the future so that history is a largely incremental story of institutional evolution in which the historical performance of economies can only be understood as a part of a sequential story.\(^{16}\)

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\(^{13}\) When examining the historical development of exchanges, this is the primary difference that Braudel finds between a commodities and a stock exchange. See Braudel, *Commerce*, at 101.

\(^{14}\) Stuart Banner, *Anglo-American Securities Regulation: Cultural and Political Roots, 1690-1860*, pp. 259-263 (Cambridge University Press, 1998). This is discussed in Part II.B


The relationships among brokers connect “the past with the present and the future,” but the evolution of the institutional packages holding together the securities market shifts continuously. With both trading networks of broker-dealers and securities exchanges owned by broker-dealers presenting viable options of institutional support, it becomes clear that the shift toward formal institutions was a decision of the same broker-dealers. It may be possible to say the same about the shift away from concentrated exchanges. As will be explained in Part II, history suggests that both market size and technology are important determinants of whether brokers prefer to interact through a closed securities exchange or less formal network. Law is a latecomer to this mix, but becomes an extremely important variable during the 20th century. During a period approaching 1,000 years, the venue of securities trading gradually congealed from open-ended networks that met casually and then in open fairs, into consolidated trading venues. As the 21st century approached a handful of exchanges dominated the global financial system. Then, during the initial decades of the 21st century, this concentration fragmented precipitously into an archipelago containing hundreds of competing platforms, usually operated by the same major brokers and banks that previously dominated exchanges, so that the direct networks of major merchants then reasserted their prominence.

If one focuses merely on the existence of concentrated exchange trading, this evolutionary path was like the plunge of an amusement park ‘roller coaster’: riders came to be seated together in a car, which was pulled slowly upward, reaching a dizzying height only to then plunge downward through harrowing twists and turns. The dis-integration took only 4% of the time that was required to achieve integration. Broker-dealers were not passive riders in this process. While technology has been the greatest factor in exchange dis-integration, its use has been channelled significantly by law which has in turn reflected the interests of major broker-dealer banks. Technology should be thought of as offering the set of possible arrangements from which broker-dealers can choose. Communication technology could not be more diametrically opposed to floor trading. Multilateral communication no longer requires physical meetings, so that the club room of the traditional exchange in the form of a “trading floor” becomes obsolete. Major broker-dealers embraced this dis-integration early in the 21st century, and the legal and economic consequences of this shift in institutional structure are just now being addressed seriously.

17 Elsewhere this author has argued that the interest of the largest broker-dealer banks has been the driving force behind modern market structure. See David C. Donald, “Market Quality and Moral Hazard in Financial Market Design,” in Rethinking Global Finance and Its Regulation, eds., Arner, Avgouleas & Buckley (Cambridge University Press, forthcoming 2015).
Perhaps the most important policy issue of this evolution is the actual and potential effect on regulation. As discussed above, through private ordering, exchanges not only reduced transaction costs and settlement risk, but had also imposed transparency and vetting both on brokers and on issuers in order to reduce both counterparty and credit risk. Beginning in the 1930s, much of this private regulatory activity was brought under the purview of public securities authorities to form a hybrid form of public/private regulation, focusing on the securities exchange.\(^\text{18}\) About 40 years later in the US and then in the EU, legislation was adopted to force competition between alternative trade matching venues and regulated securities exchanges.\(^\text{19}\) Large broker-dealers that had been important members of the exchanges then established venues with new IT and unencumbered by the regulatory activities of listing securities and supervising issuers, so that they were able to match trades cheaper and faster than exchanges.\(^\text{20}\) Trading became dispersed among tens and even hundreds of venues, the most prosperous of which were wholly owned by the large broker-dealers, and slipped out from under the old regulatory net. The fragmentation has significantly impaired both transparency and efforts against market manipulation, and created an additional, less noticed risk. When volumes plunged at traditional listing venues, so did their profits, thus depleting their resources and incentives to act as front-line supervisors.\(^\text{21}\) It is possible that if nothing is done to shore up this regulatory problem, governance of listed companies will erode.

This paper will examine the institutional evolution and options found in the developmental trajectory described above. Part II will examine the creation of the securities exchange as an institution, from disparate networks of merchants and traders, to clubs built and managed by these groups, to self-regulatory entities operating under government supervision. Part III will then explain the forces that disintegrated exchanges during a period of less than 20 years. The forces at play were a combination of legal imperative and technological change, generally subject to the public influence of the largest broker-dealer banks. Part IV will examine the potential evolution of this new trend and highlight its legal and economic risks, which include a regulatory failure caused by shifting incentive and funding. Hypothetical futures for this centrifugal force are that concentrated exchanges could completely disintegrate into data networks as invisible as those that today carry other forms

\(^{18}\) See Part II.B.

\(^{19}\) See Part II.C.

\(^{20}\) See Part II.C.

\(^{21}\) See Part III.
of information, and that all activities connected with the regulation of issuers and their traded securities would have to be transferred to a national regulator or another body that is not funded by trading revenue. This is plausible, given that exchanges were created by leading broker-dealers to enhance network connections among brokers, and if such networks can be better achieved as pure data networks, the same interests that worked to assemble securities exchanges can be expected to disassemble them. The logic of institutional choice will likely be driven by the interest of the markets most influential members, and not by either the logic of economic efficiency or the trends of technological development.

II. ASSEMBLING THE SECURITIES EXCHANGE AS INSTITUTION

A. Merchants’ meetings, sometimes in fairs

Practices among merchants constituted the first informal institutions governing exchange of negotiable instruments. In his landmark study of economic development in the modern era, Fernand Braudel dedicates one volume each to the activities of consumption, circulation and production. He sees circulation of goods take various forms, depending on the type of institution – informal or formal – supporting it, ranging from the paths of wandering peddlers to specialized markets, shops, fairs and exchanges. He examines trade in securities primarily when discussing the European stock exchange, but also cites scattered evidence that negotiable instruments such as bills of exchange were traded through informal networks of merchants prior to the establishment of the exchanges.

While it may appear intuitively correct that the simple activity of trading preceded its centralization in designated forums, even the decentralized activity presupposes the existence of merchants sophisticated enough to create claims substituting goods, the instruments representing such claims, and a network ready to accept them. Braudel finds that during the tenth century AD, trade in debt instruments like “bills of exchange, promissory notes, letters of credit” existed among “the merchants of Islam … as can be seen from the geniza documents.” Although early forms of exchange fairs for debt instruments seem to have existed in Italy at the same time, European merchants also traded such instruments through informal networks with rules and applicable law, but were nevertheless able to bring

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22 Braudel, Commerce, p. 25.
commercial rules of dealing to their trading.\(^{26}\) Indeed, \textit{lex mercatoria} is a prime example of early, private ordering. As North observes, “[m]erchants carried with them in long-distance trade codes of conduct, so that Pisan laws passed into the sea codes of Marseilles.”\(^{27}\) As occurred in the trading of goods, the first venues earmarked specifically for trade in securities were open, periodically held markets, or ‘fairs’, such as those where shares in German mines were traded during the 15\(^{th}\) century.\(^{28}\)

Mahoney and Thelen remind us that we should understand “institutions above all else as \textit{distributional instruments} laden with power implications,”\(^{29}\) and this observation appears to be confirmed in the institutional frameworks surrounding trade in securities. Historical evidence shows that as securities trading increases in volume, there is a transition from loose networks of merchants bolstered by the occasional family to concentrated trading venues owned and controlled by broker-dealers. This should be understood as an expression of institution choice rather than as part of an inevitable historical progression linked to technology or social development. The formation of a solid merchant caste – “[s]olidarity between merchants was in some ways solidarity within a class”\(^{30}\) – precedes the decision to utilize existing technology for trading.

Choices are made by different markets at different times. Whilst Islamic merchants are trading negotiable instruments in loose networks prior to the 10\(^{th}\) century, and the trading of instruments in market fairs is found in 11\(^{th}\) century Europe, English stock-jobbers were without formal organization trading instruments of various types in London coffee houses during the 18\(^{th}\) century.\(^{31}\) The form of trading found during the preliminary stage of development in New York – informal trading on the “curb” – continued among some traders in the form of the over-the-counter (OTC), still sometimes referred to as the “curb” market, long after the signing of the Buttonwood Agreement creating the New York Stock & Exchange Board in 1792.\(^{32}\) A decentralized networking for OTC trading was brought into the

\(^{30}\) Braudel, \textit{Commerce} p. 153.
\(^{31}\) Braudel, \textit{Commerce} p. 107.
digital age by the launch of the electronic NASDAQ system in 1971.\(^{33}\) OTC trading of derivative instruments also presents a modern example of this evolutionary choice from network to enclosed framework. Following the global financial crisis and the near collapse of AIG, such trading has in many countries been herded into organized securities exchanges by laws implementing 2009 G-20 reforms,\(^{34}\) but this done to increase regulatory oversight rather than being a voluntary migration. The historical evidence appears to confirm that broker-dealers sought out the advantages of concentrated venues they could control, and have more recently also sought the unwinding of such venues. This is often presented as an evolutionary process driven by technology, competition and law,\(^{35}\) but history appears to show that without a market crisis to rally public support, deliberate organizational choice by market participants is a better explanatory cause. In the case of OTC derivatives trading, the main argument raised for avoiding containment within an institutional framework is the desire to retain heterogeneous products, which do not lend themselves to the standardized transactions processes of exchanges and their clearinghouses.\(^{36}\)

**B. From merchant to club**

As discussed above, the migration of trading activity from networks of individual merchants using informally designated places like market squares or coffee houses, to a venue owned and controlled by the participating traders is not something that occurs at a uniform time in history (or stage of social development) across countries. Moreover, OTC markets have coexisted with concentrated venue trading throughout the history of organized trading. From this it is reasonable to conclude that the institutional shape of securities trading has been determined by the choices of leading merchant broker-dealers from the options that law and technology make available. In distinguishing the Amsterdam stock exchange from the earlier exchanges established for wholesale trading in commodities as well as for securities, Braudel argues that “what was new … was the volume … and the speculative freedom of transactions … gaming for gaming’s sake …. [with] a degree of sophistication and abstraction … where one could by means of various ingenious combinations speculate


\(^{36}\) *See e.g.*, Craig Pirrong, “The Economics of Central Clearing: Theory and Practice,” International Swaps and Derivatives Association Discussion Papers Series, Number One - May 2011.
without having any money or shares at all.”

Without any apparent critical view of the process, Braudel then observes that this “was where brokers came into their own.” Without detracting from the well-known transaction cost and liquidity advantages of concentrated securities exchanges, Braudel focuses on another advantage: exchanges offer a controlled environment in which speculative freedom coexists with firm control of leading merchants. This allows application of complex techniques, including margin lending, empty short selling, and momentum trading with restricted access to information. In New York, cartel control over commissions was added to this mix. If we take Braudel’s gaming metaphor seriously, the creation of a securities exchange would have had the same advantage for controlling brokers as the establishment of an owned casino does for its proprietors. Welles offers a view of the NYSE’s creation that resembles a struggle between competing mobs, in this case “the most powerful men in the street were a group of auctioneers” who opened a stock exchange that “threatened to force the group of brokers who traded under the buttonwood tree out of business.” The latter then “organized themselves into a kind of a guild” and “signed an historic agreement which is considered to have been the formal beginning of the New York Stock Exchange” (NYSE).

The NYSE was not only a cartel created by guild-like group of brokers to control fees and monopolize information but also offered a united front against government attempts at regulation. As early as the 1830s, the New York Stock & Exchange Board “succeeded in fending off regulation proposed in the New York legislature.” The success of this lobbying was to continue for over 100 years. “Unlike other American cartels which have risen from time to time, members of the NYSE have never been forced to conspire furtively …. the Exchange regarded itself, and was regarded by the courts, as a private business club, with complete authority over its own rules.” Seligman’s history of the US Securities and Exchange Commission (SEC) shows the NYSE regularly taking direct recourse to the US Congress to seek legislation to restrict the powers of the SEC. While pushing back against

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38 Ibid.
39 Trading “without having any money or shares at all,” and without pre- and post-trade information being made public. Braudel, *Commerce*, p. 103.
44 For example, in 1940, the NYSE collaborated with the Investment Bankers Association and other organizations in a three-year effort to have Congress roll back parts of the regulatory legislation enacted in 1933 and 1934, so that the House Interstate Commerce Committee called NYSE officials to “testify about
government, excluding non-members and imposing cartel prices on securities trading, the NYSE also developed the modern framework of securities regulation, and this regulatory framework presents the verso to rent seeking control.

Banner explains that the NYSE developed a listing application procedure according to which prospective listed companies needed to provide a “full statement of the capital, number of shares, recourses &c., certified to’ by a representative of the corporation.” All Exchange members (i.e., all prospective counterparties) were vetted for creditworthiness and were provided with a list of non-members who had breached contracts with members, creating significant reputational sanction. The importance of these members to the economy increased because the exchange provided them exclusively with current market price information, and they were forbidden from leaking it. Lastly, the exchange offered both a mechanism for contracting trades and transferring the securities purchased and for enforcing contracts that might be deemed unenforceable under law. As such, a controlled exchange offered members transaction cost savings similar to that to which they could have found in a single firm. Seligman argues that when the 1929 financial crisis broke, the NYSE listing standards offered a system of securities regulation that was “far more precise that any found in the blue sky laws.”

C. The public-private hybrid stage

The crash of 1929 and its aftermath brought government regulation into the field previously reserved to the private decisions of the securities exchanges. In the 1930s, the system of securities market regulation developed by the private ordering of the NYSE was partially coated with statutory provisions and rules issued by, and partially transferred to, a federal regulatory authority, the SEC. The Securities Act of 1933 essentially adopted the framework of the NYSE listing standards. The Securities Exchange Act of 1934 established

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45 Banner, Anglo-American Securities Regulation, p. 265.
48 Ibid, pp. 258, 263.
49 When examining the extent to which broker-dealers choose to concentrate transactions within an exchange or within a proprietary venue or undertake them through an informal network, it is useful to keep in mind Coase’s reasoning on transaction costs: “a point must be reached where the costs of organizing an extra transaction within the firm are equal to the costs involved in carrying out the transaction in the open market or to the costs of organizing by another entrepreneur.” Coase, The Firm, the Market, and the Law, p. 43.
50 Seligman, Transformation, p. 46.
51 Seligman, Transformation, p. 46.
the SEC, 52 created the category of Self-Regulatory Organizations (SROs) whose requirements the NYSE would have to meet in order to retain its license to conduct exchange activity, 53 and transferred power over the rules of the NYSE and other exchanges to it. 54 Moreover, the 1934 act also brought the exchange members into its framework as regulated broker-dealers, 55 and the Investment Company Act of 1939 created a statutory framework for the regulation of institutional investors. Under the 1934 Act, a national securities exchange would be charged with fair governance of and between its members, the prevention of “fraudulent and manipulative acts and practices,” and the promotion of “just and equitable principles of trade.” 56

Seligman devotes a large, extensively documented volume to the first 70 years of this relationship, and finds it to be something of a cat-mouse-dog game with the SEC chasing the NYSE, which in turn occasionally receives respite from regulatory control through intervention of the Congress – particularly if Republicans are in ascendance and no major scandal or crisis is in recent memory. Thus the immediate post-War years see a waning of SEC power, but the “back-office” crisis in 1970 leads to an extension of SEC power over clearing and settlement operations in 1975, 57 the collapse of the dot.com bubble means an increase in the SEC’s power over auditors and corporate governance measures previously controlled by exchanges, 58 and the aftermath of the global financial crisis brings OTC derivatives trading more firmly within the regulatory framework. 59 The 1975 measures also ended the exchange monopoly and fixed fee system of the NYSE, as will be explained in Part III. The other set of relationships that must be kept in mind when examining the current trend toward disassembling securities exchanges is that between the exchange as an institution with certain functions and the broker-dealers who created it. In 1998, Lee explained the problem of perception when studying securities exchange development:

54 Securities Exchange Act, §19(b)(1) “No proposed rule change shall take effect unless approved by the Commission ….”
56 Securities Exchange Act, §6(b)(1).
57 The author of this paper has examined this in David C. Donald, “‘Heart of Darkness: The Problem at the Core of the US Proxy System and Its Solution,’” 6 Virginia Law & Business Review 41 (2011).
58 The author of this paper has examined this in David C. Donald, “Die Entwicklung der US-amerikanischen Corporate Governance nach Enron,” 15 Wertpapier Mitteilungen 705 (2003).
59 The author of this paper has examined this in David C. Donald and Peter Alphart, “Risk-Shifting under the G-20 OTC Derivatives Initiatives: Danger for International Financial Centres with Small Economies?” (2015), manuscript on file with the author.
A complex rivalry may exist between exchanges and intermediaries. Interpretations of the creation of exchanges, prior to the evolution of cheap information technology, tend to portray their development as the formalization of informal associations of brokers. The primary aim of an exchange has thus traditionally been seen as the furtherance of the interests of its broker members. The possibility of rivalry between an exchange and the financial intermediaries who both trade on the exchange and are members of the exchange, is therefore at first sight implausible. Such a rudimentary notion of an exchange does not, however, capture the conflicts that inevitably obtain between an exchange and its members.\(^{60}\)

### III. DISASSEMBLING THE INSTITUTIONAL SECURITIES EXCHANGE

#### A. The National Market System

Just as the creation of the institutional securities exchange externalized transaction cost reducing institutions from the office of the merchant broker to the exchange floor, the first decades of dis-assembling institutional securities exchanges has returned the institutional framework of matching activity to the internal operations of merchant brokers, whether on their own accounts or the systems of wholly owned subsidiaries acting as alternative trading venues. For own-account matching, the EU employs the highly descriptive term “internalisation” in its Markets in Financial Instruments Directive (MiFID).\(^{61}\) The term “internalisation” captures the fact that key elements of connecting buyer and seller, matching buy and sell orders, and delivery of security and cash are undertaken within a firm rather than within the framework of an organized exchange. This reverses the migration out of the firms of individual broker dealers which accompanied the rise of securities exchanges. The relevant parts of MiFID, which will be examined in the following section, were modeled largely on the US National Market System Project launched in 1975.

The US notionally launched the breakup of concentrated exchange trading in 1975, by adding Section 11A to the Securities Exchange Act,\(^{62}\) and the idea was to create a “national market system”\(^{63}\) through breaking down the monopoly of the old clubs of the stock

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\(^{60}\) Lee, *What is an Exchange?*, p. 57.


exchanges. A national market system would arise because securities would no longer be matched solely on the venues where they were listed, but on any venue meeting the prescribed regulatory standards. According to this model, exchanges of listing became analogous to manufacturers of listed securities and alternative venues of matching became something like retail outlets for the same, so that trading could disperse on an archipelago of alternative venues throughout the national territory.

For reasons explained below, §11A would have to wait 30 years before its implementing regulations could be adopted and enter into force. The 1975 amendments sought to introduce “fair competition … between exchange markets and markets other than exchange markets … availability to brokers, dealers, and investors of information with respect to quotations for and transactions in securities … [and] the practicability of brokers executing investors’ orders in the best market.” If these provisions had come immediately into effect, it would look like institutional change in exchange trading introduced over the heads of leading broker-dealers because of political momentum created by a 1970 market crisis in which the NYSE was nearly paralyzed by securities transfers and approximately 100 broker-dealers went bankrupt or were forced into being acquired (the “back office crisis” or “paper crunch”). However, the law had little immediate impact on trade matching because the main implementing rules only came into force in 2005, in the form of Regulation NMS – Regulation of the National Market System. The 30 year delay appears to have been under control of leading broker-dealers and the exchanges they owned.

Seligman tells us that in 1978 the SEC was considering adoption of a rule proposed in 1977 that would have prohibited the NYSE’s restrictions of off-exchange broker execution, which would have then allowed the migration of matching to alternative venues. However, in 1978 the balance of the SEC’s top officers changed through the appointment of new commissioners, and simultaneously “the NYSE orchestrated a lobbying campaign … [with] nineteen of the twenty-two largest securities firms” and a number of New York politicians backing it up. The executive officers of the NYSE at that time would have likely been

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64 See S. Rep. No. 94-75, 180 (1975) (‘… a number of causes for the securities industry’s languor in the face of great change and great opportunity: price fixing with respect to commission rates, artificial restrictions on market making activities, unjustified barriers to access to markets and market makers, opposition to market integration from powerful vested interests, monopoly control of essential mechanisms for dissemination of market information’).


68 Seligman, Transformation, p. 518.
officers of large broker-dealer NYSE members. In response to this pressure, the SEC shelved the proposed rule. Some House members apparently criticized the SEC in 1980 for its failure to bring the legislation into force, but the NYSE was able restrict off-exchange trading by its members until 2000. Between 1975 and 2000 the networking options available to major broker-dealers obviously changed. The latter part of this period brought on a phase of digitalization (including dematerialization of securities) and low latency data processing and transmission in what has been called a “second machine age.” One the side of economic organization, a trend of reorganizing member-owned exchanges into for-profit, de-mutualized stock corporations and then self-listing, which began in Sweden in 1993 and moved to Hong Kong in 1999, reached New York in 2005, the same year – conveniently but probably coincidentally – that Regulation NMS entered into effect.

The financial industry lobbied to stall for a quarter century legislation designed to take trade matching out of concentrated exchanges. When early in the 21st century the NYSE began to allow its members to engage in off-exchange trading this was not the result of a change in law or regulation, but appears to be a deliberate strategy complementary to its plans for demutualization. When technology allowed the linking of multiple matching platforms and the market warmly accepted IPOs of previously private club exchanges, the SEC pulled the national market system out of its 30 year sleep and created a framework so that the demutualizing members of the NYSE and other exchanges could create and trade on alternative platforms. Most of these alternative platforms were backed by leading members. At the close of June 2015, seven of the eight largest US alternative trading systems by volume were owned by large international banks and broker-dealers. The remaining

70 Ibid, p. 519.
71 Ibid, p. 520.
76 See SEC Release No. 34-53382, Order Granting Approval of Proposed Rule Change and Amendment Nos. 1, 3, and 5 Thereto and Notice of Filing and Order Granting Accelerated Approval to Amendment Nos. 6 and 8 Relating to the NYSE's Business Combination with Archipelago Holdings, Inc. (27 February 2006).
77 These are UBS, Credit Suisse, Deutsche Bank, Goldman Sachs, Bank of America, Morgan Stanley and Barclays. See The Financial Industry Regulatory Authority, ATS Transparency Data, available at https://ats.finra.org/.
platform was owned by the IEX, an investor-friendly exchange founded expressly in reaction to perceived abuses by high frequency trading on and operation of platforms owned by large broker-dealers, and championed in Lewis’ book, *Flash Boys*.78

As at mid-year 2015, there were 1279 national securities exchanges and 37 alternative trading systems.80 In 2014, SEC Chairwoman Mary-Jo White estimated that there were more than 250 broker-dealers executing trades in the US81 in the manner that EU terminology would call internalisation.

B. The Market in Financial Instruments Directive

The first and second versions of the Market in Financial Instruments Directive (MiFID I and II)82 achieve in Europe at the treaty area level what the NMS framework achieves at the US national level. The combined MiFID I and II provides the same basic elements of opening registered exchanges to competition, requiring disclosure of bid/ask information and post-trade reports, and imposing a duty of best execution on brokers. First, regulated ‘trading venues’ are no longer limited to regulated markets,83 but also include multilateral trading facilities (MTFs)84 and organised trading facilities (OTFs).85 Second, ‘[m]arket operators and investment firms operating a trading venue must make public current bid and offer prices and the depth of trading interests at those prices.’86 Third, investment firms must take sufficient steps to achieve ‘the best possible result for their clients taking into account price, costs,

78 An early provider of high speed data lines designed a contract prohibiting users from granting access to their customers. “The whole point of the line was to create inside the public markets a private space, accessible only to those willing to pay the tens of millions of dollars in entry fees…. Morgan Stanley wanted to be able to trade for itself in a way it could not trade for its customers; it just didn’t want to seem as if it wanted to. Of all the big Wall Street banks, Goldman Sachs was the easiest to deal with. [According to the line provider,] “Goldman had no problem signing it.” Michael Lewis, *Flash Boys: A Wall Street Revolt*, pp. 19-20 (W. W. Norton & Company: 2014).
79 See www.sec.gov, market structure > data visualizations.
83 MiFID II, Art. 4.1(21).
84 An MTF is a matching venue ‘operated by an investment firm or a market operator’, MiFID II, Art. 4.1(22).
85 OTFs are matching venues other than regulated markets or MTFs that match trades in ‘bonds, structured finance products, emission allowances or derivatives … in a way that results in a contract’, MiFID II, Art. 4.1(23).
86 MiFIR, Art. 3(1).
speed, likelihood of execution and settlement, size, nature or any other consideration relevant to the execution of the order’, unless there is a specific client instruction to the contrary.  

MiFID I entered into force in 2007. By September 2015, the European Securities and Markets Authority (ESMA) reported 103 regulated markets, 152 multilateral trading facilities, and 11 registered systematic internalisers. To put this in perspective, it is useful to restrict the data to the UK alone, where up to the 1990s, securities trading was dominated by the London Stock Exchange and the London International Financial Futures and Options Exchanges (LIFFE). As at September 2015, ESMA showed registrations in the UK for 12 regulated markets, 75 multilateral trading facilities, and six of the EU’s 11 systematic internalisers.

IV. INSTITUTIONAL RESULTS AND REGULATORY RISKS OF DIS-INTEGRATING SECURITIES EXCHANGES

A. Increasingly restrictive expression of contractual terms

The new platforms arising from the initiatives discussed in Part III are invariably solely electronic. As a result, all direct communication takes place between computers, not between traders, so that natural language and the rough symbolism of ‘pit’ gestures are replaced by formulaic patterns of code. The price for increased speed and efficiency of communication is that all relationships and items communicated must be translated into the language that a computer can understand. As the physical space of the exchange evaporates, it is replaced by a precise virtual channeling in which orders and trades take shape with unerring mathematical rigor and are executed at previously unimaginable speeds. Although traders write the programs that dispatch and execute orders, it is impossible for them to inhabit the trading environment they have created. This nearly timeless circulation of data cannot fall victim to misunderstandings because all error has been shifted to the stages before the computer executes its command.

This achievement represents a very mature stage in a long evolution of trading processes. Binding contracts require an acceptable – and even hopefully perfect – level of understanding between offeree and offeror. The language used to achieve this was not historically driven by technological change, but rather by the context of transacting, such as

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87 MiFID II, Art. 27(1).
89 See Ibid.
in economically significant transactions like for the sale of land, where permissible types of transactions are defined by law in a closed set (numerous clausus). 90 Certain forms of communication helped the parties avoid potential legal pitfalls arising from misunderstanding. Achieving robust offer and acceptance is one of the transaction cost benefits of securities exchanges. Even when communicated orally, ask and bid declarations and buy and sell orders in securities exchanges were ritualized to contain a very high degree of standardization. This linguistic frame became mechanical with the electronic order book, into which traders place their orders. The order book is in most cases an interface with a computer program that provides a template for the shape of the order, in particular price, item (security), quantity, and order type (market or limit). 91 Such standardization allows offers to buy or sell securities to continuously interact with each other during trading hours, allowing offers to be accepted without further intervention.

From an institutional point of view, it is understandable that once a strict, mathematical language is programmed into a specific computer that can be accessed only through proprietary windows, neither grammar rules nor cultural support are necessary to achieve clarity in contracting. The process is automatic once the content is entered in the proper form. The four walls and rituals of the traders’ club room have been dematerialized into code. The virtual connections between broker-dealers might be thought of as analogous to the first cultural institutions supporting their contact in open fairs and coffee houses. Just as not all broker-dealers could offer equal personal presence in dealing, so too in a market consisting of data flows between computers will brokers with the most sophisticated IT capabilities have a competitive advantage. By removing the infrastructure of the clubhouse, the competitive differences among individual broker-dealers should be accentuated.

Moreover, a new form of operational risk also arises. Once an order has been entered into the system, the various computers processing it will conclude execution at unthinkable speeds. Thus a mistake at the stage of order input (the slip of a finger) can bring about systemic consequences before the trader can even think about taking corrective measures, because equally fast behavior by algorithms programmed to react can cause feedback loops that


91 A “market order” is an instruction to sell or buy a certain quantity of a security at the going market price. A “limit order” is an instruction specifying a minimum asking price for an order to sell securities or a maximum bid price for an order to buy securities. By placing a limit order, the trader is making a standing offer, essentially writing an option, to all other market participants to buy (or sell) the specified number of the relevant security at the limit price. For further discussion of market and limit orders, see Robert A. Schwarz & Reto Francioni, Equity Markets in Action: The Fundamentals of Liquidity, Market Structure & Trading, pp. 178-180 (John Wiley & Sons: 2004).
can upend a market in seconds.\textsuperscript{92} The institutional framework once used to contain rough animal spirits has been interiorized into an unforgiving tissue of automated nerves. This design does not absorb the shock of error, but rather conveys it.\textsuperscript{93}

\textit{B. Fragmenting price discovery}

There is in most cases a positive correlation between market liquidity and network externalities.\textsuperscript{94} Price discovery should also be improved if the greatest number of traders and securities are concentrated in a single system processing bid/ask information.\textsuperscript{95} With the disintegration of securities exchanges into a network meeting at nodes controlled by broker-dealers, bid/ask interaction becomes fragmented, which splits up available liquidity. The convergence of technological development and the NMS and MiFID initiatives led to a significant fragmentation of the equity markets in the US and the EU since 2000. In 2010, the SEC found that the NYSE’s market share for trades in its own listed shares declined from 79\% in 2005 to 25\% in 2009.\textsuperscript{96} At September 2015, the market share figure remained at 25\% for composite shares of the Dow Jones Industrial Average Index and was at 26\% for shares of the S&P 500.\textsuperscript{97} The trading market share London Stock Exchange (LSE) in its own listed securities comprising the FTSE 100 stood at 60\% for the same period.\textsuperscript{98}

Theoretically, if full, simultaneous pre- and post-trade information about each of these venues is made available to traders, then the liquidity present in each could be considered as a subunit aggregated into a single set. This is a project undertaken by both the US and the EU at different levels. The US plan is called the consolidated audit trail (CAT), and an initial estimate of its cost is $4 billion.\textsuperscript{99} The EU plan is referred to as the consolidated tape and would take place only within each EU member state,\textsuperscript{100} which would fall short of the goal to create an internal EU market for capital. Particularly given that market participants currently aim for execution speeds measured in microseconds, it is high questionable whether these

\begin{itemize}
\item[93] The 2010 US “flash crash” brought the broad index of US equities down by more than 3\% in a matter of minutes, causing about 20,000 trades in roughly 300 securities to be executed at prices 60\% off their average trading price, with some reaching highs of $100,000 per unit and others lows below $0.01. See US Commodity Futures Trading Commission & US Securities & Exchange Commission, “Findings Regarding the Market Events of May 6, 2010” (2010) available at http://www.sec.gov/news/studies/2010/marketevents-report.pdf
\item[94] See Stoll, “competition or consolidation,” and Foucault, Pagano & Roell, \textit{Liquidity}, above note [\textcircled{1}].
\item[95] Schwartz & Francioni, \textit{Equity Markets}, p 90.
\item[96] SEC (2013: 7).
\item[97] See Fidessa Fragmentation Index, available at http://fragmentation.fidessa.com/.
\item[98] See Fidessa Fragmentation Index, available at http://fragmentation.fidessa.com/.
\item[99] SEC Release No. 34–67457, Consolidated Audit Trail, 77 Federal Register 45722, 45725 (1 Aug 2012).
\item[100] MiFID II, Preamble 117, art. 65.
\end{itemize}
expensive projects could ever achieve an accurate picture approaching simultaneity of pricing information for the various trading venues operating. Using the current figures provided above this would mean – excluding the internalization by large broker-dealers – about 60 entities in the US and about 90 entities just in the UK alone. Liquidity, of course, can be defined in different ways, and if fragmentation is accompanied by high frequency trading, studies counting the much larger number of orders fired out by computer-driven trading may reach the conclusion that fragmentation has not affected liquidity. That finding would seem to contradict the experience of the many institutional investors which funded the creation of IEX in the hope of restoring the kind of liquidity they see as necessary in the market.

C. Impairing effective oversight

The public-private hybrid model of the securities exchange created in the wake of 1929 by hiving off some exchange rules into statute and delegating public authority to exchange management to enforce others uses admission to the securities exchange as a trigger for the application of market integrity laws and the exchange venue itself as a point to focus market scrutiny. When the activities regulated by exchange oversight occur on an assortment of other venues that are established and disbanded as a broker-dealer’s business rises and falls, the regulator is hard pressed to create full transparency over this fragmented and shifting target.

Another concern, as discussed above, is fragmentation’s impact on transparency of pre- and post-trade information, which becomes scattered and unconsolidated. This hampers oversight of price-related infractions such as market manipulation and a matching platform’s


102 Lewis, Flash Boys, pp. 207-214.

103 For example, under US law, the disclosure and most other requirements of the Securities Exchange apply to Securities if either (i) its securities are listed on a national securities exchange or (ii) the issuer of the securities has more than 500 shareholders and total assets exceeding $10 million (see § 12(g) of the Exchange Act, in connection with Exchange Act Rule 12g-1, 17 CFR § 240.12g-1). The EU rules on insider dealing and market manipulation apply to those actions if they concern “financial instruments that are admitted to trading on a regulated market.” Art. 10(a), Directive 2003/6/EC of the European Parliament and of the Council of 28 January 2003 on insider dealing and market manipulation (market abuse), 2003 O.J. (L 96) 16. Likewise, EU rules on the disclosure of information to investors apply only to “issuers whose securities are already admitted to trading on a regulated market situated or operating within a Member State.” Art. 1(1) of Directive 2004/109/EC of the European Parliament and of the Council of 15 December 2004 on the harmonisation of transparency requirements in relation to information about issuers whose securities are admitted to trading on a regulated market and amending Directive 2001/34/EC, 2004 O.J. (L 390) 38.

104 In Hong Kong, the stock exchange is deemed the primary regulator for regulating the primary market disclosure of listed companies. See the Memorandum of Understanding Governing Listing Matters between the Securities and Futures Commission and the Stock Exchange of Hong Kong, dated 28 January 2003, which creates a dual filing system for disclosure documents according to which all filings may be made with the stock exchange, which acts as an accepting agent for the regulator and remains the “front-line regulator for all listing-related matters” MoU, para 4.5.
failure to execute properly. Another prominent concern regards the competitive opportunities that a market of scattered venues offer large financial institutions to set up boutique and niche services in matching venues, the most popular form of which are ‘dark pools’ that advertise the possibility of invisibility to block trades. The Tabb Group estimated that in the first quarter of 2014 dark pools constituted 43.6% of market volume in the US. Numerous abuses have been reported in connection with the operation of dark pools, and a number of regulatory actions have been filed against them. Dark pools perhaps present the most extreme case of a general problem of diminishing transparency in fragmented markets. Transparency has been the prime regulatory tool for policing markets, given its low level of intrusion in business.

D. Replacing the securities exchange as a hub of regulatory activity

As the market for securities becomes increasingly dis-integrated, the strategy of regulating the market though a focus on the securities exchange will obviously confront functional obstacles. The first and most powerful obstacle is that the securities exchange will no longer be a center of trading activity and thus be unable to monitor the transactions in its listed securities. The second obstacle is that with trading revenue dropping, exchanges may not have the funds to pay for their regulatory efforts against both listed companies and member brokers.

As observed above, securities trading organized in some form of centralized venue was used without interruption for over 400 years. Yet during a period of about 20 years, these exchanges have lost over half of their volume to an assortment of proprietary trade matching venues that are little more than a farm of servers. That occurred without any major change in the fundamental structure of trading and booking trades (i.e., instead of shouts making contracts and recorded with a quill pen in a ledger maintained by an exchange or a broker-dealer, orders are now transmitted to a digital ledger held by an exchange or broker-dealer). However, now technology really appears to be catching up with the financial industry. A June 2015 World Economic Forum report concluded that decentralized transaction recording

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106 See e.g., Complaint, The People of the State of New York versus Barclays Capital, Inc and Barclays plc, 25 June 2014, at pp 1-2 (“Barclays … operated its dark pool to favor high frequency traders. Barclays … actively sought to attract such traders to its dark pool, and it has given them advantages over others trading in the pool.”); FINRA, Goldman Sachs Execution & Clearing LP Letter of Acceptance, Waiver and Consent, 5 June 2014 (Financial Industry Regulatory Authority charged the dark pool of Goldman Sachs with 395,000 instances of “trade-through” violation, offering its customers inferior prices); J D’Antona Jr, ‘UBS pays record $14 million fine for dark pool violations’, Traders Magazine Online News, 15 January 2015 (UBS secretly marketed sub-increment order types to HFT traders for use in its dark pool); Lewis, Flash Boys, pp. 115-116 (dark pool operator using HFT to front-run client).
technologies like the “blockchain protocol”, a decentralized ledger used in Bitcoin, “threaten to disintermediate almost every process in financial services.”\textsuperscript{107} Given the ability of major broker-dealer banks to direct the shape of the financial industry for hundreds of years, it is unlikely that new technology will “disintermediate” financial services. Thus, it appears that the historical development of finance will bring the center of gravity back to the largest merchant broker-dealers, rather than creating a “democratization of finance” beyond moneyed intermediaries.\textsuperscript{108} If exchanges are discarded as transaction nodes, then regulation focused on exchanges will become useless.

In the meantime, as transactions migrate out of exchanges, markets face the risk of a disconnection of incentives similar to that which securitization brought to the vetting of loans by mortgage lenders. With the NYSE and its controlled entities capturing just under 40\% of trades in NYSE-listed stock, it is physically and legally impossible for that exchange to monitor the remaining 60\% of trading activity on platforms operated by others. While this second set of platforms will be able to monitor the activity of traders on its venue, the potential application of different rules by different platforms presents a risk of both gaps in coverage and double coverage, which is clearly a substandard regulatory position. The second obstacle to continued, effective oversight may present a greater danger.

If exchanges list securities and monitor the governance and disclosure of listed companies, while any licensed platform is permitted to match trades in these listed securities, the cost burdens of exchanges and competing platforms will be unequal. Moreover, securities exchanges will no longer receive full benefit from the costs they incur when turning an unknown security of a privately funded company into a publicly listed corporation. If regulatory expenditures stay the same while revenues from these expenditures decrease, the regulatory model of the exchange comes under considerable pressure. Securities exchanges earn money from trading revenue, listing fees, sales of information, sales of technology, and

\textsuperscript{107} World Economic Forum, “The Future of Financial Services How disruptive innovations are reshaping the way financial services are structured, provisioned and consumed” p. 22 (June 2015). This is because the ledger of transactions is no longer controlled by a central exchange, but a copy is given to every participant in the transaction network. Swan defines blockchain as “a giant spreadsheet for registering all assets, and an accounting system for transacting them on a global scale that can include all forms of assets held by all parties worldwide.” Melanie Swan, Blockchain: Blueprint for a New Economy, Kindle Locations 114-115 (O’Reilly Media: 2015).

\textsuperscript{108} Two recent indications that the financial is absorbing blockchain technology into its existing network are recent steps taken both to deploy blockchain for its current use in Bitcoin and to develop the technology for additional financial applications. USB has brought blockchain into its currency transfer system. Steve Rosenbush, “The Morning Download: UBS Developing Virtual Currency as Financial Institutions Embrace Blockchain,” The Wall Street Journal (4 September 2015). Blythe Masters, the investment banker who is credited with developing credit default swaps, thinks blockchain will have as large an impact on the economy as the internet did in the 1990s, and has set up a company to bring blockchain into mainstream finance. Edward Robinson & Matthew Leising, “Blythe Masters Tells Banks the Blockchain Changes Everything,” Bloomberg Markets (October 2015).
clearing and settlement (if they own the clearing house). In 2007, the LSE reported that 65% per cent of its revenue derived from fees charged to issuers (18%) and brokers (47%).109 In 2013, following six years of ongoing market fragmentation, the corresponding category of ‘capital markets’ income constituted only about 37% of the LSE’s revenue.110 If exchanges compensate for this trend by increasing listing fees, they discourage listing. The result has been that exchanges are focusing on sales of information, sales of technology,111 and clearing and settlement, which has in recent decades become more centralized while trading has dispersed.112 As technology is increasingly developed outside of traditional securities exchanges and more trades occur on alternative platforms, the value of both pricing information and technology to exchanges can be expected to decline.

Alternative trading venues do not pay for the type of regulation that turns illiquid into liquid securities, but they benefit from this process. This free-riding places significant pressure on the securities exchange as a regulator of the market. If exchanges lose the incentive and funds to regulate effectively, market quality will suffer. Before this happens, current competencies of the exchanges should be transferred to a public regulator. The current US model in international comparison gives the SEC a very large share of the regulatory market, and it should be feasible to undertake such a transfer. In Hong Kong, by contrast, where the securities exchange is a major regulator of primary market activity, this transfer would require significant adjustment. In any case, these developments should take place under close supervision, and it should not be necessary that governance crises in the wake of dis-integrating securities exchanges are necessary to create public will for the necessary adjustment.

V. CONCLUSIONS

The history of institutional development surrounding securities trading shows various types of institutions being used to achieve constant ends: reduction of counterparty risk, credit risk (understood as collectability of the certificated claim), legal risk and operational risk. Informal institutions among merchants evolved along the lines of guild rules in connection with available enforcement of claims under private law, and were at some point in each local economy formalized through the creation of clubs controlled by merchants dealing

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111 At the LSE, information and technology services grew to about 50% of revenue in 2013, up from 30% in 2007. London Stock Exchange, 2007 Annual Report, at p 23.
112 See Donald, “Market Quality and Moral Hazard,” above note [●].
in securities (broker-dealers). These clubs create rules of admission, operation and behavior, and come to be known as stock or securities exchanges. They both lend monopoly power and reduce transaction costs. Following market growth and financial crises that damage investors and the real economy political will developed to replace private ordering with public law. These statutory rules transferred some competence to public authorities, but also coated existing exchange rules and activity with statutory backing, establishing the field of securities regulation and the phenomenon of the self-regulatory organization. With the exception of moments in which public attention is galvanized against market risk, the overall pattern of institutional development appears to have been determined by the incentives of broker-dealers to create monopoly power, increase liquidity and reduce transaction costs. Because the transformation of private rules into public law was determined by public choice following economic damage, the process tends to reverse through deregulation or light regulation in periods of prosperity.

During the second half of the 20th century, securities exchanges become the primary loci of regulatory efforts in capital markets. They present a node where issuers, trading broker-dealers and investors meet. Recent developments in information technology first allowed the elimination of physical meetings on the floors of securities exchanges. This led broker-dealers to adopt a business model employing proprietary ownership of multiple matching engines linked to each other with data networks. Law was changed to facilitate this. Current technology points toward even greater opportunities for dis-integration of trade matching. The institutional characteristic of this trend is that broker-dealers have begun to internalize the operational characteristics of securities exchanges which they previously used to maximize liquidity and increase operational efficiency. Given the possible impact of current developments in networked data processing, such as blockchain protocol, it is difficult to predict whether the merchant broker-dealers will continue to control industry development, although their track record indicates an affirmative answer.

Because much regulation originated in the clubs of securities exchanges as private ordering and was frozen there by legal reform, as trading volume moves toward a dis-integrated network of proprietary matching venues – perhaps returning to the direct networks of broker-dealers that preceded exchanges – broker-dealers are in many slipping under the regulatory net cast on them by government. Further, as trading volume continues to shift from the regulated securities exchanges to a constellation of proprietary platforms, gaps in regulation and in the ability to pay for regulatory activity will likely arise. A reasonable
solution for this trend would be to remove all regulatory functions from securities exchanges, and to place it in a public regulator, the operations of which could be financed by a financial transaction tax. The changes institutional this will entail will vary from jurisdiction to jurisdiction, partly in relation to the current size of the public regulator’s share of market oversight and partly in relation to the public’s acceptance of arguments that the financial industry can be expected to make on how the regulator should be financed.