From Markets to Venues: Securities Regulation in an Evolving World

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November 2004

Very Preliminary
Comments welcome
1. Introduction

The world of securities trading is changing. Advances in technology, combined with the dramatic decrease in the cost of information processing, have conspired to change the way that securities transact. While broker/dealers, specialists, and market makers still ply their trades, they are now joined by a host of new market participants such as robot traders and electronic limit order providers. And while exchanges and the Nasdaq continue to operate, they are confronted by a wide range of competitors such as ECNS, ATSs, and the trading desks of the large broker/dealer firms.\(^1\) Trading has become a commodity, a standard process whose measure of success is increasingly captured by the simple metric of cost of transacting.

Against this backdrop, stock exchanges are also changing both in function and in governance. Forced to compete after enjoying decades of essentially monopoly franchises, exchanges and markets have had to embrace new technologies or face extinction. Traditionally owned by their members, exchanges world-wide are now converting to become publicly traded corporations. Since 1998, more than a dozen exchanges have publicly listed their shares, leaving only 2 of the world’s 10 largest exchanges (New York and Tokyo) as member-owned entities.\(^2\) In this new world of

\(^1\) ECNs, the acronym for electronic communications networks, are electronic limit order books that allow traders to transact with each other without the intermediation of a dealer or market maker. Alternative trading systems, or ATSs, include a range of trading mechanisms, such as crossing networks (ITG’s POSIT being the most notable).

\(^2\) The first exchange to be publicly owned was the Stockholm Stock Exchange, which become part of OM (a Swedish technology company) in 1998. Since then, almost all of the major stock exchanges have converted, including the London Stock Exchange, the Deutsche Borse, the Hong Kong Stock Exchange, Euronext, the Australia Stock Exchange, the Singapore Stock Exchange, the Toronto Stock Exchange, the
trading, market forces are requiring dramatic change in market structure and in the way that competing firms are organized and operated, yet the regulatory structure of securities trading in the U.S. has remained the same. Can such immutability be optimal in the face of this economic upheaval?

This paper considers the role of securities regulation in a changing world. Our particular focus is on the role of self-regulation in a world of profit-seeking firms. Our analysis draws on insights from the Coasian view of markets and firms to investigate how economic functions are evolving to meet the new trading environment. A particular thesis we develop is that shifts in transactions costs and agency costs have dictated changes in the optimal economic organization of trading. These changes have forced economic activity to migrate from a centralized market to multiple competing venues. We argue that these shifts, in turn, have changed the optimal structure of exchanges, pushing exchanges away from a cooperative structure to a corporate structure. These new governance arrangements reflect the different incentives that exchange members face in a competitive environment.

We then argue that, while regulatory form should follow function, there are no similar “market forces” to change the regulatory structure. Consequently, the regulatory structure is asynchronous with the new economic realities of trading. The traditional regulatory structure relied on self-regulation by members, combined with general oversight by the Securities and Exchange Commission (SEC).³ As we argue in this

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paper, however, this allocation of regulatory responsibilities is now sub-optimal. With the incentives of exchanges and other market participants altered, the regulatory framework is ill-structured to provide either oversight or control of trading activity.

A particular problem is self-regulation by profit-seeking firms. We demonstrate that self-regulation by profit-seeking entities may actually be more effective in handling some particular regulatory functions than was the case in the past. These include activities such as monitoring to prevent manipulation, or general oversight of exchange order capacity and reliability. But other aspects of self-regulation are now fatally flawed, with the incentives of those charged with regulating diametrically at odds with their corporate mandate to maximize profits. We demonstrate how issues such as access to trading, listing and delisting requirements, and supervision of exchange members, employees, and trading practices fall into this category. We also identify dysfunctionalities in the role played by the SEC, particularly with respect to their current inability to propose rule changes.

Finally, we consider the broader question of how should securities regulation be handled in this new trading environment. Our analysis provides a number of specific recommendations. But we also consider evidence from other countries, where these same economic forces have forced markets to change sooner, and in some cases more drastically, than has been the case in the U.S. thus far. We investigate several regulatory approaches currently being used in other countries, and discuss their applicability to the U.S market.

This paper is organized as follows. The next section sets out the basic Coasian economic arguments involving the allocation of economic activity between firms and
markets. Our particular focus here is on the impact of transactions costs and agency costs on economic organization. Section 3 then applies this paradigm to securities trading, providing an analysis of how changes in the economic environment have changed the functions played by stock exchanges and markets. This section also demonstrates how these changes, in turn, have changed the optimal corporate governance structure of markets. Section 4 then turns to the issue of regulation, considering in more detail the impact of these changes in firms and markets on the self-regulatory process. In this section, we also analyze how regulatory functions should be allocated across firms and the SEC. Section 5 then reviews alternative models for securities regulation currently in use in several other countries. Section 6 is a conclusion.

2. The Organization of Firms and the Organization of Markets

The issue of how economic activity should be organized has long been a focus of economic interest. The economic differences between organizing production within a firm or within a market were first addressed in a seminal paper by Coase, and these ideas were expanded upon by a wide range of scholars. Central to these analyses is the role played by the costs of organizing economic activity.

Coase’s thesis was that the optimal allocation of economic activity involved a trade-off between transactions costs and agency costs. In particular, Coase argued that

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6 Coase, supra note 4.
firms arose because there were costs of using the price system. A demander of a good could simply buy the good from a supplier in the market, and pay the prevailing market price. But the market price would include transactions costs, which could be substantial. Alternatively, the demander could decide to produce the good himself and set up a firm within which to organize production. Now there were no transactions costs, but the firm entailed its own distinctive costs in the form of agency costs between the owners of the firm and the producers of the product. Coase concluded that “a balance is struck when the firm has expanded to the point where the costs of organizing an extra transaction within the firm become equal to the costs of carrying out the same transaction by means of an exchange in the open market or organizing in another firm”.  

Coase’s analysis provides a simple prescriptive for economic organization: when transactions costs are high, firms prevail; when transactions costs are low, markets prevail. Williamson expands on this concept, noting that “it will be convenient to assume that transactions will be organized by markets unless market exchanges give rise to serious transactions costs. In the beginning, so to speak, there were markets.”  

Such a transactions costs focus seems particularly relevant for the question of how best to organize securities trading. Security trading, at least as it involves the trading of equities, options, and futures, has traditionally been organized on centralized exchanges. These exchanges provide a centralized market for buyers and sellers, thereby reducing the transactions costs that such traders incur. But the exchange itself is actually a firm in

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7 Coase, supra note 4.


which the economic processes of trading are bundled and produced. Indeed, exchanges have often enjoyed a monopoly status whereby they are the only firm producing such exchange services, at least over some geographical or national boundary. In contrast to Williamson’s edict, in the beginning there was a single firm providing the market.

Why did trading gravitate to such a firm-based organizational structure? In earlier work, we argued that historically the transactions costs of securities trading were high. These costs included the information costs of learning about firms (or potential investments), the costs of monitoring trading, the physical costs of the trading platform, the costs of clearing and settlement, and the basic contracting costs of trading between buyers and sellers. Exchanges thus produced a vector of products, and these products involved a high degree of what Williamson termed “asset specificity.” It is expensive to operate an exchange floor, and so, too, is it costly to monitor particular trades, or to certify the attributes of the firms being traded. Moreover, when trading volume was relatively light, the average cost of specializing in the trading in a particular security was higher, as there were fewer trades per unit of time spent on the trading floor.

As trading volume increased, it began to pay for more than one person to invest in the specialized assets necessary to provide a continuous market in the trading of a particular security. Moreover, a single exchange economized on all of the costs associated with offering secondary market liquidity in a security by performing these functions over and over again. Replicating such activities by competitors was thus precluded by the specific assets needed to do so.

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11 Williamson, supra note 7.
A second factor favoring firm structure was the relationship nature of the product being produced. Exchanges produced a vector of products, among them being liquidity for the shares they traded. Listing firms needed the exchange to provide liquidity, but the exchange was also dependent on the listing firms to provide the shares to trade. Such co-dependence typically favors organizing as a firm because the relationship requires specific investments by both parties and the anonymity of markets precludes extracting value from such an investment. Thus, for a variety of reasons, exchanges were organized as a single firm doing many things.

Times have changed. The advent of technology has dramatically reduced the costs of trading, allowing a wide range of competitors to enter what was traditionally the exchange’s sole province. Similarly, whereas the exchange once enjoyed a pre-eminent role in functions such as signaling issuer quality, now a host of alternatives such as financial analysts, newsletters, and investment banks provide more and better information about issuers. Moreover, oversight by bodies such as the SEC, the NASD, and even states’ Attorneys General have eroded the value of the exchange’s monitoring function. Indeed, even the relationship nature of the business has changed as the multiplicity of trading venues now means that where issuers’ shares trade need not be where issuers’ shares list.

These changes reflect an overall shift in the transactions costs of securities trading. Now, the business of an exchange involves almost purely the provision of liquidity, and trading has become a commodity business. Exchanges must compete with a wide range of competitors, forcing exchanges to adapt both their economic form and function. In the next section, we argue that the balance between agency costs and
transactions costs has shifted, necessitating a change in the optimal organization of trading. These changes, in turn, have important implications for the regulation of trading in a world of many trading venues.

3. Securities Trading – Market Structure and Regulation

The high transactions costs associated with entering the business of offering liquidity services meant that it was optimal to organize a panoply of services associated with securities trading into a single, multi-purpose firm, which we know as an “exchange.” The exchange provided a wide range of services, including signaling, regulatory oversight, the provision of internal rules of corporate governance, clearing, and the provision of liquidity. The exchange, in turn, like all firms, faced agency costs, and these internal costs were solved by adopting the corporate governance structure of member-owned cooperative.

A. The Old Environment: Tradition versus Transition

The critical features of the historical competitive environment in which exchanges operated were homogeneity of members, monopoly powers of an exchange, and a regulatory scheme organized as a system of self-regulation with SEC oversight to keep the monopolist/regulator in check.\(^\text{12}\)

Each of these features is related. As a monopolist, exchanges had incentives to pass rules to increase the overall size of the market as this would increase overall monopoly profit. Because market participants were very homogeneous, there was a significant convergence of interests with respect to regulation. What was perceived as being in the interests of exchange members was, in turn, perceived as being good for the

\(^{12}\) Karmel, supra note 3 at 369, 400-02 (2003). See also Joel Seligman, Cautious Evolution or Perennial Irresolution, 59 The Business Lawyer 1347 (2003).
market. And, in turn, what was perceived as being good for the market was also perceived as being good for investors and issuers. For example, listing firms wanted to be able to commit to investors that they would abide by certain corporate governance rules, and exchanges wanted to attract listing firms that would commit to the utilization of their trading venues.

In the new environment, under which exchanges currently must operate, however, there is no homogeneity of interests among the various constituencies of the exchange. The dramatic fall in the transaction costs associated with operating a trading venue has transformed the relationship among issuers, trading venues and investors from a relationship business into a commodity business.

Because of the reduction in transaction costs, particularly with regard to technology, exchanges members such as Goldman Sachs and Merrill Lynch not only participate directly in the operation of the stock exchange, but simultaneously compete with the stock exchanges, both by internalizing order flow on the buy and sell side of the same transaction, and by offering ECNs and ATSs that directly compete for order flow with the exchanges. Self-regulation in this new environment is bound to fail, because the homogeneity of interests that was critical to the success of the old model no longer exists.

Moreover, the multiplicity of competitive venues now results in the paradoxical situation that Exchanges engaged in self-regulation are being regulated by, and are regulating, their competitors. This is a system whose structural features make success highly unlikely. These agency problems are a key factor in inducing exchanges to

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13 For example, Goldman Sachs owns Speer, Leeds, one of the largest specialist firms on the NYSE, has a substantial interest in ARACex, the firm created by the merger of the Archipelago ECN with the Pacific Stock Exchange, as well as interests in several other competing ECN such as BRUT.
convert from non-profit mutual form to profit-seeking firms. Exchanges are now venues and not the monopoly markets they once were.

For example, exchange members, and their customers, often will prefer to execute a trade on a venue other than on exchanges. Even among particular constituencies, such as investors, there is growing heterogeneity of interests, as some investors prefer markets that give priority to maintaining narrow spreads, while others prefer giving priority to speed of execution. Thus market participants can no longer even agree on what is the best way to execute trades.\textsuperscript{14}

Henry Hansmann has argued that the “truly striking” feature that distinguishes investor owned firms from worker owned firms is the “strong homogeneity of interest among the workers involved.”\textsuperscript{15} The same analysis can be applied to mutually organized firms such as exchanges. As the NYSE itself argues, the homogeneity of the interests of exchange members is what historically has caused incentives to align such that the cooperative form of ownership was a successful organizational paradigm: “The (cooperative ownership) structure (of the NYSE) seeks to maximize the efficiency, reliability, and integrity of the market, and not the maximum profit as in the public company model.”\textsuperscript{16}

What is particularly important in determining which firms will be owned by customers or workers, and which will be owned by outside investors is homogeneity of jobs and skills: labor cooperatives appear to work best where all the workers who are

\textsuperscript{14} See the discussion of the trade through rule in Section 4, infra.


\textsuperscript{16} NYSE, May 2003
also members of the cooperative perform essentially identical tasks within the firm. For example, Hansmann observes that in law firms, partners have similar skills and perform similar tasks, and that there is “relatively little vertical division of labor or hierarchy among the partners in the firm.”

What drives Hansmann’s insight is the necessity for the firm to divide net income and to make policy decisions. Worker-owned enterprises, such as law firms and plywood cooperatives, tend to divide pay equally among worker-owners. Worker ownership works because to the extent that workers do the same jobs, they will be affected similarly by any decision made by the firm. Alternatively, where workers in worker-owned firms perform different jobs, it is “important to the viability of the firm that the returns to those jobs be separable.”

The original organization of the New York Stock Exchange (NYSE) as a not-for-profit member-owned cooperative and self-regulatory organization, was consistent with Hansmann’s observations in that returns to members could be allocated simply via trading revenues. As discussed in Macey and O’Hara, over time the actual costs of running the exchange were largely shifted to the listing firms, leaving the members free to extract rents via brokerage and market making activities. This, in turn, created divergences in the operations of the exchange, with some aspects reflecting features more akin to investment banking firms, while other dimensions remaining closer to the “public

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18 Id.
utility” focus of the past. The cataclysmic problems at the NYSE surrounding Richard Grasso’s compensation package illustrate how divisive these disparate roles have become.

At the margin, member or worker ownership of firms such as stock exchanges also may be efficient where the capacity of workers to monitor the management of the firm is superior to that of outside investors.\(^{21}\) As with most workers, stock exchange members are knowledgeable about the firms operations (or at least certain aspects of the firm’s operations), and can come together to make decisions relatively cheaply. However, in light of the lack of meaningful corporate governance participation by stock exchange members (witness again the Grasso controversy and the lack of corporate governance participation by members with respect to that issue), it is difficult to imagine that the employees of the NYSE or other exchanges are characterized by particularly high capabilities with respect to monitoring. This seems particularly true in light of the fact that the major competitive issues facing the exchanges clearly are in the realm of technology investment and competition from more technologically-based trading systems. This is not an issue over which member/worker monitoring is likely to add much, if any, value.

Finally, while it is true that a firm’s workers or managers are likely to have strong incentives either to obtain and use information themselves or to find agents who have the capacity to do so, remote investors, as Hansmann calls them, have stronger incentives to use this information in ways that increase the overall value of the firm. Specialists,

\(^{21}\) Id.
broker-dealer firms and other exchanges members all have incentives to use rule-making authority to benefit themselves at the expense of the firm as a whole.

Stock exchanges are increasingly risky ventures. Small changes in regulation, technology, or consumer demand can result in significant losses or even failure. Some evidence for this can be found in the complex web of cross-ownership in alternative trading venues, particularly ECNs. As David Brown of the Ontario Securities Commission recently observed:

No one, including industry professionals, seems to know where the new world of competition among exchanges, ECNs and ATSS will lead. A look at the cross-ownership of ECNs and ATSS illustrates the point. A chart depicting their ownership resembles a spider web, with strands being held by investment banks, brokerages, and even news media. Investors in the ECN Archipelago include a cable network, CNBC; an online brokerage, E*Trade; another ECN, Instinet; as well as Merrill Lynch and Goldman Sachs. Merrill and Goldman Sachs also own interests in Brut, along with Morgan Stanley Dean Witter; and in OptiMark, along with Paine Webber; Dow Jones --which owns the Wall Street Journal; and Softbank, which also owns a significant stake in E*Trade. … Everyone seems to be putting small bets on every horse in the race, in hopes that at least one of them will make it to the finish line.22

Thus, to the limited extent that worker ownership is related to risk, it is clear that outside owners, who are clearly more efficient risk-bearers, are better-suited to run exchanges than are the members or workers in those exchanges. What is less clear is whether those outside owners are equally adept at self-regulation, which has been and remains the regulatory framework for securities trading.

B. The Modern Exchange: Demutualized and Publicly Traded

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Faced with a dramatically altered economic environment, exchanges have had to adapt in both form and function. One response to the new competition has been demutualization.23 A second, and distinct response has been for the demutualized entity to launch an Initial Public Offering (IPO). We view the demutualization process as accomplishing the three goals identified in Section II (aligning incentives, reducing rent-seeking, and facilitating outside capital formation). This, in turn allows the exchange to operate more efficiently. The question to which we turn in the section below is whether demutualization allows exchanges to regulate more efficiently.

The defense of the stock exchange as effective self-regulator has been made most forcefully by Paul Mahoney, who argues for a dramatic expansion in the scope of regulatory authority commanded by stock exchanges.24 The essence of Professor Mahoney’s argument is incentive-based. He argues that, like other producers:

Exchanges should have strong incentives to adopt rules that benefit investors… Exchanges are typically owned by their members, who are stockbrokers or other professional intermediaries. Because their incomes rise as the volume of transactions rises, intermediaries create stock markets, which attract investors by offering liquidity. As a provider of liquidity, an exchange competes with other exchanges and over-the-counter markets, both to attract companies and to induce investors to purchase listed securities. The securities market as a whole also competes for investor funds with real estate, precious metals, collectibles and so on.25

There are three fundamental problems with this argument. First, while Professor Mahoney is clearly correct that exchanges compete for listings, his argument does not


25 Id. at 1457-58.
account for the critical difference between the initial competition among competing trading venues to obtain a listing, and the ongoing competition among exchanges to attract trading volume. For better or for worse, today’s securities markets are characterized by simultaneous trading in multiple venues.\textsuperscript{26} This simultaneous trading in multiple markets creates serious problems for those who would regard the exchanges as viable sources of regulation, without guidance or coordination from the government.

One problem is that promulgating regulations is costly. Enforcement of regulations may be even more costly. For example, in 2003, the NYSE charged $113,506,000 in regulatory fees, a figure that accounted for 10\% of the Exchange’s revenues.\textsuperscript{27} Significantly, the $113.5 million in regulatory fees is ten times more than the $11.0 million that the NYSE received in revenue from Membership Fees.\textsuperscript{28} These regulations create significant public goods, since the regulations clearly benefit entities besides the firms that pay for it. This suggests that the NYSE will under-produce regulation.

A related problem with exchange regulation in today’s market environment is that the regulatory activities conducted by the NYSE and other exchanges create significant free-rider problems. Rival trading venues, particularly companies operating Alternative Trading Systems and Electronic Communications Networks can free-ride on these


\textsuperscript{27} 2003 Annual Report, Consolidated Statement of Income. The NYSE’s revenues are , in order of magnitude, received from the following sources: Listing Fees, Data Processing Fees, Market Information Fees, Trading Fees, Regulatory Fees, Facility and Equipment Fees, Membership Fees, Investment and Other Income.

Meanwhile, The NASD & NYSE had a combined regulatory staff of 2650 and a regulatory budget of $624M in 2003. Joel Seligman, supra note _12_ at 1384.

\textsuperscript{28} 2003 Annual Report, supra note 27.
regulatory efforts, since those venues can trade NYSE and Nasdaq listed securities without incurring any regulatory costs. Individual investors and traders who transact on other markets don’t pay for regulation, but directly benefit from it.

A second problem with Professor Mahoney’s analysis is that it is explicitly based on the premise that exchanges are owned by their members. But this is no longer the case. Mahoney’s theory provides no theory for the transformation from mutual to stock ownership, and no account of the consequences of this change. If, as Mahoney suggests, member-ownership of exchanges is what creates the incentives to adopt rules that benefit investors, then the switch away from member-ownership that we have observed in recent years should undermine the case for Exchange self-regulation. While it is true that, in general, “producers have strong incentives to supply goods or services that customers desire,”29 it also is important to distinguish firms’ public-regarding ex ante preferences regarding regulation from their private-regarding preferences, ex post with respect to regulation.

Ex ante, at a time when a company is selling its shares to the public, it has incentives to lower its capital costs. One way of doing this is to opt into a set of efficient legal rules to prevent or impede later diversions of wealth from investors. However, ex post, once the shares have been sold and the company is listed on an exchange and trading, management has an incentive, where possible, to renege on the agreements it has made with investors.

In today’s environment of multi-venue trading, the problem of such ex post opportunistic behavior looms quite large. There is nothing that an exchange can do to enforce its regulations when firms are willing to cease doing business with the exchange

29 Mahoney, supra note _24_ at 1457.
by delisting their shares and removing themselves from the scope of the exchange’s regulatory reach. Over time, the ability of listing firms to make credible, \textit{ex ante} commitments to acquiesce to the exchanges’ \textit{ex post} enforcement of rules has been eviscerated. Firms that are threatened with sanctions now can simply move to rival trading venues with similar liquidity characteristics, and more congenial rules.

A third problem with Professor Mahoney’s analysis is empirical in nature. There is much research and no evidence of the proclivity for efficient rule-making on the part of Exchanges of the kind that Maloney describes. The fact of the matter is that exchanges \textit{collude} rather than \textit{compete} when they promulgate new rules. As the “Special Study on Market Structure, Listing Standards and Corporate Governance,” pointed out, “the SEC had adopted a practice of encouraging the exchanges ‘voluntarily’ to adopt given corporate governance listing standards and in the process has urged the exchanges listed companies and shareholders to reach consensus on those standards.”

For example, during the 1970s, the SEC urged that the exchanges adopt rules requiring that corporate audit committees be comprised of independent directors. The rules began changing with the approval in March, 1977 of a new NYSE rule requiring all listed domestic companies to establish and maintain audit committees independent of management and free from any relationship that would interfere with the exercise of the independent judgment of the audit committee member. With the support and encouragement of the SEC, the NYSE and the Nasdaq “agreed to sponsor a ‘blue ribbon panel’ to make recommendations on strengthening the role of audit committees in overseeing the corporate financial

\footnote{American Bar Association, Special Study on Market Structure, Listing Standards and Corporate Governance, May 17, 2002, at 15 (The Special Study Group responsible for drafting this report consisted of Robert Todd Lang, Chair, and Brandon Becker, Roger Blanc, Peter Clapman, Roberta Karmel, John Liftin, Jonathan Macey, Hugh Makens, and John Olson).}
Within one year after the release of the panel’s report, all of its recommendation were coordinately proposed as rules by the NYSE, Nasdaq and the AMEX and subsequently approved on en masse on December 21, 1999 by the SEC under the Commission’s statutory authority pursuant to Section 19(b). 32

The same joint approach was followed under both Chairman Arthur Levitt and Chairman Harvey Pitt with respect to coordinating the Exchange’s rulemaking regarding the issue of when shareholder approval is required for executive compensation plans involving the issuance of stock options. The SEC in 2000 and again in 2001 called for a collaborative resolution of this issue. The Chairman of the SEC went so far as to say that although the SEC’s letters to the exchanges was worded as “a request, it was expected to be implemented. They should move with alacrity.” 33

As a purely descriptive matter, the available evidence is inconsistent with the assertion that rival trading venues compete to produce corporate law rules. Rather, the accurate depiction of the competitive situation is that the SEC coordinates the regulatory standards of the exchanges and the Nasdaq in order to prevent competition among these trading venues from occurring at all.


This is not to say that exchanges *never* have the appropriate incentives to regulate their own activities. As with all firms, we can expect an exchange’s own rules to be efficient when, and only when, the exchange’s incentives are consistent with the promulgation of efficient rules. But self-regulation now poses massive agency cost problems because exchanges are seeking to regulate their members, who are, in fact, competing firms, rather than firms with whom the exchanges interests are aligned with respect to most regulatory issues.

Evidence abounds that exchanges are failing to meet their regulatory mandates. For example, in 2000, the Justice Department and the SEC sanctioned the American Stock Exchange, the Philadelphia Stock Exchange, the Chicago Board of Options Exchange, and the Pacific Stock Exchange (which is owned by an ECN, ArcaEx), for not enforcing their own internal rules for the trading of options. The four exchanges agreed, without admitting or denying wrongdoing, to spend $77 million on new surveillance technology and enforcement initiatives. In 2003, the Securities and Exchange Commission investigated and disciplined the New York Stock Exchange for failure to properly regulate against trading in front of customer orders and other actions by exchange members that harm investors. In October, 2003, the SEC Office of Compliance, Inspection and Examinations wrote a confidential report, that, according to the Wall Street Journal, concluded that self-regulation at the NYSE “does not adequately discipline or deter” securities law violations by exchange members. 

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36 Landon Thomas, Jr., SEC Steps In as Fines are Planned on 5 Firms, The N.Y. Times, Oct. 17, 2003, C1.
the SEC was preparing enforcement actions against three other exchanges, the American Stock Exchange, the Philadelphia Stock Exchange and Chicago’s National Stock Exchange. The SEC has “evidence that some of the dozens of firms that oversee the buying and selling of securities at these exchanges withheld valuable pricing information from the public or traded for their own accounts before filing public orders… [T]he firms allegedly took advantage of their knowledge of price trends to get better deals for themselves, shortchanging other investors.”

These are all clear examples of the point we are making: self-regulation in today’s environment is systemically dysfunctional. The SEC is pressuring the exchanges to engage in self-regulation because the exchanges are required to police trading on their floors aggressively, which they don’t do. But the problem is that the exchanges no longer have the proper incentives to engage in self-regulation with respect to many issues. These incentives have been replaced by the need to survive by attracting order flow from rival trading venues.


The move to for-profit status is a natural economic consequence of the evolution of securities trading from the firm/exchange level to the market level. As the locale for securities trading have evolved from exchanges to venues, exchanges simultaneously have evolved from constituting the entire market for securities to being “merely” one provider among several sources of liquidity for securities. Yet, to the extent that exchanges are engaged in self-regulation, they can promulgate rules that affect their competitors.

In general, where and only where, an exchange internalizes both the costs and the benefits of the rules it promulgates should it be entrusted with the task of self-regulation. When the exchange was the market, this condition was at least approximately met. Now, however, there is not a congruity of interests: rules that benefit the exchange as a firm may well be to the detriment of the market. Consequently, while exchanges may actually now be more adept at setting internal regulations, they will fail miserably at setting regulations at the market level. It is not economically sensible to expect profit-seeking exchange to act any other way. Regulators, not exchanges, should make decisions that affect the entire market.

We believe the regulation of U.S. exchanges is currently sub-optimal because it fails to recognize this discrepancy. For some issues, such as trading capacity or rules regarding insider trading or the manipulation of share prices, regulators are too involved. For other issues, such as listing and delisting decisions, or the monitoring of trading practices regulators are either insufficiently involved, or else they are involved in ways that are inappropriately opaque. We illustrate these points with some specific market examples.

A. Listing and Delisting Decisions

Few issues better reflect this divergence of interests than the listing and delisting of securities. Exchanges have traditionally used listing standards to support their “signaling role” of attesting to the quality of firms trading on the exchange. In return for this endorsement, listing firms paid both initial listing fees and continuing listing fees. These fees have been an important source of revenue for stock markets, particularly in the U.S where listing fees have often been upwards of 30% of the NYSE’s overall revenues.
When it was the case that where firms listed determined where shares traded, these fees could be justified as paying for the ongoing regulation of trading. As we have argued earlier, however, the listing-trading connection has broken down, and trading currently takes place on whichever venue provides the greatest liquidity. 39 There is increased competition for listings. 40 Listing fees now represent almost a fee for access to the US markets, a monopoly rent as it were to the few exchanges and venues empowered to list firms. 41 From a purely economics perspective, since exchanges can list firms whose stocks they may not actually end up trading, the incentives are surely to list more firms than would be optimal if listing and trading were linked. Concerns over such perverse incentives were recently raised in Hong Kong, where a government appointed commission pushed for the transfer of the listing function to the regulator from the exchange arguing that “As a listed company motivated by profitability, the HKEx has a clear interest in listing as many companies as possible since listing fees represent a significant portion of revenues (18% in 2002) and there is a disincentive to allocate revenues to enforcement with is costly and produces no revenues.” 42

A similar difficulty relates to the issue of who should decide delisting standards. Delisting presents an even greater dilemma for a stock market, as it destroys its listing fee income and curtails the exchange’s opportunity to make revenues from trading the stock. Not surprisingly, exchanges have found delisting increasingly unpalatable, as evidenced


41 This profit potential may explain the newly publicly listed ArcaEx’s decision to begin listing stocks.

by Nasdaq’s reticence in 2001 to delist the more than 10% of their stocks failing Nasdaq’s listing requirements. Indeed, in a competitive world where stock markets make money from trading securities, delisting stocks seems a particularly perverse action for an exchange – why remove the very product generating your revenue?

For the security market as a whole, however, listing and delisting standards play an important role by delineating the quality of firms allowed to access a country’s capital markets. Restricting access or denying trading privileges is thus a public good in that it enhances the overall quality of the market. Entrusting this decision to self-regulating exchanges is suboptimal because as with any public good, the social costs exceed the private costs. As we have argued above, self-regulation cannot succeed when this is the case.

B. Oversight of Exchange Trading Practices

Another area where the costs and benefits of self-regulation may diverge is with respect to trading practices. Traditionally, exchanges have been entrusted to police themselves with respect to ensuring that trading takes place fairly and honestly. The difficulty here is trading practices that benefit traders may do so at the expense of exchange members. Thus, floor brokers who trade ahead of customer orders, or specialists who step in front of existing orders, profit from doing so, and customers correspondingly lose out. It is the zero-sum nature of trading that someone’s cost is someone else’s benefit.

An argument traditionally advanced in favor of self-regulation is that it will be in the interest of all the members to police the profit-taking activity of the few in a position to abuse their power. Yet, the litany of trading practice failures by self-regulating

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43 For an analysis of the delisting process see Macey, O’Hara, and Pompilio [2004].
exchanges is long, suggesting that even the cooperative structure of exchanges was not sufficient to overcome these rent-seeking tendencies. As exchanges convert to profit-seeking firms, however, these problems become even more apparent: Now the gains of the few turn into the profits of the corporation. How can a corporate entity that captures all the gains from such behavior be expected to prohibit it (or more to the point actively monitor to prevent it)?

More subtle difficulties of the self-regulation of trading practices can be seen in the controversy surrounding the trade-through rule. Trade-through rules bar traders from electing to trade at worse prices in faster electronic markets when there is a better quote in the slower, exchange market. The current trade through rule was promulgated pursuant to the Intermarket Trading System ("ITS") Plan, and it dictates that no market participating in this plan can trade at a price inferior to a price displayed in another market. Pursuant to the trade-through rule, the market receiving the order must match a better price available in another market or route the order to the other market for execution. The exchanges succeed in regulating (reducing) competition for order flow against other trading venues when they lobby successfully for the continuation of the trade through rules.

The trade through rule, also known as the “best price rule” originally was intended to deal with an agency cost problem. This problem manifests itself on the buy


46 Current signatories to the ITS Plan include the American Stock Exchange LLC ("Amex"), Boston Stock Exchange, Inc. ("BSE"), Chicago Board Options Exchange, Inc. ("CBOE"), Chicago Stock Exchange, ("CHX"), Cincinnati Stock Exchange ("CSE"), NASD, New York Stock Exchange, Inc. ("NYSE"), Pacific Exchange, Inc. ("PCX"), and Philadelphia Stock Exchange, Inc. ("Phlx").
side when a specialist fills a buy order at a price above an existing offered price, or a sell order at a price below an existing price, and making a risk free profit by buying at the lower-pre-existing price to fill the bid or selling at the higher, pre-existing offer price to fill the order.

The best price rule prevents specialists and other market makers from doing this. Under the trade-through rule, trades must be executed at the best price, which is defined as the current best price offer regardless of the size order.\(^47\) For example, if a customer places a market price sell order for 50,000 shares and there is a pre-existing 100 share bid order for $100.50 and a 50,000 share bid order for $100.45, the market maker is required to wait until he can fill the 50,000 share order at the higher, quoted $100.50. The specialist or market maker cannot fill the market sell order with the $100.45 standing bid, even though that bid might disappear shortly, and even if the customer with the 50,000 share block trade would prefer to execute the entire order immediately, foregoing the .05 better price in order to obtain a faster execution.

In fact, under the current trade through rule at the New York Stock Exchange, the trade cannot be executed at all until the prior, superior bid of $100.50 is filled or withdrawn. If the 100 share $100.50 bid disappears first, he can place your market 200 shares at the $100.45 bid, since this is now the highest price at the time. If, in the meantime, the market drops, say to $1.30 bid, then the block trader’s trade will be executed at $100.30.

Many block traders would prefer to execute their trades automatically at $100.45, the best price for the entire block, rather than to wait, but currently they do not have that

option. The SEC has recently proposed, but not enacted, rules that will allow traders to choose "speed of execution" over "best price." The proposed rule would limit the scope of the trade-through rule in two important respects. First, it would enable those placing orders to “opt-out” of the trade-through rule if the trader is able to “make and informed decision” to select speed of execution over best-price. Second, in automated markets, such as ECNs, where an order can be instantly filled by a computer system, the trade through rule would not apply within a certain "de minimis” range of price discrepancy between the order price and the best bid or offered price in the system. This range would be from one to five cents per share, based on the total share price to be "trade-through-able." Turning to the previous example, an automated order to sell 50,000 could be executed at $1.45 per share, despite the existence of a better displayed price, as long as the better displayed price were not greater than $.05. The NYSE has vigorously opposed relaxing the trade-through rule, arguing that trades should have to go the market posting the best price, which traditionally has been the NYSE.

The trade-through rule provides an important example of our point that technological change has led to a dramatic increase in the level of heterogeneity with respect to the range of self-interest among the participants to exchange transactions. The trade through controversy also illustrates how technology also has led to less concern about agency costs, and more concern about transaction costs. Following Williamson,

48 These new rules are part of “Reg NMS”, a proposal to change the current operation of the national market system. For details of Regulation NMS see  http://www.sec.gov/news/press/2004-22.htm. For an analysis of these proposed changes see O’Hara [2004].

49 SEC Final Rule, supra note 45.

50 Id.

51 See infra section 2.
this suggests that market forces currently favor the organization of trading across markets rather than within firms. Equally importantly, the controversy over the trade through rule suggests that no single trading platform is likely to dominate this market completely, because some clienteles prefer trading platforms that give precedence to small order execution at market prices, while other clienteles prefer trading platforms that give precedence to maintaining the anonymity of market participants, and still others prefer trading platforms that give permit large orders at slightly inferior prices to be executed ahead of smaller orders at slightly superior prices.

The problem with permitting the NYSE and the SEC to enforce the Intermarket Trading System trade through rules is that these rules prevent all exchanges and ECNs from instituting the trading rules they think will maximize their own share of trading. In other words, the regulation prevents competitors from engaging in competition in the way of product differentiation, and is therefore likely to be inefficient.

C. Insider Trading and Share Price Manipulation

The previous two examples have demonstrated areas in which self regulation will fail due to incentive problems on the part of the self-regulating exchange. There are areas, however, where the new incentives of exchanges actually enhance the efficacy of self regulation. In particular, the for-profit exchange will generate efficient legal rules with respect to decisions where the costs and benefits are internalized within the firm. One such areas is with respect to manipulation and insider trading.

Stock market manipulation and insider trading distort share prices in very different ways. Stock market manipulation moves prices to inefficient levels by making
inaccurate or misleading statements or sham transactions that distort share prices. Manipulators then profit by transacting in securities before the prices adjust once again to the undistorted levels. Insider traders, by contrast, profit by trading in securities on the basis of accurate, non-public information that reasonably can be expected to have an impact on share prices once the information is revealed.

Despite these important analytical differences, from the standpoint of the exchange’s incentives to regulate, insider trading and manipulation have an important characteristic in common: they increase the risks and the transaction costs associated with trading. The more that one transacts in the securities subject to manipulation and insider trading, the costlier trading becomes. And since market makers and exchange specialists engage in more transactions than most other traders, they are the groups with the strongest incentives to regulate manipulation and insider trading.

Market makers and specialists hold themselves out as being willing to buy or sell continuously, in order to provide liquidity to the market. Exchange specialists in particular are under an affirmative obligation to buy from or sell to any trader whose order cannot be offset against other orders arriving simultaneously. Market makers and specialists’ compensation comes from charging a "bid-ask spread" that must be narrow enough to attract business, but wide enough to off-set the costs associated with continuous trading and holding occasional inventories of securities to off-set temporary order imbalances. Manipulators and inside traders, however, will sell (or buy) securities to market makers and specialists when only they know that the securities price will go down (or up) in the near future. Thus, while specialists systematically (though not

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always) earn the bid-asked spread with transacting with outsiders, they systematically lose when transacting with insiders and manipulators. Consequently market makers and specialists insist on larger bid-ask spreads as manipulation and insider trading increases as a percentage of overall trading volume.

Thus, both to specialists and market makers, as well as to investors, insider trading increases the transaction costs, in the form of the bid-ask spread, of dealing in securities. Nevertheless, the SEC has minutely regulated insider trading. For example since June 30, 2003, the SEC has required all companies that maintain a corporate website to provide public access to corporate filings within one day of posting. Compliance presents a potentially time-consuming and expensive challenge for companies hoping to accomplish this task in-house.53

Putting aside the obvious point that the information contained in corporate filings of public companies is incorporated in the share prices of firms virtually instantaneously, and certainly before a full day has past after the information is posted, privatized exchanges have incentives to promulgate rules that regulate these sorts of disclosures in a timely way. Indeed, one might expect that these incentives to regulate are so strong that much of the current SEC regulatory structure surrounding these issues can be replaced by rules implemented at the trading system level.

**D. Oversight of Exchange Trading Capacity**

Another area where the interests of the corporate exchange work to enhance regulation is with respect to exchange operation and capacity decisions. At various

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times, particularly when there is a crisis in the market, one hears the need to regulate either to reduce market volatility or to ensure trading continuity during times of national emergency, such as terrorist attack. For example, after the 1987 stock market crash, “questions about whether the market is (or should be) adequately protected” by circuit breakers often were raised.  

Similarly, following the terrorist attacks on the World Trade Center and the Pentagon in September 2001, the SEC attempted to impose uniform rules on the securities industry by issuing a “Policy Statement” containing basic principles to be followed by trading venues, including exchanges and ECNs, in their business continuity planning.

Under our analysis, regulation in this area is unnecessary for two reasons. First, stock exchanges and ECNs fully internalize the costs and the benefits associated with the rules they have concerning trading halts and continuity of trading during times of crisis. Because their basic product is liquidity, exchanges and ECNs have strong incentives to remain open, and to provide customers with the appropriate levels of trading capacity and continuity, for a very simple reason: they cannot make money when they are not trading. Thus, in a world of privatized stock exchanges in which the incentives of the owners is to maximize profit, self regulation should generate efficient rules regarding trading halts and the optimal level of investment in redundant trading systems.

Second, government regulation in this area has led to, and will continue to lead to rent-seeking by market participants. In particular, because of the high fixed costs of

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installing back-up trading systems and training redundant trading personnel, regulation to require firms to have such costly systems in place constitutes barriers to entry for new firms. For example, after the SEC issued its Policy Statement, Bloomberg, a large competitor issued comments urging the SEC to make:

- listed markets more secure by improving access for electronic systems and creating the same redundancy and geographical dispersion that currently exist for markets in Nasdaq securities.
- Designating a single decision maker (possibly the Commission itself) as the central point which, in the event of a major disruption of the securities markets, would announce to the entire marketplace which exchanges/markets would be ready to resume trading.
- Requiring broker-dealers to identify to the Commission their back-up facilities and to carry out and certify pre-trade-thorough-settlement testing of those facilities.\(^56\)

Similarly, in the year following the 1987 stock market crash, the New York, and American stock exchanges, and the National Association of Securities Dealers and a variety of regional exchanges, all adapted rules regulating trading halts.\(^57\) These rules, in their original incarnation, would have halted trading for one hour in all stocks whenever the Dow Jones Industrial Average (DJIA) fell by 250 points, followed by an additional two hour halt if the DJIA fell another 150 points. These rules had to be readjusted as the market rose, particularly in the mid-1990s when the 250 point increase represented a

\(^{56}\) Comments of Bloomberg Tradebook LLC on S7-17-03Bloomberg Tradebook LLC, November 7, 2003, U.S. Securities and Exchange Commission, Re: Commission File No. S7-17-03.

\(^{57}\) Harris, supra note _54_ at 19.
mere 4% change in prices. Now trading halts are regularly re-adjusted by the exchanges. 58

 Appropriately, in our view, the SEC does not halt trading in securities due to order imbalances or in anticipation of pending news. We would argue that privatized exchanges and trading venues have strong competitive incentives to set trading halts at efficient levels, because these competing trading forums internalize the costs associated with promulgating inefficient rules, and internalize the benefits when they promulgate efficient rules.

5. Alternative Regulatory Models – Global Evidence

The previous sections have outlined how changes in the economic environment have forced exchanges to change both their form and function. These changes, in turn,

58 As of October, 2004, with the DJIA at around 10,000, a 1,000-point (10%) drop in the DJIA before 2 p.m. will halt trading on the NYSE for one hour; for 30 minutes if between 2 p.m. and 2:30 p.m.; and have no effect if at 2:30 p.m. or later. A 2,050-point drop in the DJIA before 1 p.m. will halt trading for two hours; for one hour if between 1 p.m. and 2 p.m.; and for the remainder of the day if at 2 p.m. or later. A 3,050-point decline will halt trading for the remainder of the day regardless of when the fall in prices takes place.

suggest that the current U.S. system of self-regulation may be ill-suited to regulating exchanges, particularly as exchanges convert from member-owned cooperatives into profit-seeking publicly listed firms. Against this backdrop, we have argued that a different regulatory environment is called for, one that explicitly recognizes the different incentives now present in exchange structure. We have also argued for a new, expanded role for the SEC that involves both more direct oversight of specific market functions and the ability to propose rules.

What is not clear is whether implementing this new regulatory approach requires a specific regulatory framework, or whether it can be accomplished in a variety of ways. Perhaps not surprisingly, this question of how to regulate securities trading is a global issue, reflecting the fact that markets world-wide are facing the same economic forces. However, many foreign markets have had to adapt more quickly, and change more dramatically, than have the US exchanges, and this has been particularly true with respect to exchange corporate ownership. Consequently a number of countries have already adopted alternative regulatory structures, and these global examples provide important evidence regarding alternative structures for market regulation.

Interestingly, while the problem of regulating these corporate exchanges is essentially the same, the solutions being adopted show little uniformity. As discussed by O’Hara, securities regulation worldwide now exhibits a bewildering array of alternatives ranging from direct government supervision of trading to more standard self-regulation. Within this gamut, however, there are large variations, including a number of hybrid models in which exchanges and government regulators take responsibility for specific functional regulation. Table 1 sets out the regulatory framework currently used for the
London Stock Exchange, the Toronto Stock Exchange, the Singapore Stock Exchange, the Hong Kong Exchange, Euronext, the Deutsche Borse, and the Stockholm Stock Exchange (OM).

Perhaps the most straightforward approach to regulation is that of single governmental regulator. The Deutsche Borse operates under such a structure, where the Exchange Supervisory Authority controls virtually all aspects of trade monitoring, listing and supervision. The Stockholm market is also under direct supervision, and is overseen by the Finansinspektionen (FI), a public authority set up to supervise and monitor companies operating in the financial markets.\(^{70}\) The Stockholm Exchange represents a particularly interesting example, as this market is completely owned by the technology company OM.\(^{71}\)

An intriguing variant of this governmental regulation is found in the U.K., where regulation of securities markets is overseen by the Financial Services Authority,\(^ {72}\) a “super regulator” created in 2000 to oversee all U.K. financial and banking markets. This “super regulator” has wide-ranging powers, and in the area of securities regulation it has taken over the setting and regulation of listing requirements for the London Stock Exchange. The FSA notes two goals for its listing authority: to “facilitate access to listed markets for a broad range of enterprises; and to seek to maintain the integrity and competitiveness of UK markets for listed securities.”\(^ {73}\) The London Stock Exchange still remains responsible for the monitoring and supervision of trading practices on the LSE.

\(^{70}\) O’Hara, “Searching…”, supra note 69 at 21.


\(^{72}\) O’Hara, “Searching…”, supra note 69 at 20.

\(^{73}\) See Financial Services Authority web site www.fsa.gov.uk, responsibilities of the UKLA.
This shared arrangement of functional regulation is consistent with the arguments made earlier in this paper that profit-seeking exchanges may be well-suited for some regulatory tasks, but not for others.

In contrast to the directly regulated markets discussed above, several markets have retained a self-regulatory structure, the most notable of which are Euronext and the Singapore Stock Exchange. Euronext has an intriguing two-tiered governance structure involving a Supervisory Board and a Managing Board. The Supervisory Board is composed of independent members, who cannot by law also serve on the Managing Board. While the Managing Board is responsible for running the company, the Supervisory Board oversees all exchange activities, and is responsible for the overall regulation of the market. In accordance with Dutch law, all major decisions require the approval of the Supervisory Board, and the members of both boards are required to sign all financial statements.\(^7^4\)

Yet another regulatory variant is found in the regulation of the Toronto Stock Exchange. Canadian regulation is entrusted to Market Regulation Services, Inc. (RS), a national, independent not-for-profit regulation services provider that is jointly owned by the Toronto Stock Exchange and the Investment Dealers Association of Canada. As an industry-run SRO, RS retains the basic self-regulatory approach but removes the influence of specific exchange ownership. Thus, RS is responsible for trade monitoring, rule setting, and enforcement for all security markets in Canada.

These alternative regulatory models differ from each other, but each is crafted to deal with the specific problem of regulating exchanges that are publicly-traded entities. A feature common to all approaches is independence between the supervisory authority

\(^7^4\) O’Hara, “Searching…”, supra note 69 at 21.
and the management of the exchange or market. This structure differs from the typical U.S. model, where the regulatory function is carried on directly by the exchange. One exception to this is found in the reorganization of Nasdaq, where following the price-fixing scandal the regulatory arm was split off to form NASDR. NASDR is now separated from the Nasdaq market, but both are owned by the NASD.

There is little doubt that the U.S. markets will evolve toward the private ownership structure now so prevalent elsewhere. The recent corporate governance reforms at the NYSE suggest that individual markets may adopt some changes, but the real issue remains how to regulate U.S. markets operating as profit-seeking, publicly owned firms. The NYSE has proposed retaining its regulatory arm in-house, but changing the reporting lines to go directly to the Board. Unlike the Euronext model, however, there is only one Board at the NYSE, so that management and supervisory decisions would still reside in the same group. An added disadvantage of this approach is that it retains multiple regulators at competing exchanges, an expensive and costly approach which ignores the scale benefits of standardized technology for market oversight. Perhaps more importantly, this approach retains the premise that profit-seeking firms can be trusted to regulate themselves, a questionable assumption given the recurring scandals in U.S. equity markets.

6. Conclusion

This article has explored the changing nature of stock exchanges and the implications of this change for securities regulation. Our premise is that stock exchanges have evolved from being the central market to being one of many venues trading

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75 In 2003, sixty-three percent of the World Federation of Exchanges’s member exchanges were for-profit. World Federation of Exchanges Annual Report 2003.
securities. This evolution from markets to venues has largely been due to the decrease in transactions costs, which has allowed alternative providers of liquidity to enter the securities trading business. As a consequence, the internal structure of stock exchanges has also changed, with exchange world-wide converting from a cooperative structure to a profit-seeking corporate structure.

This change in the form and function of stock exchanges has profound implications for the structure of securities regulation. As we have argued here, market forces have forced exchanges to adapt, but there are no similar market forces acting on the structure of securities regulation. We contend that the changing incentives of exchanges renders obsolete many of the current features of securities regulation, and raises particular concerns with the role of self regulation by shareholder-owned publicly listing exchanges. Our analysis suggests that while self regulation of some aspects of securities market operation may be enhanced in corporate stock exchanges, other facets of self-regulation will fail miserably. This divergence reflects the fact that firms will set efficient legal rules only to the extent that the firm internalizes all the costs and benefits of the rules it promulgates. The current structure of self-regulation allows exchanges to impose costs on competitors, while retaining benefits to itself. Such a regulatory structure cannot hope to succeed.

We propose that a better structure for securities regulation would allocate to firms decisions regarding the internal operations of securities trading, and assign to the SEC decisions relating to the overall market. Thus, regulation of listing and delisting, which define access to the US capital markets, are better handled by the SEC, while decisions regarding trading system capacity are handled more effectively by the market itself. We
also would transfer oversight and monitoring of trading practices to the SEC, reflecting our belief that the incentives of exchanges are not compatible with the policing of these activities.

Self-regulation of securities markets has had a long, and troubled, history in the U.S. As exchanges evolve to being corporate entities operating in a world of many trading venues, a new regulatory structure must evolve as well. Our analysis has suggested a number of necessary features of this new structure, but many specific issues remain to be addressed in future work.
References


Table 1

Regulatory Frameworks for Security Markets

<table>
<thead>
<tr>
<th>Stock Market</th>
<th>Governance Status</th>
<th>Regulators</th>
<th>How is Regulation Handled?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australian Stock Exchange ASX</td>
<td>Publicly listed corporation</td>
<td>ASIC (Australian Securities &amp; Investments Commission)</td>
<td>ASIC overseas listing and delisting, and undertakes daily supervision of ASX’s compliance with rules.</td>
</tr>
<tr>
<td>Deutsche Borse</td>
<td>Publicly listed corporation</td>
<td>Exchange Supervisory Authority – governmental agency part of the Hessian Ministry of Economics</td>
<td>The ESA supervises listing/delisting, supervision of trading practices, and investigates violations of exchange rules and regulations.</td>
</tr>
<tr>
<td>Euronext</td>
<td>Publicly listed corporation</td>
<td>Self -Regulating</td>
<td>Euronext has a two-tiered structure with a Supervisory Board and a Managing Board. The Supervisory Board oversees actions and policies of the Managing Board, and the SB’s approval is required for all major decisions. The Managing Board is responsible for listing/delisting decisions, and the monitoring and supervision of trading.</td>
</tr>
<tr>
<td>Hong Kong Exchange HKEx</td>
<td>Publicly listed corporation</td>
<td>SFC – The Securities and Futures Commission – an independent, nongovernmental statutory body</td>
<td>The SFC monitors and oversees trading in Hong Kong’s futures and equity markets. The HKEx retains the power to list/delist, and also monitors trading.</td>
</tr>
<tr>
<td>London Stock Exchange LSE</td>
<td>Publicly listed corporation</td>
<td>FSA – Financial Services Authority – a governmental agency.</td>
<td>The Financial Services Authority is the “super regulator” of the British capital markets. The FSA is charged with promoting fairness, transparency and order conduct in financial markets. The LSE monitors trading behavior, while the FSA has taken over listing/delisting powers and retains general oversight of the LSE.</td>
</tr>
<tr>
<td>Stock Market</td>
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<tr>
<td>OM (Stockholm)</td>
<td>Publicly listed corporation</td>
<td>FE – Finansinspektionen., The Swedish Financial Supervisory Authority – a governmental agency</td>
<td>The FE sets listing standards and establishes rules regarding trading practices, compliance with insider trading rules, and information disclosure requirements.</td>
</tr>
<tr>
<td>Singapore Stock Exchange SGX</td>
<td>Publicly listed corporation</td>
<td>Self-Regulating</td>
<td>The SGX has self-regulatory powers with respect to issuer regulation (ie. listing standards), member supervision, market surveillance and enforcement. The SGX retains the power to list/delist securities</td>
</tr>
<tr>
<td>Toronto Stock Exchange TSX</td>
<td>Publicly listed corporation</td>
<td>Market Regulation Services, Inc. (RS) - a national, independent not-for profit regulation services provider.</td>
<td>RS is given regulatory responsibility for Market Policy, Market Surveillance, Investigations and Enforcement. The Stock Exchange retains listing and delisting functions.</td>
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</tbody>
</table>